



## **ALBERTA NON-GRID RISK SHARING POOL**

### **JUNE 2018 OPERATIONAL REPORT**

# **ACTUARIAL HIGHLIGHTS**

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**ACTUARIAL HIGHLIGHTS**  
**RSP ALBERTA NON-GRID**  
**OPERATIONAL REPORT**  
**JUNE 2018**

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## 1 Summary

### 1.1 Valuation Schedule (Fiscal Year 2018)

The June 2018 Operational Report leverages actuarial assumptions consistent with last month (that is, it does not reflect the results of an updated valuation). The table immediately below summarizes the implemented valuations and future scheduled valuations for fiscal year 2018.

ALBERTA NON-GRID RISK SHARING POOL FISCAL YEAR 2018 – SCHEDULE OF VALUATIONS			
Valuation Date	Discount Rate (per annum)	Operational Report	Description of Changes
Sep. 30, 2017 (completed)	1.76% mfad: 25 bp	Oct. 2017	updated valuation (roll forward): accident year 2017 loss ratio increased 2.9 points to 112.8%; discount rate increased by 56 basis points; no change to selected margins for adverse deviations
Dec. 31, 2017 (completed)	1.76% mfad: 25 bp	Mar. 2018	update valuation: accident year 2018 loss ratio increased 2.7 points to 108.5%; no change to selected discount rate; no change to selected margins for adverse deviations
Mar. 31, 2018 (completed)	1.93% mfad: 25 bp	May 2018	update valuation (roll forward): accident year 2018 loss ratio increased 2.7 points to 111.2%; discount rate increased by 17 basis points; no change to selected margins for adverse deviations
Jun. 30, 2018		Aug. 2018	update valuation:
Sep. 30, 2018		Oct. 2018	update valuation (roll forward):

Under the proposed schedule for fiscal year 2018, the “off-half” valuation quarters ending March 31, 2018 and September 30, 2018 would not reflect a full valuation update of assumptions, but would rather “roll-forward” key assumptions from the previous valuation.

### 1.2 Appointed Actuary and Hybrid Actuarial Services Model

Liam McFarlane of Ernst & Young LLP is Facility Association’s Appointed Actuary (effective as of June 1, 2013).

Facility Association operates under a “hybrid” model in relation to the management and provision of actuarial services. Under this model, actuarial services are performed by both Facility Association’s internal staff and its external actuarial consulting firm. The hybrid model approach maximizes the efficiency of resource allocation while providing access to additional expertise and capacity as needed.

### 1.3 Consideration of Recent Legal Decisions and Changes in Legislation / Regulation

There have been no changes in these descriptions since last month’s Highlights.

Consideration and assessment of potential impacts of legal decisions and changes in legislation / regulation constitutes a regular part of the valuation process. Descriptions of some of the more recent changes are provided below.

In the **Alberta Treasury Board and Finance Notice 04-2018** (Clarification of Minor Injury Regulation), dated **May 17, 2018**, the Alberta Superintendent of Insurance advised that clarifying amendments have been made to the definition of minor injuries under the Minor Injury Regulation (MIR). At the current time, no adjustments have been made to our valuation estimates or views based on these amendments, but we are reviewing the impact with FA's Appointed Actuary.

The **Supreme Court of Canada** rendered its judgment on **Saadati v Moorhead (2017 SCC 28, rendered on Jun 2, 2017)**. Saadati was involved in a collision in July of 2005 in British Columbia and sued the at-fault driver for damages. According to the Supreme Court decision, *“The trial judge found that the ... accident caused S[aadati] psychological injuries, including personality change and cognitive difficulties. ...and awarded S[aadati] \$100,000 for non-pecuniary damages.”* The trial decision was appealed to the BC Court of Appeal where the trial's \$100,000 non-pecuniary award was dismissed. The Supreme Court upheld the \$100,000 non-pecuniary award, determining:

- *“A finding of legally compensable mental injury need not rest, in whole or in part, on the claimant proving a recognized psychiatric injury.”*
- *“...a trier of fact adjudicating a claim of mental injury is not concerned with diagnosis, but with symptoms and their effects.”*
- *“Expert evidence can assist in determining whether or not a mental injury has been shown, but where psychiatric diagnosis is unavailable, it remains open to a trier of fact to find on other evidence adduced by the claimant that he or she has proven on a balance of probabilities the occurrence of mental injury.”*

At the current time, no adjustments have been made to our valuation estimates or views based on the judgment as rendered, but we continue to review and consider the implications of the judgment.

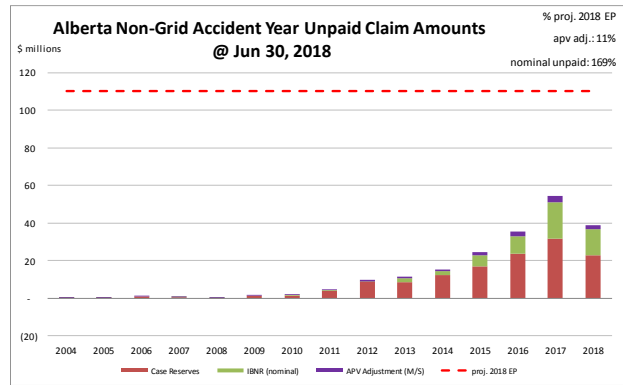
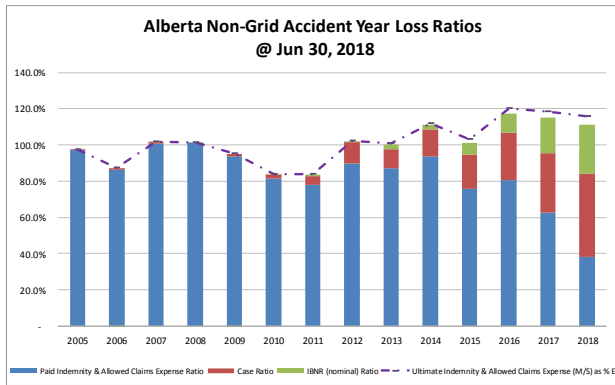
#### **1.4 Current Provision Summary**

The charts at the top of the next page show the current levels of claim liabilities<sup>1</sup> booked by accident year<sup>2</sup>. The left chart displays life-to-date payments, case reserves, IBNR, and the total including actuarial present value adjustments against accident year earned premium. The right chart shows the associated dollar amounts for the components of the claim liabilities and the current projected amount of 2018 full year earned premium (the red hash-mark line) to provide some perspective.

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<sup>1</sup>Claim liabilities refer to provision for unpaid indemnity and allowed claims expenses. Allowed claims expenses are first party legal and other expenses as listed in the RSP Claims Guide. Claims expenses paid through the member company expense allowance are NOT included in this discussion.

<sup>2</sup>Accident year 2004 was an incomplete year and therefore has been excluded from the loss ratio chart.



