

## Alberta Royalty Framework: Formulas – Natural Gas Effective January 1, 2011

R% = Price Component ( $r_p$ ) + Quantity Component ( $r_q$ )

R% has a minimum of 5% and a maximum of 36%

For Transition Wells\* R% has a minimum of 5% and a maximum of 30%

<b>Royalty Parameters</b>				
	<b>Price (\$/GJ)</b>		<b>%Change (%/\$/GJ)</b>	
	ARF (2011)	Transition Wells	ARF (2011)	Transition Wells
<b>P<sub>1</sub></b>	4.50	2.00	4.5%	3.5%
<b>P<sub>2</sub></b>	5.25	3.25	2%	0.5%
<b>P<sub>3</sub></b>	9.00	5.00	1%	0%
	<b>Q (10<sup>3</sup>m<sup>3</sup>/d)</b>		<b>% Change (%/10<sup>3</sup>m<sup>3</sup>/GJ)</b>	
	ARF (2011)	Transition Wells	ARF (2011)	Transition Wells
<b>Q<sub>1</sub></b>	4	2	5%	5%
<b>Q<sub>2</sub></b>	6	4	3%	2%
<b>Q<sub>3</sub></b>	11	9	1%	1%

<b>Price Component (<math>r_p</math>)</b>			
<b>Alberta Royalty Framework (2011)</b>		<b>Transition Wells</b>	
<b>Price (\$/GJ)</b>	<b><math>r_p</math></b>	<b>Price (\$/GJ)</b>	<b><math>r_p</math> Transition Wells</b>
$PP \leq 5.25$	$((PP - 4.50) * 0.0450) * 100$	$PP \leq 3.25$	$((PP - 2.00) * 0.0350) * 100$
$5.25 < PP \leq 9.00$	$((PP - 5.25) * 0.0200 + 0.03375) * 100$	$3.25 < PP \leq 5.00$	$((PP - 3.25) * 0.0050 + 0.0437) * 100$
$PP > 9.00$	$((PP - 9.00) * 0.0100 + 0.10875) * 100$	$PP > 5.00$	$((PP - 5.00) * 0.0000 + 0.0525) * 100$
Maximum	30%	Maximum	5.25%

PP is the par price for the month in \$/GJ

Note:  $r_p$  can be negative

<b>Quantity Component (<math>r_q</math>)</b>			
<b>Alberta Royalty Framework (2011)</b>		<b>Transition Wells</b>	
<b>Quantity (10<sup>3</sup>m<sup>3</sup>/d)</b>	<b><math>r_q</math></b>	<b>Quantity (10<sup>3</sup>m<sup>3</sup>/d)</b>	<b><math>r_q</math> Transition Wells</b>
$ADP \leq (6*DF)$	$([ADP - (4*DF)] * (0.0500/DF)) * 100$	$ADP \leq 4$	$([ADP - 2] * 0.0500) * 100$
$(6*DF) < ADP \leq (11*DF)$	$([ADP - (6*DF)] * (0.0300/DF) + 0.1000) * 100$	$4 < ADP \leq 9$	$([ADP - 4] * 0.0200 + 0.1000) * 100$
$ADP > (11*DF)$	$([ADP - (11*DF)] * (0.0100/DF) + 0.2500) * 100$	$ADP > 9$	$([ADP - 9] * 0.0100 + 0.2000) * 100$
Maximum	30%		25%

PP is the par price for the month in \$/GJ

Note:  $r_q$  can be negative

DF is a depth factor that applies only to the quantity component and is based on the measured depth (MD) of a well where:

DF = 1 for all transition wells and for MD ≤ 2000 m;  
DF = (MD/2000)<sup>2</sup> for MD > 2000 m; and,  
The depth factor is capped at 4.

### Illustration of Depth Factor Adjustment

MD	DF	Quantity	$r_q$
$\leq 2000$ m	1.0000	$ADP \leq 6 \cdot 10^3 \text{ m}^3/\text{d}$	$(ADP - 4) * 0.0500$
		$6 \cdot 10^3 \text{ m}^3/\text{d} < ADP \leq 11 \cdot 10^3 \text{ m}^3/\text{d}$	$(ADP - 6) * 0.0300 + 0.1000$
		$ADP > 11 \cdot 10^3 \text{ m}^3/\text{d}$	$(ADP - 11) * 0.0100 + 0.2500$
		Maximum	30%
2500 m	1.5625	$ADP \leq 9.3750 \cdot 10^3 \text{ m}^3/\text{d}$	$(ADP - 6.25) * 0.032$
		$9.3750 \cdot 10^3 \text{ m}^3/\text{d} < ADP \leq 17.1875 \cdot 10^3 \text{ m}^3/\text{d}$	$(ADP - 9.3750) * 0.0192 + 0.1000$
		$ADP > 17.1875 \cdot 10^3 \text{ m}^3/\text{d}$	$(ADP - 17.1875) * 0.0064 + 0.2500$
		Maximum	30%
3000 m	2.2500	$ADP \leq 13.5 \cdot 10^3 \text{ m}^3/\text{d}$	$(ADP - 9) * 0.0222$
		$13.5 \cdot 10^3 \text{ m}^3/\text{d} < ADP \leq 24.75 \cdot 10^3 \text{ m}^3/\text{d}$	$(ADP - 13.5) * 0.0133 + 0.1000$
		$ADP > 24.75 \cdot 10^3 \text{ m}^3/\text{d}$	$(ADP - 24.75) * 0.0044 + 0.2500$
		Maximum	30%
3500 m	3.0625	$ADP \leq 18.375 \cdot 10^3 \text{ m}^3/\text{d}$	$(ADP - 12.25) * 0.0163$
		$18.375 \cdot 10^3 \text{ m}^3/\text{d} < ADP \leq 33.6875 \cdot 10^3 \text{ m}^3/\text{d}$	$(ADP - 18.3750) * 0.0098 + 0.1000$
		$ADP > 33.6875 \cdot 10^3 \text{ m}^3/\text{d}$	$(ADP - 33.6875) * 0.0033 + 0.2500$
		Maximum	30%
$\geq 4000$ m	4.000	$ADP \leq 24 \cdot 10^3 \text{ m}^3/\text{d}$	$(ADP - 16) * 0.0125$
		$24 \cdot 10^3 \text{ m}^3/\text{d} < ADP \leq 44 \cdot 10^3 \text{ m}^3/\text{d}$	$(ADP - 24) * 0.0075 + 0.1000$
		$ADP > 44 \cdot 10^3 \text{ m}^3/\text{d}$	$(ADP - 44) * 0.0025 + 0.2500$
		Maximum	30%