



**ALBERTA GRID RISK SHARING POOL**

**APRIL 2018 OPERATIONAL REPORT**

**ACTUARIAL HIGHLIGHTS**

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**ACTUARIAL HIGHLIGHTS**

**RSP ALBERTA GRID**

**OPERATIONAL REPORT**

**APRIL 2018**

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## 1 Summary

### 1.1 Valuation Schedule (Fiscal Year 2018)

The April 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 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 decreased 0.3 points to 89.9%; discount rate increased by 57 basis points; no change to selected margins for adverse deviations
Dec. 31, 2017 (completed)	1.75% mfad: 25 bp	Mar. 2018	update valuation: accident year 2018 loss ratio increased 4.9 points to 90.7%; discount rate decreased by 1 basis point; no change to selected margins for adverse deviations
Mar. 31, 2018		May 2018	update valuation (roll forward):
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

This section has been updated since last month’s Highlights to include a description of the Alberta Treasury Board Notice 04-2018.

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.

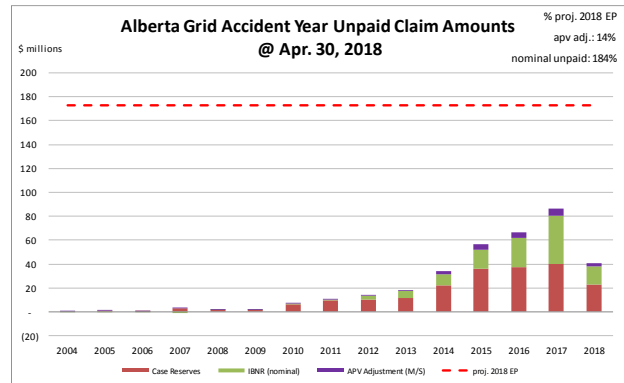
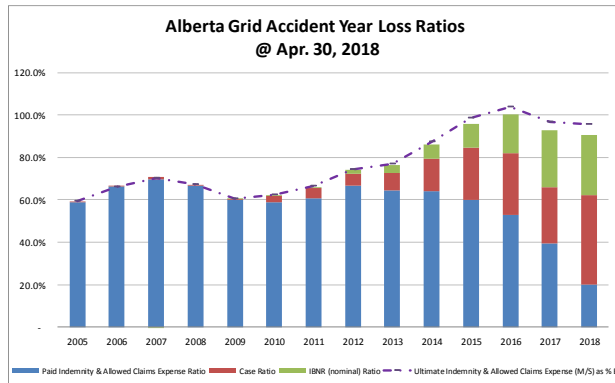
#### 1.4 Current Provision Summary

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 (\$23.5 million – see table immediately below) represents 14% 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	203,360	59.6%
ibnr	114,531	33.5%
M/S apv adjust.	23,504	6.9%
<b>M/S total</b>	<b>341,395</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 for this pool is in case reserves. Approximately 49% of the IBNR balance relates to accident years 2017 and 2018 (see Exhibit B). Approximately 83% 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	82,301	103.4%
prem def/(dpac)	(7,260)	(9.1%)
M/S apv adjust.	4,533	5.7%
<b>M/S total</b>	<b>79,574</b>	<b>100.0%</b>

policy liabilities (\$000s)

	amt	%
claim	317,891	75.5%
premium	75,041	17.8%
M/S apv adjust.	28,037	6.7%
<b>M/S total</b>	<b>420,969</b>	<b>100.0%</b>

## 2 Activity During the Month of April 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 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	2	2	3,371	312	(2,093)	(842)	1,278	(530)
2016	24	24	1,093	(161)	(236)	523	857	362
2017	(324)	(324)	2,022	(454)	(1,329)	734	693	280
2018	13,580	(353)	4,075	(459)	4,304	830	8,379	371
<b>TOTAL</b>	<b>13,281</b>	<b>(651)</b>	<b>10,562</b>	<b>(761)</b>	<b>647</b>	<b>1,245</b>	<b>11,208</b>	<b>484</b>