"M/S" refers to "Member Statement" values – that is, actuarial present value adjustments at the selected discount rate.

The current actuarial present value adjustments balance (\$12.2 million – see table immediately below) represents 11% of the earned premium projected for the full year 2018 (see the upper right corner of the right chart above). If our current estimates of the nominal unpaid amounts prove to match actual claims payments, the actuarial present value adjustments will be released into the net operating result over future periods.

claim liabilities (\$000s)

	amt	%
case	132,875	66.9%
ibnr	53,626	27.0%
M/S apv adjust.	12,200	6.1%
<b>M/S total</b>	<b>198,701</b>	<b>100.0%</b>

The table to the left breaks down the Member Statement (M/S) claim liabilities total into component parts, showing that the majority of the claim liabilities is in case reserves for this pool. Approximately 61% of the IBNR balance relates to accident years 2017 and 2018 (see Exhibit B). Approximately 85% of the M/S total claim

liabilities are related to accident years 2014-2018 inclusive (i.e. the most recent 5 accident years), and approximately 1% is related to accident years 2008 and prior (i.e. prior to the most recent 10 accident years).

The tables immediately below summarize the premium liabilities and the total policy liabilities.

premium liabilities (\$000s)

	amt	%
unearned prem	59,162	85.1%
prem def/(dpac)	6,829	9.8%
M/S apv adjust.	3,513	5.1%
<b>M/S total</b>	<b>69,504</b>	<b>100.0%</b>

policy liabilities (\$000s)

	amt	%
claim	186,501	69.5%
premium	65,991	24.6%
M/S apv adjust.	15,713	5.9%
<b>M/S total</b>	<b>268,205</b>	<b>100.0%</b>

## 2 Activity During the Month of June 2018

### 2.1 Recorded Premium and Claims Activity

The table at the top of the next page summarizes the extent to which premiums and claims amounts recorded during the month differ from projections reflected in the prior month's Operational Report<sup>3</sup>.

<sup>3</sup>There may be rounding differences in values in this document compared with the associated Bulletin and/or Operational Report.

*Alberta Non-Grid RSP Actual vs Projected Summary: Recorded Transaction Amounts (\$ thousands)*

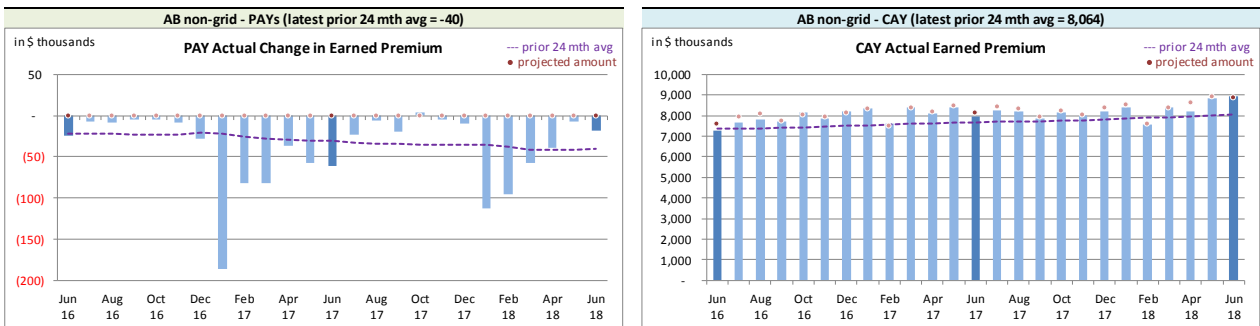
Table 01 Accident Year	Earned Premium		Paid Indemnity & Allowed Claims Expense		Case increase / (decrease)		Recorded increase / (decrease)	
	Actual	Actual less Projected	Actual	Actual less Projected	Actual	Actual less Projected	Actual	Actual less Projected
Prior	0	0	3,230	1,854	(1,686)	(1,298)	1,544	556
2016	7	7	580	(95)	(657)	1,258	(78)	1,162
2017	(25)	(25)	766	(788)	(654)	3,604	112	2,816
2018	8,951	111	4,140	(501)	3,460	1,466	7,600	966
TOTAL	8,933	93	8,715	470	463	5,030	9,178	5,500

(Recorded transaction amounts exclude IBNR & other actuarial provisions)

Claims transaction activity is generally volatile and changes from one month to the next are anticipated due to this natural “process variance” (i.e. random variation). Each month, the projection variances are reviewed for signs of projection bias and to identify potential ways to reduce the level of the variance. Commentary from our review is provided in the sub-sections that follow.

### 2.1.a Actual vs. Projected (AvsP): Earned Premium

The charts immediately below show actual **earned premium**<sup>4</sup> activity in each of the most recent 25 calendar months, along with a “prior 24-month average” to show how each month’s actual compares with the average amount of the preceding 24 calendar months.

*Alberta non-Grid RSP Actual **Earned Premium** by Calendar Month*


**Earned premium** changes during a given calendar month in relation to prior accident years tend to be at modest levels, although relatively high levels seem to occur at the beginning of each year.

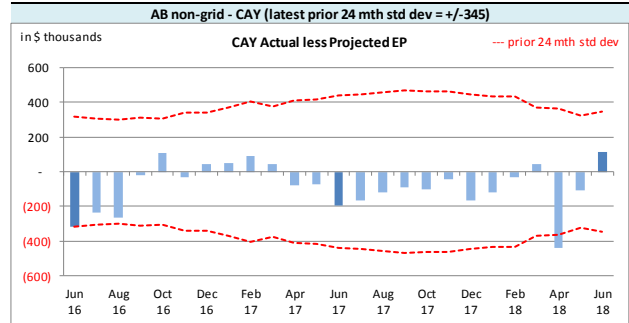
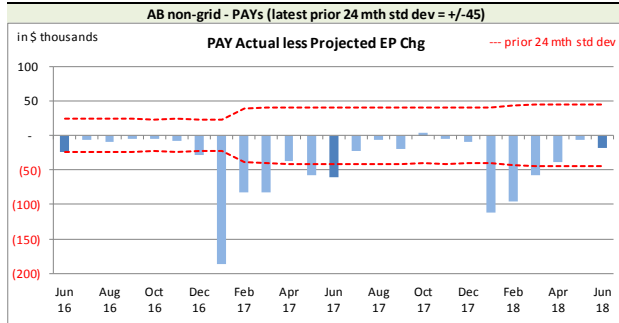
We have noted and investigated the unusually high level of PAYs earned premium activity earlier in 2017 and January through April 2018, particularly with respect to one member. Management reviewed and was satisfied with the appropriateness of the 2017 transactions, but continues its investigation of the 2018 transactions.

The associated variance between the actual changes and the projections from the previous month are shown in the charts at the top of the next page. **Earned premium** change projections are all attributed to the current accident year as the projection upload does not accept **earned premium** changes for other accident years. We do not see this limitation as being significant for our purposes,

<sup>4</sup>Premium is earned on a daily basis based on the transaction term measured in days. As a result, months with 31 days earned relatively more than those with 30 days, and February earns the least.

but it does mean that the actual less projection variance will equal the actual earned premium change in relation to prior accident years.

