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Plucking the Golden Goose: Higher Royalty Rates on the Oil Sands Generate Significant Increases in Government Revenue

Kenneth J. McKenzie¹

SUMMARY

The Alberta government's 2009 *New Royalty Framework* elicited resistance on the part of the energy industry, leading to subsequent reductions in the royalties imposed on natural gas and conventional oil. However, the oil sands sector, subject to different terms, quickly accepted the new arrangement with little complaint, recognizing it as win-win situation for industry and the government. Under the framework, Alberta recoups much more money in royalties — about \$1 billion over the two year period of 2009 and 2010 — without impinging significantly on investment in the oil sands. This brief paper demonstrates that by spreading the financial risks and benefits to everyone involved, the new framework proves it's possible to generate increased revenue without frightening off future investment. The same model could conceivably be applied to the conventional oil and natural gas sectors.

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The purpose of this communiqué is to briefly review the changes to the oil sands royalty regime implemented in 2009 and shed some light on some of the implications of the changes. In particular, it will show that:

- The changes to the treatment of oil sands introduced in 2009 have resulted in a significant increase in royalties collected from the oil sands relative to the previous system, helping to make the oil sands the single biggest contributor to royalties from non-renewable resources in Alberta. Specifically, the new regime increased government of Alberta revenue by about \$1 billion over the two-year period of 2009 and 2010.
- This was accomplished without significantly impinging upon the incentive to invest in the oil sands, and without generating a good deal of resistance from the oil sands sector. This is due largely to the way in which the oil sands royalties are structured.

French economist Jean-Baptiste Colbert (Minister of Finance under King Louis XIV) famously quipped that, “the art of taxation consists in so plucking the goose as to obtain the largest amount of feathers with the least possible amount of hissing.”

It may be an understatement to say that the changes to the oil and gas royalty regime in Alberta over the last four years have generated a certain amount of “hissing.” Following the release of the *Royalty Review* report in September 2007, the government of Alberta introduced the *New Royalty Framework*, implemented on January 1, 2009. The rather vehement reaction on the part of the oil patch to the new framework has been well documented. At the not inconsiderable risk of carrying the goose metaphor too far, a common refrain was that the *New Royalty Framework* was akin to “killing the goose that lays the golden egg.” In response, the government launched a *Competitiveness Review* late in 2009, which, among other things, re-examined royalties on natural gas and conventional (non-oil sands) oil. As a result of that review, released in March 2010, the royalties imposed on natural gas and conventional oil were reduced.

Importantly, the *Competitiveness Review* did not include a re-examination of the oil sands royalty regime implemented under the *New Royalty Framework*. Indeed, it seems safe to say that the one aspect of the protracted royalty review process in Alberta that has generated relatively little in the way of “hissing” — at the time and since — is the changes to the oil sands royalty system.

This is all the more notable given the important role played by the oil sands in Alberta, particularly on a “go-forward” basis. By 2013-14 oil sands royalties are expected to account for over 60 percent of the projected \$11.8 billion in government revenue from non-renewable resources.² CERI estimates that existing and under-construction oil sands projects alone will add \$2.3 trillion to Canadian GDP over the 2010-2035 period, and generate in excess of \$22 billion in annual royalties to Alberta by 2020. If additional pipeline capacity is added to the US and Canadian west coast, and currently approved oil sands projects go ahead, GDP could increase by as much \$4.8 trillion over the 25-year period and annual royalties could be as high as \$65 billion by 2035.³ It is important to note that these estimates are based on analysis undertaken after the *New Royalty Framework* was implemented.

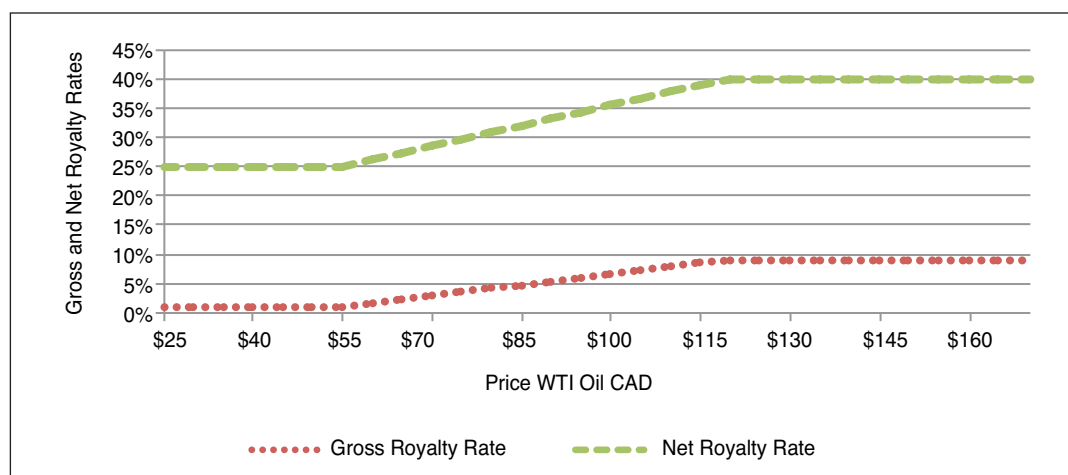
² From Government of Alberta, Budget 2011, Fiscal Plan Tables, at <http://www.finance.alberta.ca/publications/budget/budget2011/fiscal-plan-tables.pdf>.