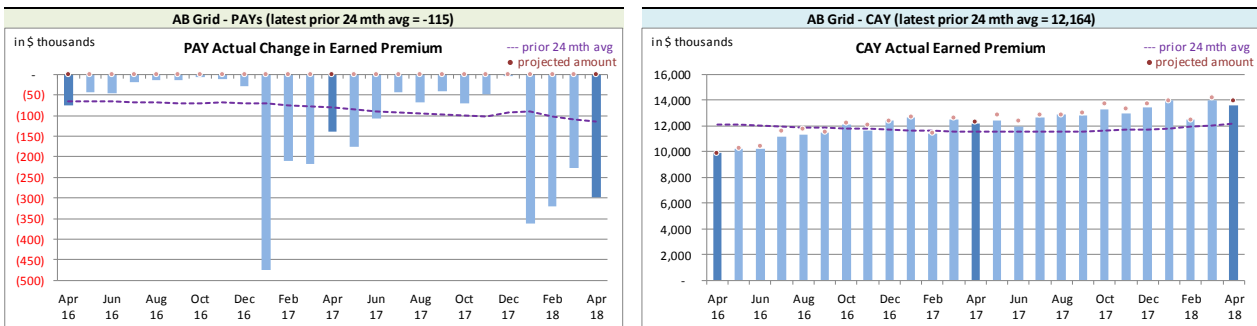
(Recorded transaction amounts exclude IBNR & other actuarial provisions)

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 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.

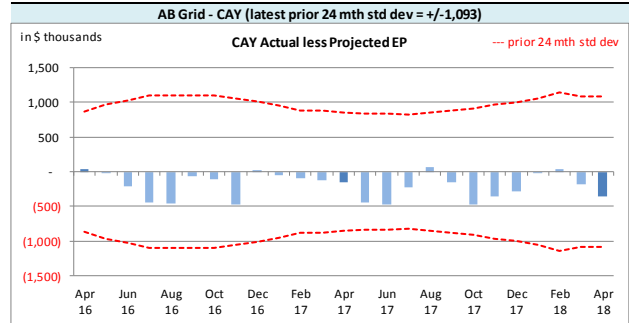
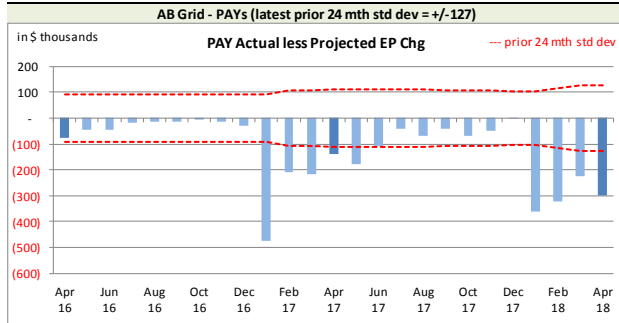
We have noted and have investigated the unusually high level of PAYs earned premium activity earlier in 2017 and January through April 2018, particularly with respect to one member. FA management reviewed and was satisfied with the appropriateness of the 2017 transactions, but continues its investigation 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 Grid RSP Actual vs. Projected Summary: Earned Premium Variances by Calendar Month*



On Latest \$ thousands		
Earned Premium	PAYs	CAY
Mthly Avg EP Chg (prior 24 mths)	(115)	12,164
std dev	127	1,093
A-P <> std dev	9	-
% <> std dev	36.0%	0.0%
norm <> std dev	31.7%	31.7%