*Alberta non-Grid RSP Actual vs. Projected Summary: **Earned Premium** Variances by Calendar Month*



On Latest \$ thousands		
<b>Earned Premium</b>	PAYs	CAY
Mthly Avg EP Chg (prior 24 mths)	(40)	8,064
std dev	45	345
A-P <> std dev	9	2
% <> std dev	36.0%	8.0%
norm <> std dev	31.7%	31.7%

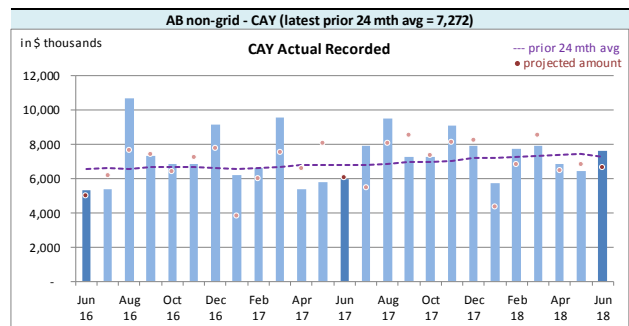
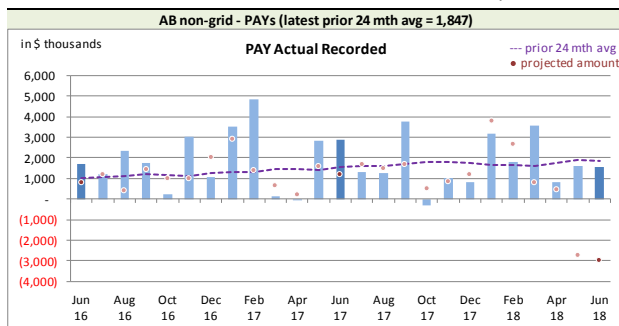
We project **earned premium** changes from known unearned premium and projected written premium levels, but upload the total projections as current accident year (CAY). This process has generated prior accident years' (PAYs) bias<sup>5</sup>, with actuals generally lower than projected, although the magnitude is not high relative to monthly

premium. In addition to the PAYs' bias, the CAY has also shown bias<sup>6</sup> up until May 2018, with actuals being generally lower than projected, and we have modified our projections processes in response. Over time, we may consider other projection approaches to narrow monthly variance levels further, but it is not currently deemed a priority.

**2.1.b AvsP: Recorded Indemnity & Allowed Claims Expense**

The charts below show actual **recorded** activity (**paid** and case reserve changes), in each of the most recent 25 calendar months, along with a "prior 24-month average" to show how each month's actual compares with the average amount of the preceding 24 calendar months.

*Alberta non-Grid RSP Actual **Recorded** by Calendar Month*

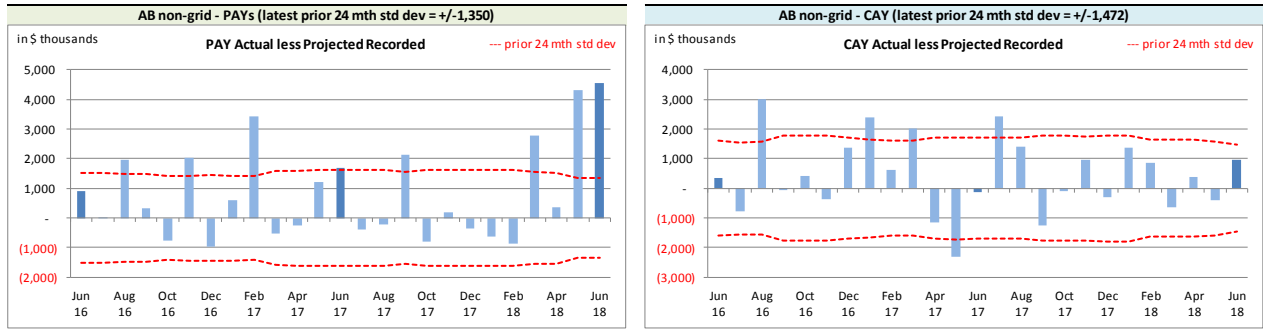


<sup>5</sup>The PAYs' variances will show bias as the projection upload forces all earned premium projections to be attributed to the CAY.

<sup>6</sup>We measure bias based on a 95% confidence range for a binominal distribution with trials based on the range being considered (24 in this case) and 50% probability of success. The 24-month variances at May 2018 has only 6 months where the actuals was higher than projected, and as the 95% confidence range is 7 to 17, bias continues to be indicated.

**Recorded** activity variances from the previous month’s projections are shown in the charts immediately below, including the “prior 24-month standard deviation” levels to show how the variances from projection compare with historical standard deviations.

*Alberta non-Grid RSP Actual vs Projected Summary: **Recorded** Variances by Calendar Month*



On Latest \$ thousands			
	<b>Recorded</b>	PAYs	CAY
Mthly Avg Recorded (prior 24 mths)	1,847	1,847	7,272
std dev	1,350	1,350	1,472
A-P <> std dev	8	8	5
% <> std dev	32.0%	32.0%	20.0%
norm <> std dev	31.7%	31.7%	31.7%

With respect to **recorded** indemnity & allowed claims expense activity, 32% of the prior accident years’ (PAYs) variances (left chart above) fell outside of the experience period’s standard deviation, suggesting the projection process has performed no better than a projection based simply on the 24-month average. We have

implemented changes in an attempt to address this. No bias has been indicated at a 95% confidence level on a lagging 24-month basis.

As first noted in the May 2018 Actuarial Highlights, the PAY projected **recorded** activity was adjusted for the months of May and June 2018 to account for a member correction in recorded case reserve overstatement. The PAY **recorded** variance was outside of one standard deviation driven by adjustments made to the recorded projection, as FA expected the correction in recorded case reserve overstatement to happen this month, as previously advised by a member (see following sections for more details). As the correction did not go through during the current month, the PAY **recorded** activity was higher than the projected by more than one standard deviation. The member is still engaged in a process to correct the reported levels.

The current accident year (CAY) **recorded** variances (right chart above) have been greater than one standard deviation 20% of the time, suggesting that the projection process has performed better than simply projecting the most recent prior 24-month average. No bias has been indicated at a 95% confidence level on a lagging 24-month basis.

As noted in the last five month’s Actuarial Highlights, FA management was notified on January 31, 2018 by a member of a potential recorded case reserve overstatement. Furthermore, during the latest valuation, FA management was advised of an additional and separate recorded case reserve understatement primarily due to incorrect reporting after FA’s October 31, 2017 fiscal year end. Management investigated and estimated the overall overstatement for the Alberta non-Grid RSP as at March 31, 2018 as indicated in the table at the top of the next page.



