

# Modernizing Alberta's Royalty Framework

Technical Briefing

April 21, 2016



# Royalty Review Process

Advisory Panel  
Work and Final  
Report  
Fall/Winter 2015

Release of  
Calibration  
Formulas  
April 2016

Strategic Overlays,  
Detailed Rules  
Spring/Summer  
2016

Industry  
Training  
Sessions  
Fall/Winter  
2016

New  
Framework  
takes effect  
January 2017

## Panel Recommendations:

1. Establish guiding principles and design criteria for Alberta's royalty framework.
- 2. Modernize Alberta's royalty framework for crude oil, liquids and natural gas.**
3. Enhance royalty processes for the oil sands.
4. Seize opportunities to enhance value-added processing.

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# Goals

## The goals of a modernized framework are:

- As good or better returns for Alberta owners
- As good or better returns for industry/investors
- Drilling incentives are incorporated but effects diminish at higher prices
- Harmonizing the framework across hydrocarbons to remove distortions and disincentives



# Recommendation 2: Modernized framework for crude oil, liquids, and gas

- Apply changes to new wells only
- Emulate a “revenue minus costs” approach
- Apply a 5% royalty rate until revenues equal the Drilling and Completion Cost Allowance (C\*), followed by post-C\* royalty rates that increase with price
- Extend current drilling incentives but reduce their effects at higher prices
- Harmonize the framework across hydrocarbons
- Remove distortions and disincentives in the current framework
- Calibrate to target the same industry returns and Albertans’ royalty revenues that are achieved under the current framework



# Design Criteria: Emulate R minus C

The Revenue (R) minus Cost (C) model is a global standard for sharing profits from resource production between energy companies and resource owners.

## Structure

**Capital Investment Phase**  
("Pre-payout")

- Lower royalty rate to allow producers to recoup investment (called "pay out") faster to re-invest in next well, and so on

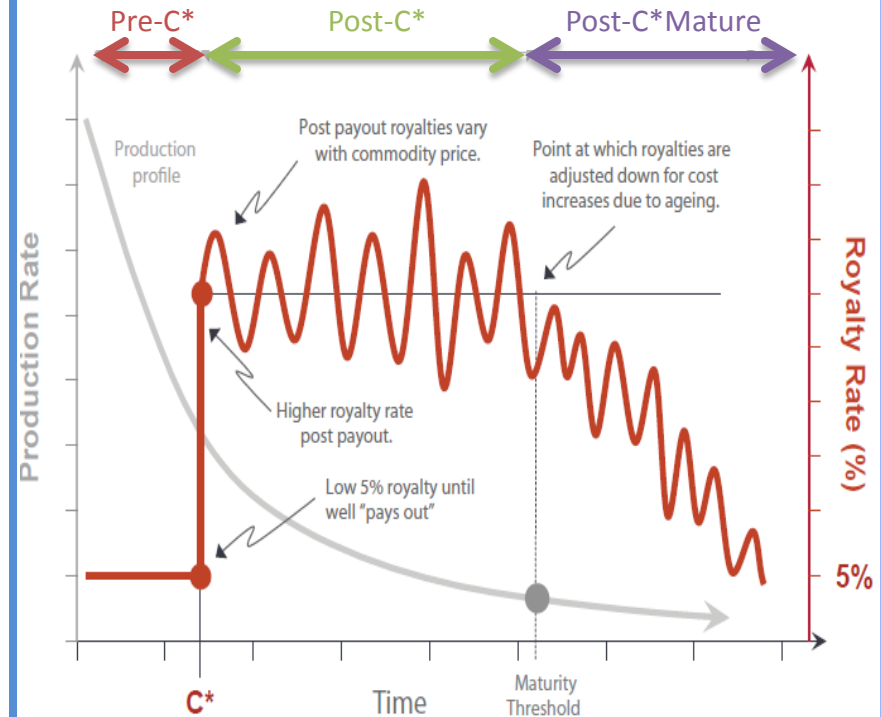
**Production Phase**  
("Post-payout")