³ Canadian Energy Research Institute, Economic Impacts of Staged Development of Oil Sands Projects in Alberta (2010-2035), Study No. 125 – Section 1, June 2011.

The new regime introduced on January 1, 2009 maintains the basic structure of the oil sands royalty system that has existed since 1997 under the so-called “generic regime.” Under this structure, a gross royalty is imposed on gross revenue for “pre-payout” oil sands projects, while a net royalty rate is imposed on net cash flow (which allows for the deduction of costs) for “post-payout” projects. “Payout” occurs when the cumulative revenues from the project exceed the cumulative costs (both operating and capital), including a return allowance.

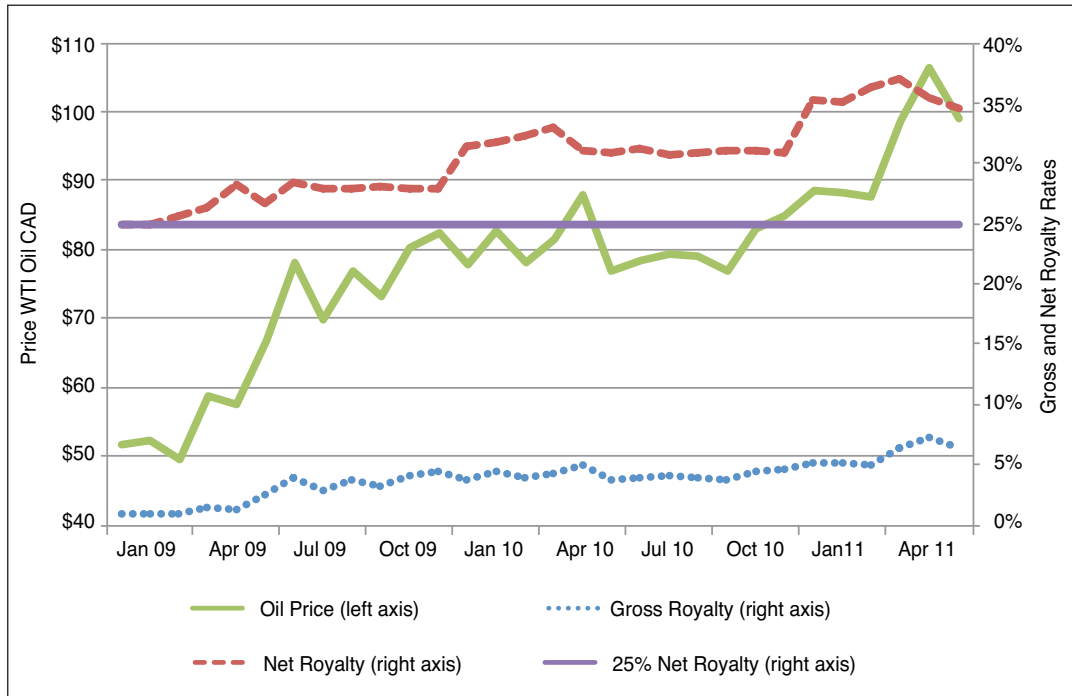
The key difference between the previous oil sands regime and the *New Royalty Framework* introduced in 2009 is the determination of the gross and net royalty rates applied to pre- and post-payout projects. Under the old regime the pre-payout gross royalty was a flat one percent rate and the post-payout net royalty a flat 25 percent; in what follows this is sometimes referred to as the old 1/25 regime. Under the new regime both rates are price-sensitive. Specifically, the pre-payout gross royalty rate starts at a minimum of one percent and increases in a linear fashion at the rate of 0.12308 percent per dollar increase in the price of West Texas Intermediate (WTI) oil in excess of \$55 CAD per barrel, reaching a maximum of nine percent at a price of \$120. The post-payout net royalty rate starts at a minimum of 25 percent and increases linearly at the rate of 0.23077 percent per dollar increase in the price of oil in excess of \$55 CAD per barrel, reaching a maximum of 40 percent at \$120. Figure 1 illustrates the price-sensitive rate schedules under the *New Royalty Framework*.