*Estimated case reserve overstatement as at Mar 31, 2018*

overstatement / (understatement)

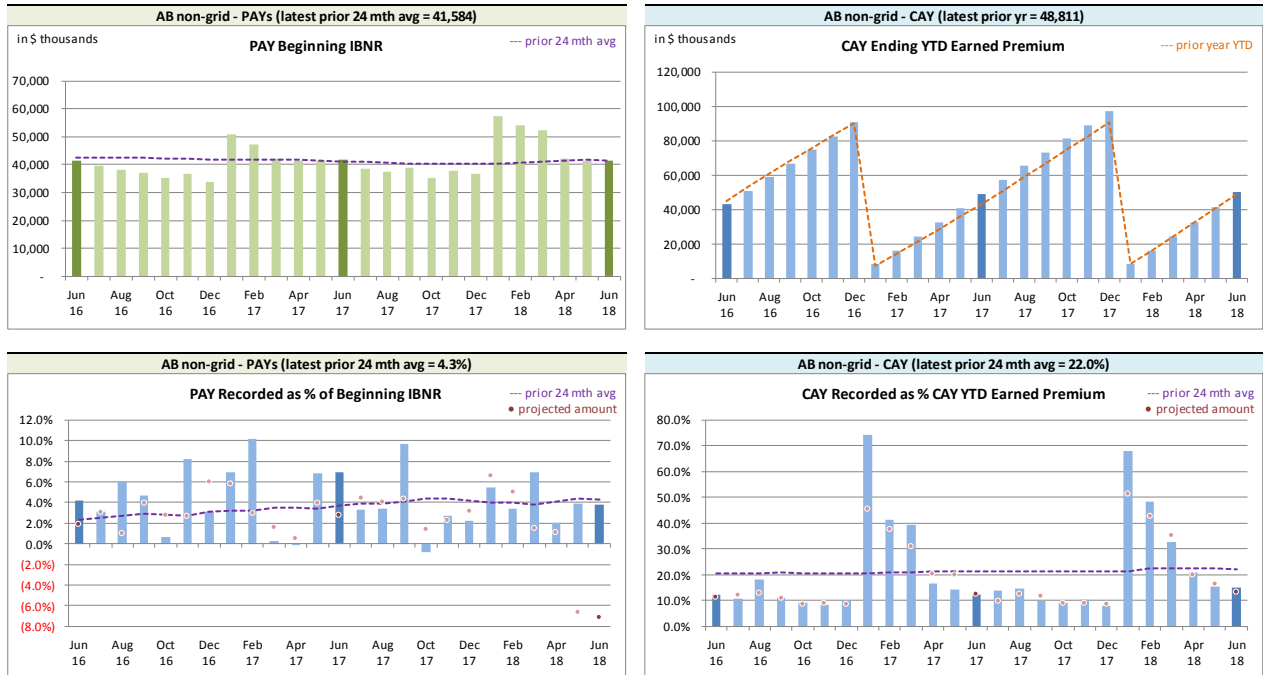
Accident Year	Total Case Reserve Adjustment (\$'000s)
2010	(171)
2011	(239)
2012	-
2013	(92)
2014	(104)
2015	518
2016	2,554
2017	2,529
<b>Total</b>	<b>4,995</b>

With this valuation, prior accident years' ultimates selections have taken into account the member's overstatement (both the original amount as notified, and the subsequent amount, with the combination of the two being summarized in the table above). The member is still engaged in a process to correct the reported levels but we currently do not have a timeline on when this issue will be resolved.

The method for establishing IBNR adjusts automatically for changes in **earned premium** and **recorded** claims activity level (see sections 2.2 and 3).

We have included, for reference, additional charts at the top of the next page related to levels influencing **recorded** activity.

*Alberta non-Grid RSP Levels that influence<sup>7</sup> Recorded activity by Calendar Month*



We track beginning prior accident years’ IBNR as **recorded** activity “comes out of” IBNR. Changes in the prior accident years’ beginning IBNR (see upper left chart above) occur for several possible reasons:

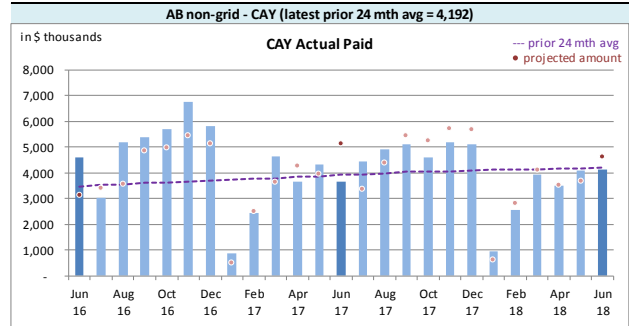
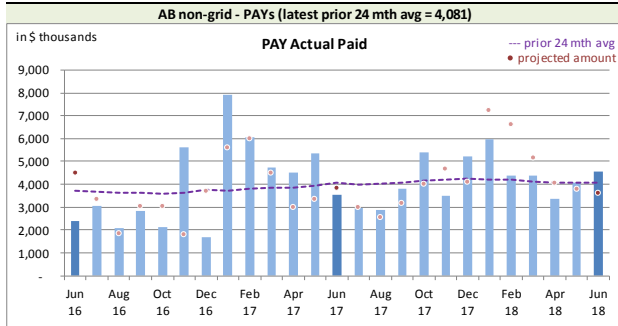
- to offset actual **recorded** activity (through loss ratio matching);
- the annual switchover as a current accident year becomes a prior accident year (occurs in January); and
- when a new valuation is implemented, where the valuation resulted in changes to the selection of prior accident years’ ultimate (will show up as a beginning IBNR change one month after the valuation is implemented, i.e. the change will generally show in April, June, September, and November).

**2.1.c AvsP: Paid Indemnity & Allowed Claims Expense**

The charts at the top of the next page show actual **paid** activity in each of the most recent 25 calendar months, along with a “prior 24-month average” to show how each month’s actual compares with the average amount of the preceding 24 calendar months.