- Higher, more stable royalty rate that fluctuates with price but not production

**Maturity Phase**

- Royalty rates begin to decline to help extend life of the well

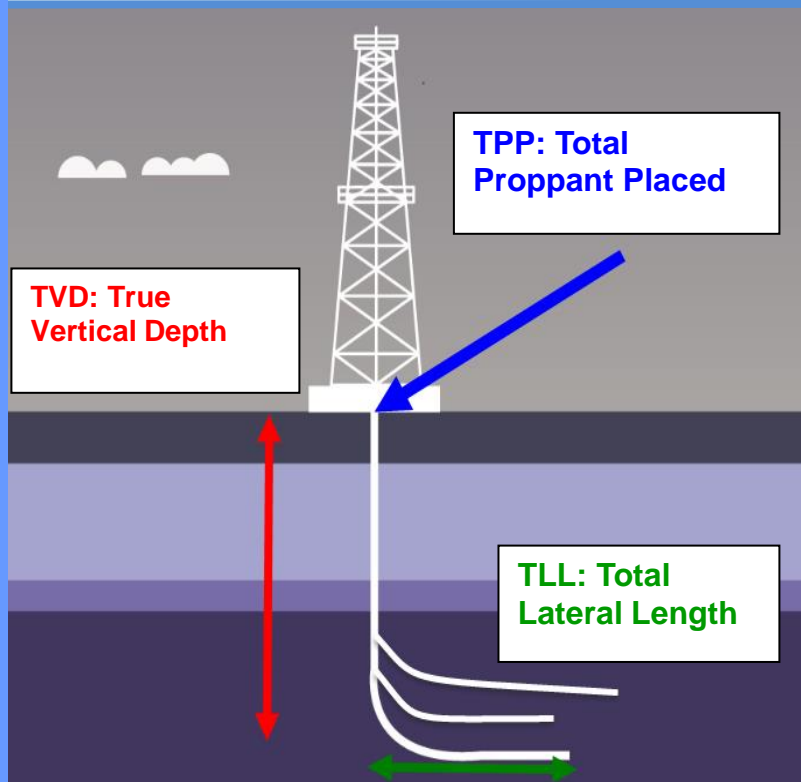
## Illustration



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# Capital Investment Phase: determining C\*

C\* is a proxy for drilling and completion costs in Alberta using a well's parameters: TVD, TLL, TPP. C\* is applied to all wells.



## Calculating a well's C\*

For wells  $\leq 2000$  metres

$$C^* = 1,170 * (\text{TVD} - 249) + 800 * \text{TLL} + 0.6 * \text{TVD} * \text{TPP}$$

For wells  $> 2000$  metres

$$C^* = 1,170 * (\text{TVD} - 249) + 3,120 * (\text{TVD} - 2,000) + 800 * \text{TLL} + 0.6 * \text{TVD} * \text{TPP}$$

All wells pay 5 % royalty rate until gross revenue equals C\* (\$)

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# Production Phase: Oil and Condensate Post-C\* Royalty Rates

- After a well reaches its gross revenue allowance as determined by the C\* formula, the following price sensitive rates apply to oil and condensate:

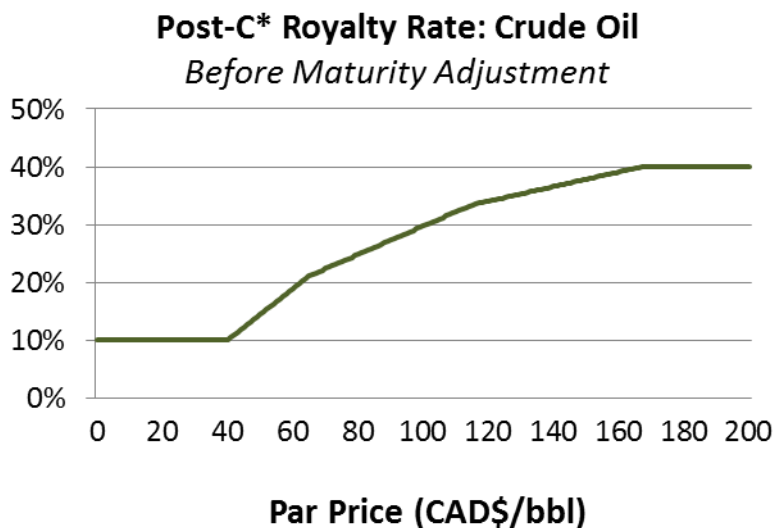
| Royalty Parameters |                             |                         |                               | Price Component ( $r_p$ )  |   |
|--------------------|-----------------------------|-------------------------|-------------------------------|----------------------------|---|
|                    | Price (C\$/m <sup>3</sup> ) | Approx. Price (C\$/bbl) | Change (%/\$/m <sup>3</sup> ) | Price (\$/m <sup>3</sup> ) | $r_p$                                       |
| P1                 | 251.70                      | 40.00                   | 0.07100%                      | PP ≤ 251.70                | 10%   |
| P2                 | 409.02                      | 65.00                   | 0.03900%                      | 251.70 < PP ≤ 409.02       | $((PP - 251.70) * 0.00071 + 0.10000) * 100$ |
| P3                 | 723.64                      | 115.00                  | 0.02000%                      | 409.02 < PP ≤ 723.64       | $((PP - 409.02) * 0.00039 + 0.21170) * 100$ |
|                    |                             |                         |                               | PP > 723.64                | $((PP - 723.64) * 0.00020 + 0.33440) * 100$ |
|                    |                             |                         |                               | Maximum                    | 40%   |

| Oil Wells Quantity Adjustment for Maturity ( $r_q$ ) |                          |
|--|--------------------------|
| Quantity (m <sup>3</sup> e/month)                    | $r_q$                    |
| Q ≥ 194.0  | 0%                       |
| Q < 194.0  | $(Q - 194.0) * 0.1350\%$ |

Note: Quantity is calculated at a well level, where m<sup>3</sup>e/month = m<sup>3</sup> equivalent per month. The applicable  $r_q$  is different for oil and gas wells as noted above.

Note:  $r_q$  is 0 or negative



# Production Phase: Natural Gas Post-C\* Royalty Rates

- After a well reaches its gross revenue allowance as determined by the C\* formula, the following price sensitive rates apply to natural gas:

| Royalty Parameters |                |                    | Price Component ( $r_p$ ) |   |
|--------------------|----------------|--------------------|---------------------------|---|
|                    | Price (C\$/GJ) | % Change (%/\$/GJ) | Price (\$/GJ)             | $r_p$                                     |
| <b>P1</b>          | 2.40           | 6.0000%            | PP ≤ 2.40                 | 5%  |
| <b>P2</b>          | 3.00           | 4.2500%            | 2.40 < PP ≤ 3.00          | $((PP - 2.40) * 0.06000 + 0.05000) * 100$ |
| <b>P3</b>          | 6.75           | 2.2500%            | 3.00 < PP ≤ 6.75          | $((PP - 3.00) * 0.04250 + 0.08600) * 100$ |
|                    |                |                    | PP > 6.75                 | $((PP - 6.75) * 0.02250 + 0.24538) * 100$ |
|                    |                |                    | Maximum                   | 36%                                       |