FIGURE 1: Gross and Net Oil Sands Royalty Rate Schedule



Since the new scheme was implemented in 2009, oil prices have risen steadily. Figure 2 shows the per-barrel price of WTI oil in Canadian dollars from January 2009 to June 2011 (left axis), as well as the price-sensitive gross and net royalty rates corresponding to those prices (right axis). As can be seen, early in 2009 the price of oil was under \$55 and both the gross and net royalty rates were at their minimums, which are equal to the old regime rates of one percent and 25 percent respectively. In April 2009 the price started increasing and has remained above the \$55 threshold ever since. As a result, the price-sensitive gross and net royalty rates have remained consistently above the old 1/25 flat rates.

FIGURE 2: Monthly Oil Sands Gross and Net Royalty Rates, 2009-2011



SOURCE: Alberta Energy, Monthly Royalty Rates, at <http://www.energy.alberta.ca/OilSands/1513.asp>.

Table 1 shows the average Canadian dollar price of a barrel of WTI oil in 2009, 2010 and the first six months of 2011, along with the associated gross and net royalty rates. In 2009 the price of oil averaged around \$66 over the year, and the associated gross and net royalty rates averaged 2.5 percent and 27 percent respectively. As prices increased throughout 2010 and into 2011, the royalty rates increased accordingly. For the first six months of 2011 the gross royalty rate averaged 5.9 percent and the net royalty rate averaged 35.6 percent.

TABLE 1: Average Gross and Net Royalty Rates on Oil Sands, 2009-2011

	2009	2010	2011*
WTI Price CAD	\$66.46	\$80.63	\$94.83
Gross Royalty	2.5%	4.2%	5.9%
Net Royalty	27.0%	31.3%	35.6%

*First six months.

SOURCE: Author calculations; Alberta Energy, Monthly Royalty Rates, at <http://www.energy.alberta.ca/OilSands/1513.asp>

How much additional revenue from the oil sands have these higher royalty rates generated for the government of Alberta? If it is presumed that production from the oil sands over this period was not significantly dampened by the higher royalty rates — an assumption that will be addressed below — it is a relatively straightforward matter to answer this question.

Data from Alberta Energy on royalties collected from pre- and post-payout oil sands projects for 2009 and 2010, and calculations of the impact of the *New Royalty Framework* on

government revenues, are reported in Table 2. As can be seen, the vast bulk of royalties were generated by the net royalty levied on post-payout projects — about 92 percent of royalties in both 2009 and 2010. While pre-payout projects account for a relatively small amount of total oil sands royalties, the percentage increase of the new price-sensitive gross royalty rate over the old one percent gross royalty rate was quite significant (see Table 1). Thus, under the assumptions stated above, in 2009 the new price-sensitive gross royalty generated \$105 million in additional royalty revenue over and above what would have been collected under the old one percent rate. Similarly, the new price-sensitive net royalty generated \$162 million in additional royalty revenue. Thus, for 2009, additional oil sands royalties generated due to the higher royalty rates under *New Royalty Framework* amounted to \$267 million — a 13 percent increase over the old regime. In 2010 the additional royalties due to the higher price-sensitive royalty rates generated even more incremental revenue. The gross royalty on pre-payout projects generated \$224 million in incremental royalty revenue and the net royalty on post-payout projects \$649 million, for a total of \$873 million — a 33 percent increase over the royalties that would have been generated under the old 1/25 regime.

TABLE 2: Incremental Government of Alberta Revenues Under New Royalty Framework

	2009	2010
Pre-Payout		
Actual Royalties	\$173 million	\$295 million
Incremental Royalties Over Old Regime	\$105 million	\$224 million
Post-Payout		
Actual Royalties	\$2,144 million	\$3,226 million
Incremental Royalties Over Old Regime	\$162 million	\$649 million
Total		
Actual Royalties	\$2,317 million	\$3,521 million
Incremental Royalties Over Old Regime	\$267 million	\$873 million
Reduced Alberta Corporate Income Taxes	\$27 million	\$87 million
Total Net Incremental Revenue Over Old Regime	\$240 million	\$786 million

Numbers may not add up due to rounding.