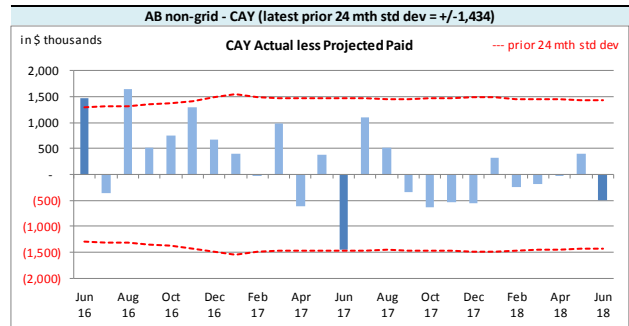
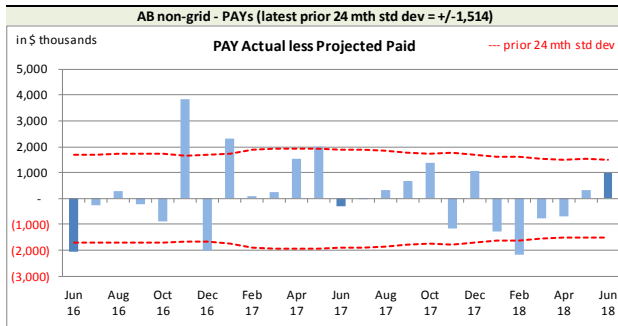
<sup>7</sup>Our recorded activity projections for the prior accident years are based on selected ratios of recorded activity to beginning unpaid balances, whereas the current accident year projections are based on selected ratios of year-to-date IBNR to year-to-date selected ultimate (i.e. selected LR x earned premium), deriving year-to-date recorded as selected ultimate less IBNR. In both cases, the ratio selection is based on our review of the more recent recorded activity and recent AvsP analyses.

*Alberta non-Grid RSP Actual **Paid** activity by Calendar Month*



**Paid** activity variances from the previous month’s projections are shown in the charts immediately below, including the “prior 24-month standard deviation” levels to show how the variances from projection compare with historical standard deviations.

*Alberta non-Grid RSP Actual vs Projected Summary: **Paid** Variances by Calendar Month*



On Latest \$ thousands			
	<b>Paid</b>	PAYs	CAY
Mthly Avg Paid (prior 24 mths)		4,081	4,192
std dev		1,514	1,434
A-P <> std dev		6	2
% <> std dev		24.0%	8.0%
norm <> std dev		31.7%	31.7%

With respect to **paid** indemnity & allowed claims expense, the prior accident years’ variances (left chart above) do not appear to have bias and the magnitude of the variances do not appear to be an issue. With 24% of prior accident years (PAYs) **paid** variances over the last 25 calendar months falling outside of one standard deviation,

the projection process has performed better than simply projecting based on a 24-month average. No bias has been indicated at a 95% confidence level on a lagging 24-month basis.

With only 8% of the current accident year (CAY) **paid** variances falling outside of one standard deviation of the experience period activity, the projection process has performed better than simply projecting based on a 24-month average. While no bias has been indicated at a 95% confidence level on a lagging 24-month basis this month, it was indicated for each month from November 2015 through to September 2017. We made adjustments to our projection process to reflect this, and they appear to have been somewhat successful.

We have included, for reference, additional charts at the top of the next page related to levels influencing **paid** activity.

*Alberta non-Grid RSP Levels that influence<sup>8</sup> Paid activity by Calendar Month*



We track beginning prior accident years’ unpaid balance (case and IBNR) as **paid** activity “comes out of” the unpaid balance. Changes in the prior accident years’ beginning unpaid balance (see upper left chart above) occur for several possible reasons:

- to offset actual **paid** activity (may reduce case or IBNR or both);
- the annual switchover as a current accident year becomes a prior accident year (occurs in January); and
- when a new valuation is implemented, where the valuation resulted in changes to the selection of prior accident years’ ultimate (will show up as a beginning unpaid balance change one month after the valuation is implemented, i.e. the change will generally show in April, June, September, and November).

**2.2 Actuarial Provisions**

An “ultimate loss ratio matching method” (described in section 3) is used to determine the month’s IBNR<sup>9</sup>, and factors are applied to the nominal unpaid claims liability (case plus IBNR) to determine the discount amount (shown as a negative value to indicate its impact of reducing the liability) and the Provisions for Adverse Deviations. The loss ratios and the factors used to determine the projections and actuals were based on the applicable valuation. The table at the top of the next page summarizes variances in provisions included in the June 2018 Operational Report and the associated

<sup>8</sup>Our paid projections for the prior accident years are based on selected ratios of paid to beginning unpaid balances, whereas the current accident year projections are based on selected ratios of year-to-date paid to year-to-date selected ultimate indemnity (i.e. selected LR x earned premium). In both cases, the ratio selection is based on our review of the more recent recorded activity and recent AvsP analyses.

<sup>9</sup>For ease of discussion, “IBNR” is used in place of “provisions for incurred but not recorded (IBNR) and development”.

one-month projections from last month’s Report.

*Alberta Non-Grid RSP Actual vs Projected Summary: IBNR and APV Amounts (\$ thousands)*

Table 02

Accident Year	actuarial present value adjustments							
	IBNR		Discount Amount		Provisions for Adverse Deviations		IBNR + actuarial present value adjustments	
	Actual	Actual less Projected	Actual	Actual less Projected	Actual	Actual less Projected	Actual	Actual less Projected
Prior	11,097	(555)	(3,045)	83	7,149	(186)	15,201	(658)
2016	9,624	(1,154)	(1,758)	(6)	4,062	13	11,928	(1,147)
2017	19,173	(2,845)	(2,805)	(42)	6,285	94	22,653	(2,793)
2018	13,732	(842)	(1,948)	(33)	4,260	72	16,044	(803)
<b>TOTAL</b>	<b>53,626</b>	<b>(5,396)</b>	<b>(9,556)</b>	<b>2</b>	<b>21,756</b>	<b>(7)</b>	<b>65,826</b>	<b>(5,401)</b>

The IBNR provision is \$5.4 million lower than projected from last month, counterbalancing the recorded claims activity and adjusting for the earned premium variance impacts indicated in section 2.1. The lower than projected PAY **IBNR** amount was driven by adjustments made to the recorded projection in anticipation of a member correction in recorded case reserve overstatement this month, which as we understand it, did not go through as expected (see detailed discussion in section 2.1.b).

Exhibit G shows the accident year IBNR amount change from last month to this month broken down into:

- (i) the change projected last month;
- (ii) the additional change due to variances in earned premium (because we apply a loss ratio to earned premium in determining ultimate level) and/or recorded claims (as IBNR is calculated as ultimate less recorded) differences; and
- (iii) the additional change due to valuation implementation impacts (as applicable)

The variances associated with (ii) above are discussed in sections 2.1.a and 2.1.b.

The table at the top of the next page summarizes the variances in the provisions for premium deficiency liability / (deferred policy acquisition cost asset) included in the June 2018 Operational Report and the one-month projections from last month’s Report. This RSP is in a premium deficiency position (shown as a positive amount) prior to and after actuarial present value adjustments. Actuarial present value adjustments increase the liability value as the adjustments increase the expected future policy obligations (costs) associated with the unearned premium. The variances noted are mainly driven by the unearned premium variance.