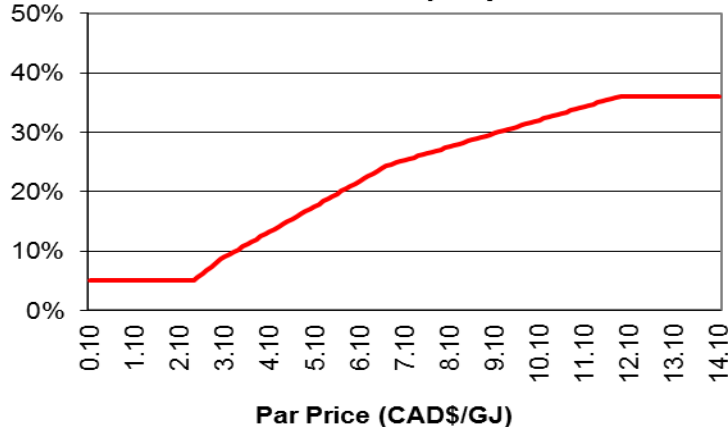
| Natural Gas Maturity Threshold  |  |   |
|---------------------------------|--|---|
|                                 | Q  | % Change  |
| <b>Q gas equivalent volumes</b> | 345.5<br>(e <sup>3</sup> m <sup>3</sup> e/month) | 0.04937%<br>(%/e <sup>3</sup> m <sup>3</sup> e/month) |

| Quantity Adjustment (gas equivalent volume)      |                           |
|--|---------------------------|
| Quantity (e <sup>3</sup> m <sup>3</sup> e/month) | $r_q$                     |
| Q ≥ 345.5  | 0%                        |
| Q < 345.5  | $(Q - 345.5) * 0.04937\%$ |

Note: Quantity is calculated at a well level, where e<sup>3</sup>m<sup>3</sup>e/month = e<sup>3</sup>m<sup>3</sup> equivalent per month. Note:  $r_q$  is 0 or negative

Post-C\* Royalty Rate: Natural Gas  
Before Maturity Adjustment



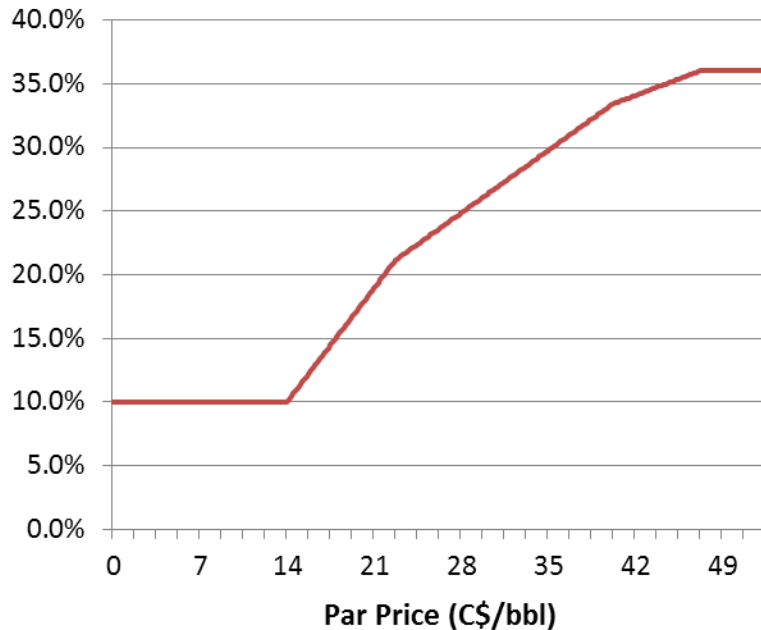


# Production Phase: Propane Post-C\* Royalty Rates

- After a well reaches its gross revenue allowance as determined by the C\* formula, the following price sensitive rates apply to the propane stream:

## Post-C\* Royalty Rate: Propane

*Before Maturity Adjustment*



## Royalty Parameters

|           | Price (C\$/m <sup>3</sup> ) | Approx. Price (C\$/bbl) | % Change (%/\$/m <sup>3</sup> ) |
|-----------|-----------------------------|-------------------------|---------------------------------|
| <b>P1</b> | 88.10                       | 14.00                   | 0.20250%                        |
| <b>P2</b> | 143.16                      | 22.75                   | 0.11130%                        |
| <b>P3</b> | 253.28                      | 40.25                   | 0.05900%                        |