SOURCE: Author calculations; Alberta Energy, Alberta Energy Archive Information at http://www.energy.alberta.ca/About_Us/1701.asp

But this is not quite the end of the story. While the higher royalty rates resulted in a significant increase in royalty revenue for Alberta, because royalties are a deduction against corporate income taxes there will be a slight reduction in corporate tax collections. Calculating this reduction requires information on the “taxability” status of oil sands companies (i.e., whether or not they are in a tax loss position), to which I am not privy. However, assuming that *all* of the companies operating in the oil sands were in a fully corporate taxpaying position, the reduction in Alberta corporate income taxes would be about \$27 million in 2009 and \$87 million in 2010. This suggests a *net* increase in total government of Alberta revenue due to the new oil sands regime of \$240 million in 2009 and \$786 million in 2010; about 12 percent and 30 percent higher than the old 1/25 regime.⁴ The two-year total incremental increase in government revenue due to the new oils sands regime is therefore just over \$1 billion.

⁴ Because of royalty deductibility, under the same full taxability assumption corporate income tax collections on the part of the federal government would also fall, by about \$48.5 million in 2009 and \$157.5 million in 2010.

As indicated above, in making these calculations it is presumed that production and investment in the oil sands over the last two years remained unaffected by the new regime. This seems to be a reasonable assumption for the short term given the long lead and lag times of oil sands projects, and the costs associated with adjusting output on an operational level.

In the longer run, however, it is possible that the higher royalties on oil sands could dampen investment, reducing the incremental increase in royalties under the new system. Table 3 provides calculations of effective tax rates (which reflect both corporate income taxes and royalties) on investment in the oil sands using the University of Calgary’s School of Public Policy Marginal Effective Tax Rate (METR) Model. The METRs provide an indication of the extent to which the tax and royalty system impinge upon the incentive to undertake investment in the sector. The METRs in the table are based upon the 2010 corporate income tax regime for Alberta, for four different royalty scenarios. The first is the old 1/25 royalty regime; the next three are for different rate scenarios under the new regime, corresponding to the actual royalty rates for 2009, 2010 and for the first six months of 2011 (see Table 1). As indicated in the table, the effective tax rate on investment in the oil sands sector does indeed increase due to the higher royalty rates — from 21.4 percent under the old regime, to 22.1 percent under the higher royalty rates that existed in 2009, 23.5 percent in 2010, and 25.5 percent in 2011. This suggests a slight dampening of investment due to the higher royalty rates.

TABLE 3: Marginal Effective Tax Rates, 2010 Corporate Income Tax System

Gross and Net Royalty Rates	METR
1%, 25%	21.4%
2.5%, 27%	22.1%
4.2%, 31.3%	23.5%
5.9%, 35.6%	25.5%

SOURCE: Author calculations using The School of Public Policy METR Model.

What is noteworthy here, however, is the fact that while the METRs did indeed increase, the proportional increase is significantly less than the increase in the royalty rates. For example, over the first six months of 2011 oil prices average just under \$95 per barrel. This was associated with a net royalty rate of 35.6 percent, which is about 42 percent higher than the flat 25 percent rate under the old regime. However, the METR on investment is less than 20 percent higher than it would have been under the old regime (25.5 percent vs. 21.4 percent).

How can the large increases in royalty rates under the new regime be reconciled with the relatively modest increases in effective tax rates? The key is the structure of the oil sands royalty regime. While the upfront royalties on pre-payout projects are based on gross revenue, these are typically paid for a relatively short period of time and account for only 8 percent of total oil sands royalties. More important from a long-run investment point of view are the net royalties on post-payout projects. As indicated above, these are based on net cash flow, which allows for the deduction of operating and capital costs. Thus, the government shares equally in both the revenues and costs of oil sands projects.

For this reason, if considered on its own in the absence of corporate income taxes, an increase in the net royalty rate would have no impact on investment in the oil sands sector. This is because a cash flow tax of this nature is “neutral” with respect to investment because revenues and costs decrease proportionately.⁵ However, when interacted with the corporate income tax, which allows royalty payments as a deduction, the impact of the net royalty is no longer neutral.⁶ Nonetheless, as indicated in Table 3, the impact of the higher net royalty rate on the METR is relatively modest, particularly in comparison to the magnitude of the increases in the royalty rate.