*Alberta Non-Grid RSP Actual vs Projected Summary: Premium Deficiency / (DPAC) Amounts (\$ thousands)*

Table 03

	Premium Deficiency / (Deferred Policy Acquisition Costs)		actuarial present value adjustments		Premium Deficiency / (DPAC) including actuarial present value adjustments	
	Actual	Actual less Projected	Actual	Actual less Projected	Actual	Actual less Projected
balance:	6,829	57	3,513	29	10,342	86
balance as % unearned premium:	11.5%	-	5.9%	-	17.5%	-
actual unearned premium:	59,162					
less projected:	486					

### 3 Ultimate Loss Ratio Matching Method

An “ultimate loss ratio matching method” continues to be applied to the current month and two projected months shown in the Operational Reports, with IBNR determined by accident year as follows:

- (a) Earned premium to-date
- (b) Ultimate loss<sup>10</sup> ratio per latest valuation
- (c) Estimated ultimate incurred = (a) x (b)
- (d) Recorded indemnity & allowed claims expense to-date
- (e) IBNR = (c) – (d)

### 4 Calendar Year-to-Date Results

The table at the top of the next page summarizes the calendar year-to-date results for indemnity & allowed claims expenses<sup>11</sup>, including IBNR.

In calculating the amounts as percentages of earned premium, the calendar year-to-date earned premium has been used, which includes earned premium associated with the current accident year but also earned premium adjustments related to prior accident years. Specifically, the current accident year (CAY) ratio in the table is 111.9% rather than 111.2% (the valuation ultimate ratio for accident year 2018), as the calendar year-to-date earned premium includes prior accident year earned premium adjustments. (Note that the ratios in this table may differ slightly from those shown in the Alberta Non-Grid RSP Summary of Operations due to rounding.)

<sup>10</sup>“Loss” here refers to indemnity and allowed claims expenses, but does not include the claims expense allowance included in member company overall expense allowances (“Expense Allowance” in the Operational Report).

<sup>11</sup>Allowed claims expenses are first party legal and other expenses as listed in the RSP Claims Guide. Claims expenses paid through the member company expense allowance are NOT included in this analysis.

*Alberta Non-Grid RSP Calendar Year-to-Date Indemnity & Allowed Claims Expense Summary  
(\$ thousands)*

Table 04	YTD Nominal Values		YTD actuarial present value adjustment		YTD Total		Change from Prior Month YTD	
	Amount	% EP	Amount	% EP	Amount	% EP	Amount	LR pts
PAYs	(4,916)	(9.8%)	(2,335)	(4.7%)	(7,251)	(14.5%)	(302)	2.4%
CAY	55,963	111.9%	2,312	4.6%	58,275	116.6%	10,320	(0.2%)
TOTAL	51,047	102.1%	(23)	-	51,024	102.1%	10,018	2.2%

(“% EP” based on 2018 calendar year-to-date earned premium; ratios may not total due to rounding)

In general, prior accident years (PAYs) changes from last month are due to the release of the actuarial present value adjustments with claims payments, except when valuations are implemented. The loss ratio change year-to-date in Table 04 reflects not only changes in the prior accident year levels, but also the increase in the calendar year-to-date earned premium with an additional month’s earned premium.

For the current accident year (CAY), changes in the year-to-date total reflects the additional month’s exposure and regular changes to actuarial present value adjustments as the year ages.

**5 Current Operational Report – Additional Exhibits**

Section 6 provides exhibits pertaining to the actuarial provisions reflected in the current month’s Operational Report.

IBNR (including actuarial present value adjustments) presented in section 6, Exhibit A, were derived on a discounted basis, and therefore reflect the time value of money and include an explicit provision for adverse deviations in accordance with accepted actuarial practice in Canada.

IBNR presented in section 6, Exhibit B, does NOT include any actuarial present value adjustments. The “Total IBNR” from this exhibit is shown in the Operational Report as “Undiscounted IBNR”.

The ultimate loss ratios detailed in section 6, Exhibit B, refer to the estimates derived on the basis of various actuarial methodologies applied to the experience of the Alberta Non-Grid Risk Sharing Pool for the purposes of the most recent quarterly valuation. As discussed in section 3, IBNR reflected in the current month’s Operational Report was derived as the difference between the estimated ultimate for the claims amount (i.e. earned premium x ultimate loss ratio) and the associated current recorded amounts (life-to-date payments plus current case reserves).

## **6 EXHIBITS**

The exhibits listed below are provided on the pages that follow:

- EXHIBIT A IBNR for Member Sharing – includes Actuarial Present Value Adjustments
- EXHIBIT B IBNR
- EXHIBIT C Premium Liabilities
- EXHIBIT D Projected Year-end Policy Liabilities
- EXHIBIT E Discount Rate & Margins for Adverse Deviations
- EXHIBIT F Interest Rate Sensitivity
- EXHIBIT G Components of IBNR Change During Month



EXHIBIT A

IBNR for Member Sharing – includes Actuarial Present Value Adjustments

TABLE EXHIBIT A

		Amounts in \$000s				
IBNR + M/S actuarial present value adjustments	Accident Year	Actual May. 2018	Actual Jun. 2018	Projected Jul. 2018	Projected Aug. 2018	Projected Dec. 2018
	2004	42	42	42	42	42
	2005	13	13	13	13	12
	2006	(91)	(91)	(90)	(91)	(73)
	2007	133	133	130	127	106
	2008	130	130	128	126	106
	2009	18	(48)	(49)	(49)	(39)
	2010	451	407	398	391	328
	2011	955	848	830	817	686
	2012	1,109	613	596	581	500
discount rate	2013	2,729	2,753	2,694	2,654	2,224
1.93%	2014	3,097	2,940	2,795	2,719	2,208
	2015	8,347	7,461	7,105	6,691	5,769
interest rate margin	2016	11,881	11,928	11,570	11,267	10,223
25 basis pts	2017	22,848	22,653	22,008	21,382	19,687
	2018	13,324	16,044	18,976	20,684	29,498
	<b>TOTAL</b>	<b>64,986</b>	<b>65,826</b>	<b>67,146</b>	<b>67,354</b>	<b>71,277</b>
	Change		840	1,320	208	

*Please see Exhibit G, page 1 for Components of Change during Current Month*

EXHIBIT B

IBNR

TABLE EXHIBIT B

Amounts in \$000s

IBNR	Ultimate Loss Ratio	Accident Year	Actual May. 2018	Actual Jun. 2018	Projected Jul. 2018	Projected Aug. 2018	Projected Dec. 2018
	349.1%	2004	36	36	36	36	36
	97.4%	2005	5	5	5	5	5
	87.2%	2006	(136)	(136)	(133)	(132)	(109)
	101.8%	2007	87	87	85	84	69
	101.2%	2008	123	123	121	120	100
	95.1%	2009	(54)	(115)	(113)	(112)	(93)
	83.9%	2010	325	311	305	302	250
	83.5%	2011	714	618	606	600	498
	101.7%	2012	584	108	106	105	87
	100.4%	2013	2,168	2,202	2,158	2,136	1,774
	110.9%	2014	2,228	2,146	2,017	1,956	1,527
	101.0%	2015	6,560	5,712	5,426	5,046	4,282
	117.4%	2016	9,538	9,624	9,335	9,055	8,265
	115.0%	2017	19,314	19,173	18,598	18,040	16,636
	111.2%	2018	11,378	13,732	16,275	17,612	25,239
		<b>TOTAL</b>	<b>52,870</b>	<b>53,626</b>	<b>54,827</b>	<b>54,853</b>	<b>58,566</b>
		Change		756	1,201	26	