## Price Component (r<sub>p</sub>)

| Price (\$/m <sup>3</sup> ) | r <sub>p</sub>                              |
|----------------------------|---|
| PP ≤ 88.10                 | 10%   |
| 88.10 < PP ≤ 143.16        | $((PP - 88.10) * 0.00202 + 0.10000) * 100$  |
| 143.16 < PP ≤ 253.28       | $((PP - 143.16) * 0.00111 + 0.21150) * 100$ |
| PP > 253.28                | $((PP - 253.28) * 0.00059 + 0.33406) * 100$ |
| Maximum                    | 36%   |

# Production Phase: Butane Post-C\* Royalty Rates

- After a well reaches its gross revenue allowance as determined by the C\* formula, the following price sensitive rates apply to the butane stream:

**Post-C\* Royalty Rate: Butane**  
*Before Maturity Adjustment*



**Royalty Parameters**

|           | Price (C\$/m <sup>3</sup> ) | Approx. Price (C\$/bbl) | % Change (%/\$/m <sup>3</sup> ) |
|-----------|-----------------------------|-------------------------|---------------------------------|
| <b>P1</b> | 176.19                      | 28.00                   | 0.10130%                        |
| <b>P2</b> | 286.31                      | 45.50                   | 0.05540%                        |
| <b>P3</b> | 506.55                      | 80.50                   | 0.03130%                        |

**Price Component (r<sub>p</sub>)**

| Price (\$/m <sup>3</sup> ) | r <sub>p</sub>                              |
|----------------------------|---|
| PP ≤ 176.19                | 10%   |
| 176.19 < PP ≤ 286.31       | $((PP - 176.19) * 0.00101 + 0.10000) * 100$ |
| 286.31 < PP ≤ 506.55       | $((PP - 286.31) * 0.00055 + 0.21155) * 100$ |
| PP > 506.55                | $((PP - 506.55) * 0.00031 + 0.33356) * 100$ |
| Maximum                    | 36%   |

# Maturity Phase:

## Royalty adjustments for maturity threshold

- Royalty adjustments apply when the rate of production is too low to sustain a full royalty burden.
- After the maturity threshold is crossed, a declining linear function proportional to declining production. The minimum rate is 5 percent.
- The maturity adjustment applies any time that production is below the threshold.

### Productivity Threshold for Maturity

|                                 | Q   | % Change   |
|---------------------------------|---|--|
| <b>Q oil equivalent volumes</b> | 194.0 (m <sup>3</sup> e/month)                | 0.1350% (%/m <sup>3</sup> e/month)                 |
| <b>Q gas equivalent volumes</b> | 344.0 (e <sup>3</sup> m <sup>3</sup> e/month) | 0.04937% (%/e <sup>3</sup> m <sup>3</sup> e/month) |

### Oil Well Quantity Adjustment ( $r_q$ )

### Gas Well Quantity Adjustment ( $r_q$ )

| Quantity (m <sup>3</sup> e/month) | $r_q$             | Quantity (e <sup>3</sup> m <sup>3</sup> e/month) | $r_q$              |
|-----------------------------------|-------------------|--|--------------------|
| Q >=194.0                         | 0%                | Q >=345.5  | 0%                 |
| Q <194.0                          | (Q-194.0)*0.1350% | Q <345.5   | (Q-345.5)*0.04937% |

Note: Quantity is calculated at a well level, where m<sup>3</sup>e/month = m<sup>3</sup> equivalent per month. The applicable  $r_q$  is different for oil and gas wells as noted above. Note:  $r_q$  is 0 or negative

# For More Information

- Please visit *About Royalties* at [http://energy.alberta.ca/About Us/Royalty.asp](http://energy.alberta.ca/About_Us/Royalty.asp)