The structure of the oil sands royalty regime and the relatively muted impact of the higher royalty rates on the effective tax rate may also explain why such a significant increase in royalties from the sector vis-a-vis the old regime generated little in the way of public resistance on the part of the oil sands sector, particularly compared to the natural gas and conventional oil sector. The structure of the royalty regimes for gas and conventional oil is fundamentally different, based entirely on gross royalties levied on revenue. While there are adjustments for production — intended as a rough proxy for costs — and special programs for higher cost wells, these adjustments and programs are *ad hoc*, and do not result in the government sharing in both the revenues and costs of oil and gas wells in the way that the oil sands regime does. In particular, new developments in the extraction of “tight” gas and oil suggest that the old relationships between cost and production that underlie the basic structure of the royalty system may no longer be relevant. This invites rough, *ad hoc* adjustments to royalty rates in response to changing conditions that are almost guaranteed to be “wrong” in some sense.

To sum up, the changes implemented to the oil sands royalty regime have generated incremental revenue for the government of Alberta over the last two years in excess of \$1 billion. This has been done without generating the political outcry that accompanied much of the changes to conventional oil and gas as a part of the royalty review process. On a “go-forward” basis, while the changes in the oil sands royalty regime will be expected to dampen investment in the oil sands sector somewhat, this impact is relatively modest in comparison to the increase in royalty rates. It is argued that all of this is due to the basic structure of the oil sands royalty system, a large part of which is based upon a cash flow approach under which the government shares equally in the costs and revenues of oil sands projects.

The experience with the oil sands provides some important lessons for royalty policy, and indeed for tax policy in general. In particular, it emphasizes that the structure of the system — the base upon which the tax or royalty is applied — is at least as important as the rates. It also suggests that it is possible to generate increased revenue without a great deal of either economic or political discomfort — we can pluck the goose that lays the golden eggs without killing it, much less generating a lot of “hissing.” This lesson may well be applied to royalties in the conventional oil and gas sector. Anyone ready for another royalty review?

⁵ See Robin Boadway and Neil Bruce (1984), “A General Proposition for the Design of a Neutral Business Tax,” *Journal of Public Economics*, 24(2), 231-239.

⁶ See Jack M. Mintz, “An Evaluation of the Business Tax Recommendations of the Henry Review and the Australian Government Response,” in *Australia’s Future Tax System: The Prospects After Henry*, edited by C. Evans, R. Krever and P. Mellor, Thompson Reuters, 2010, 162-82



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About the Author

Kenneth J. McKenzie is a Professor in the Department of Economics and The School of Public Policy at the University of Calgary, where he has been since 1992. He received his B.Comm. from the University of Saskatchewan in 1982, his M.A. from the University of Calgary in 1985 and his Ph.D. from Queen's University in 1990. From 1984 to 1986 he was an economist in the Tax Policy Branch of the federal Department of Finance. His first academic appointment was at the University of Toronto in 1990. His principle area of research is public economics, with an emphasis on taxation and political economy. Professor McKenzie has received the Harry Johnson Prize for the best article in the Canadian Journal of Economics (1996, with Herb Emery). He is a two time winner of the Douglas Purvis Memorial Prize for a published work of excellence relating to Canadian public policy (1999, with Ron Kneebone; 2010, with Natalia Sershun). In 2000 he was the recipient of the Faculty of Social Sciences Distinguished Research Award at the University of Calgary. He was the EnCana Scholar at the C.D. Howe Institute, where he delivered the 2001 Benefactors Lecture, and has been a visiting fellow at research institutes in both Germany and Australia. He was the inaugural director in 2004 of the University of Calgary's Institute for Advanced Policy Research. Professor McKenzie has acted as an advisor to governments and institutions at the international, federal and provincial levels. He has been on the Panel of Experts for the International Monetary Fund and the World Bank and has provided analysis and advice on tax policy to several developing countries. He has sat on the Taxation and Finance Committee of the Alberta Economic Development Authority, was a member of the Alberta Business Tax Review Committee in 2000, an expert advisor to the Financial Review Commission in Alberta in 2002, and involved in research for the federal government's Technical Committee on Business Taxation in 1997. In 2007 he was a member of the Alberta Royalty Review Panel. Professor McKenzie has served on the Executive Council of the Canadian Economics Association, and on the editorial boards of the Canadian Journal of Economics and the Canadian Tax Journal and is past editor and associate editor of Canadian Public Policy. He served as Department Head in Economics from 2007-2010, and is currently Director of the Tax and Economic Growth Program in The School of Public Policy.