*Please see Exhibit G, page 2 for Components of Change during Current Month*

## EXHIBIT C

## Premium Liabilities

TABLE EXHIBIT C

	Amounts in \$000s				
	Actual May. 2018	Actual Jun. 2018	Projected Jul. 2018	Projected Aug. 2018	Projected Dec. 2018
Premium Liabilities					
(1) unearned premium (UP)	56,501	59,162	64,934	64,568	61,598
FOR MEMBER SHARING					
(2) expected future costs ratio {% of (1)}	117.5%	117.5%	117.4%	117.4%	117.1%
(3) expected future costs {(1) x (2)}	66,399	69,504	76,248	75,785	72,130
(4) premium deficiency / (deferred policy acquisition cost)	9,898	10,342	11,314	11,217	10,532
Excluding Actuarial Present Value Adjustments					
(5) expected future costs ratio {% of (1)}	111.6%	111.5%	111.5%	111.4%	111.2%
(6) expected future costs {(1) x (5)}	63,044	65,991	72,395	71,956	68,485
(7) premium deficiency / (deferred policy acquisition cost)	6,543	6,829	7,461	7,388	6,887

EXHIBIT D

Projected Year-end Policy Liabilities

The table below presents the projected policy liabilities as at December 31, 2018, broken down by component.

Alberta non-Grid ending 2018		Projected Balances as at Dec. 31, 2018 (\$000s)								
Acc Yr	nominal values			actuarial present value adjustments (apvs)					TOTAL	
	Case	IBNR	Total Unpaid	discount	investment PfAD	nominal development PfAD	development PfAD discount	development PfAD		Total apvs
2004	26	36	62	-	-	6	-	6	6	68
2005	61	5	66	-	-	7	-	7	7	73
2006	628	(109)	519	(16)	2	52	(2)	50	36	555
2007	487	69	556	(19)	2	56	(2)	54	37	593
2008	(20)	100	80	(2)	-	8	-	8	6	86
2009	947	(93)	854	(32)	4	85	(3)	82	54	908
2010	1,106	250	1,356	(60)	8	136	(6)	130	78	1,434
2011	3,112	498	3,610	(177)	22	361	(18)	343	188	3,798
2012	7,357	87	7,444	(342)	45	744	(34)	710	413	7,857
2013	7,047	1,774	8,821	(441)	53	882	(44)	838	450	9,271
2014	10,757	1,527	12,284	(553)	61	1,228	(55)	1,173	681	12,965
2015	14,980	4,282	19,262	(905)	116	2,388	(112)	2,276	1,487	20,749
2016	19,926	8,265	28,191	(1,494)	169	3,467	(184)	3,283	1,958	30,149
2017	28,077	16,636	44,713	(2,459)	313	5,500	(303)	5,197	3,051	47,764
PAYs (sub-total):	94,491	33,327	127,818	(6,500)	795	14,920	(763)	14,157	8,452	136,270
CAY (2018)	42,474	25,239	67,713	(3,589)	474	7,787	(413)	7,374	4,259	71,972
claims liabilities:	136,965	58,566	195,531	(10,089)	1,269	22,707	(1,176)	21,531	12,711	208,242
	Unearned Premium	Premium Deficiency / (DPAC)	Total Provision	discount	investment PfAD	nominal development PfAD	development PfAD discount	development PfAD	Total apvs	TOTAL*
premium liabilities:	61,598	6,887	68,485	(2,659)	341	6,205	(242)	5,963	3,645	72,130
policy liabilities:			264,016	(12,748)	1,610	28,912	(1,418)	27,494	16,356	280,372

\*Total may not be sum of parts, as apvs apply to future costs within UPR

EXHIBIT E

Discount Rate & Margins for Adverse Deviations

The tables below present selected margins for adverse development by coverage (the total is a weighted average, based on the unpaid claims projection for December 31, 2018 from the valuation), followed by the selected discount rate and the associated margin for investment income.

Selected Claims Development MfADs (Mar. 31, 2018)

Accident Year	Third Party Liability Margins	Accident Benefits Margins	Other Coverages Margins	Total Margins
2004	10.0%	10.0%	10.0%	10.0%
2005	10.0%	10.0%	10.0%	10.0%
2006	10.0%	10.0%	10.0%	10.0%
2007	10.0%	10.0%	10.0%	10.0%
2008	10.0%	10.0%	10.0%	10.0%
2009	10.0%	10.0%	10.0%	10.0%
2010	10.0%	10.0%	10.0%	10.0%
2011	10.0%	10.0%	10.0%	10.0%
2012	10.0%	10.0%	10.0%	10.0%
2013	10.0%	10.0%	9.4%	10.0%
2014	10.0%	10.0%	8.8%	10.0%
2015	12.5%	10.0%	10.5%	12.4%
2016	12.5%	10.0%	9.9%	12.3%
2017	12.4%	10.0%	11.2%	12.3%
2018	12.1%	10.0%	7.1%	11.5%
2019	11.8%	10.0%	5.3%	9.1%
<u>prem liab</u>	<u>11.8%</u>	<u>10.0%</u>	<u>5.3%</u>	<u>9.1%</u>

discount rate: 1.93%  
margin (basis points): 25

EXHIBIT F

Interest Rate Sensitivity

The tables below present sensitivity to the member statement claims liability as projected to Dec. 31, 2018 from the latest valuation date (projections in exhibits A to D are also to Dec. 31, 2018, but are based on more up-to-date information). We have included the most recent valuation selection (1.93%), the prior valuation assumption (1.76%) and the prior fiscal year end valuation assumption (1.76%) for comparative purposes. A 25 basis point margin for investment return adverse deviation is used in all scenarios presented.

\$ Format: \$000s

AY	Actuarial Present Value of Provisions at Various Discount Rates - Dec. 31, 2018 projected Unpaid							
	0.93%	1.43%	1.93%	2.43%	2.93%	3.43%	1.76%	1.76%
2004	-	-	-	-	-	-	-	-
2005	-	-	-	-	-	-	-	-
2006	1,034	1,026	1,018	1,009	1,001	993	1,020	1,020
2007	371	368	365	362	358	355	366	366
2008	141	140	139	137	136	135	139	139
2009	1,268	1,255	1,244	1,232	1,220	1,209	1,248	1,248
2010	1,959	1,936	1,914	1,893	1,872	1,851	1,922	1,922
2011	3,340	3,297	3,254	3,213	3,173	3,133	3,269	3,269
2012	6,871	6,788	6,708	6,629	6,552	6,477	6,735	6,735
2013	9,873	9,742	9,616	9,491	9,371	9,253	9,658	9,658
2014	13,567	13,405	13,249	13,095	12,946	12,801	13,302	13,302
2015	21,761	21,488	21,228	20,968	20,720	20,476	21,316	21,316
2016	32,782	32,320	31,876	31,438	31,016	30,604	32,025	32,025
2017	49,590	48,862	48,168	47,485	46,828	46,181	48,401	48,401
2018	79,055	77,944	76,877	75,828	74,828	73,845	77,234	77,234
<b>Total</b>	<b>221,612</b>	<b>218,571</b>	<b>215,656</b>	<b>212,780</b>	<b>210,021</b>	<b>207,313</b>	<b>216,635</b>	<b>216,635</b>
	curr - 100 bp	curr - 50 bp	curr val assumption	curr + 50bp	curr + 100bp	curr + 150bp	prior val assumption	prior fyr end assumption

AY	Dollar Impact Relative to Valuation Assumption							
	0.93%	1.43%	1.93%	2.43%	2.93%	3.43%	1.76%	1.76%
Total	5,956	2,915	-	(2,876)	(5,635)	(8,343)	979	979
	curr - 100 bp	curr - 50 bp	curr val assumption	curr + 50bp	curr + 100bp	curr + 150bp	prior val assumption	prior fyr end assumption

AY	Percentage Impact Relative to Valuation Assumption							
	0.93%	1.43%	1.93%	2.43%	2.93%	3.43%	1.76%	1.76%
2004	-	-	-	-	-	-	-	-
2005	-	-	-	-	-	-	-	-
2006	1.6%	0.8%	-	(0.9%)	(1.7%)	(2.5%)	0.2%	0.2%
2007	1.6%	0.8%	-	(0.8%)	(1.9%)	(2.7%)	0.3%	0.3%
2008	1.4%	0.7%	-	(1.4%)	(2.2%)	(2.9%)	-	-
2009	1.9%	0.9%	-	(1.0%)	(1.9%)	(2.8%)	0.3%	0.3%
2010	2.4%	1.1%	-	(1.1%)	(2.2%)	(3.3%)	0.4%	0.4%
2011	2.6%	1.3%	-	(1.3%)	(2.5%)	(3.7%)	0.5%	0.5%
2012	2.4%	1.2%	-	(1.2%)	(2.3%)	(3.4%)	0.4%	0.4%
2013	2.7%	1.3%	-	(1.3%)	(2.5%)	(3.8%)	0.4%	0.4%
2014	2.4%	1.2%	-	(1.2%)	(2.3%)	(3.4%)	0.4%	0.4%
2015	2.5%	1.2%	-	(1.2%)	(2.4%)	(3.5%)	0.4%	0.4%
2016	2.8%	1.4%	-	(1.4%)	(2.7%)	(4.0%)	0.5%	0.5%
2017	3.0%	1.4%	-	(1.4%)	(2.8%)	(4.1%)	0.5%	0.5%
2018	2.8%	1.4%	-	(1.4%)	(2.7%)	(3.9%)	0.5%	0.5%
<b>Total</b>	<b>2.8%</b>	<b>1.4%</b>	<b>-</b>	<b>(1.3%)</b>	<b>(2.6%)</b>	<b>(3.9%)</b>	<b>0.5%</b>	<b>0.5%</b>
	curr - 100 bp	curr - 50 bp	curr val assumption	curr + 50bp	curr + 100bp	curr + 150bp	prior val assumption	prior fyr end assumption

EXHIBIT G

Page 1 of 2

Components of Member Statement IBNR (i.e. “Discounted”) Change During Month

RSP		Alberta Non-Grid						M/S IBNR - in \$000s
AccountCode	Desc	IBNR - Discou	IBNR - Discou					
AccYear	Values							Sum of Current Month Final Amount
	Sum of Prior Month Actual Amount	Sum of Projected Change	Sum of Change Due to AvsP Variances	Sum of Change Due to Valuation Implementation	Sum of Total Change	Sum of % Total Change		
2004	42	-	-	-	-	-	42	
2005	13	-	-	-	-	-	13	
2006	(91)	3	(3)	-	-	-	(91)	
2007	133	(4)	4	-	-	-	133	
2008	130	(5)	5	-	-	-	130	
2009	18	-	(66)	-	(66)	(366.7%)	(48)	
2010	451	(15)	(29)	-	(44)	(9.8%)	407	
2011	955	(34)	(73)	-	(107)	(11.2%)	848	
2012	1,109	(33)	(463)	-	(496)	(44.7%)	613	
2013	2,729	(98)	122	-	24	0.9%	2,753	
2014	3,097	(262)	105	-	(157)	(5.1%)	2,940	
2015	8,347	(626)	(260)	-	(886)	(10.6%)	7,461	
2016	11,881	1,194	(1,147)	-	47	0.4%	11,928	
2017	22,848	2,598	(2,793)	-	(195)	(0.9%)	22,653	
2018	13,324	3,523	(803)	-	2,720	20.4%	16,044	
<b>Grand Total</b>	<b>64,986</b>	<b>6,241</b>	<b>(5,401)</b>	<b>-</b>	<b>840</b>	<b>1.3%</b>	<b>65,826</b>	

EXHIBIT G

Components of IBNR (i.e. “Undiscounted”) Change During Month

RSP		Alberta Non-Grid					IBNR - in \$000s	
AccountCode Desc		IBNR - Undiscounted						
AccYear	Values							Sum of Current Month Final Amount
	Sum of Prior Month Actual Amount	Sum of Projected Change	Sum of Change Due to AvsP Variances	Sum of Change Due to Valuation Implementation	Sum of Total Change	Sum of % Total Change		
2004	36	-	-	-	-	-	36	
2005	5	-	-	-	-	-	5	
2006	(136)	5	(5)	-	-	-	(136)	
2007	87	(3)	3	-	-	-	87	
2008	123	(5)	5	-	-	-	123	
2009	(54)	2	(63)	-	(61)	113.0%	(115)	
2010	325	(13)	(1)	-	(14)	(4.3%)	311	
2011	714	(29)	(67)	-	(96)	(13.4%)	618	
2012	584	(23)	(453)	-	(476)	(81.5%)	108	
2013	2,168	(87)	121	-	34	1.6%	2,202	
2014	2,228	(245)	163	-	(82)	(3.7%)	2,146	
2015	6,560	(590)	(258)	-	(848)	(12.9%)	5,712	
2016	9,538	1,240	(1,154)	-	86	0.9%	9,624	
2017	19,314	2,704	(2,845)	-	(141)	(0.7%)	19,173	
2018	11,378	3,196	(842)	-	2,354	20.7%	13,732	
<b>Grand Total</b>	<b>52,870</b>	<b>6,152</b>	<b>(5,396)</b>	<b>-</b>	<b>756</b>	<b>1.4%</b>	<b>53,626</b>	