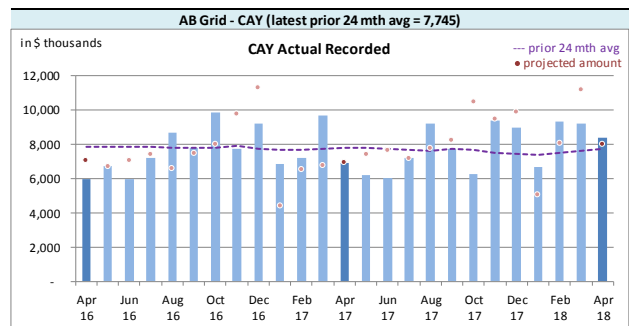
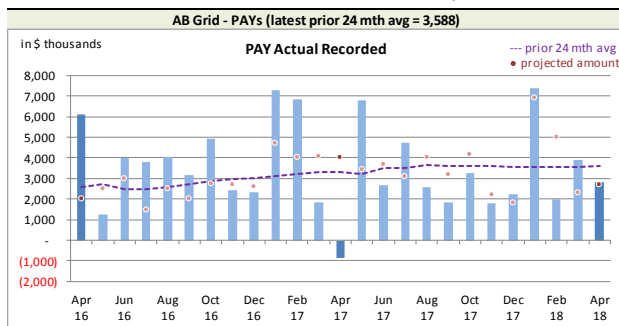
We project **earned premium** changes from known unearned premium and projected written premium levels, but upload the total projections as current accident year (CAY). This process has generated prior accident years' (PAYs) bias<sup>5</sup>, with actuals generally lower than projected, although the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

monthly premium. In addition to the PAYs' bias, the CAY has also shown bias<sup>6</sup>, with actuals being generally lower than projected, and we modified our projections processes in response, but bias still exists. 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 immediately 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 Grid RSP Actual Recorded by Calendar Month*

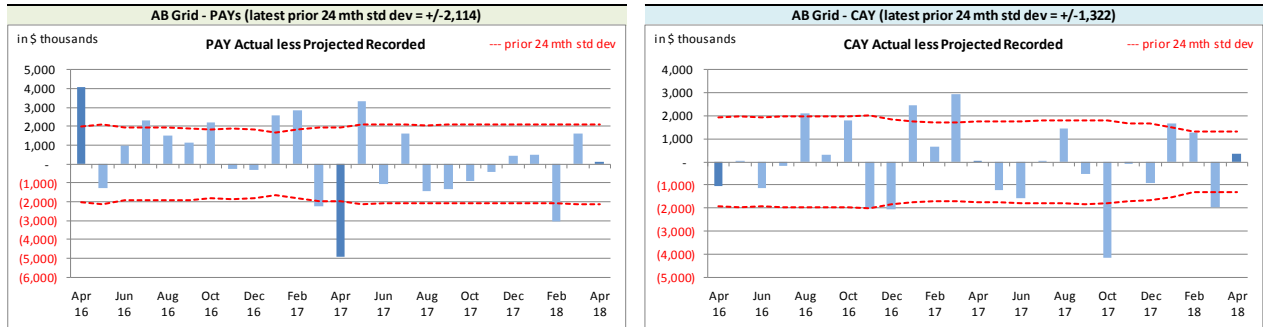


<sup>5</sup>The PAYs' variances will show bias as the projection upload forces all earned premium projections to be attributed to the CAY.

<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 April 2018 has only 3 months where the actuals were 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 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)	3,588	7,745	
std dev	2,114	1,322	
A-P <> std dev	9	8	
% <> std dev	36.0%	32.0%	
norm <> std dev	31.7%	31.7%	

With respect to **recorded** indemnity & allowed claims expense activity, 36% of the prior accident years’ (PAYs) variances (left chart above) over the last 25 months have fallen outside of one standard deviation of the actual **recorded** amounts, suggesting the projection process has performed no better than simply

projecting from the prior 24-month average. No bias has been indicated at a 95% confidence level on a lagging 24-month basis.

The current accident year (CAY) **recorded** variances (right chart above), have been greater than one standard deviation 32% of the time, which suggests that the projection process has performed no 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.

We note that there may be a change in the levels of CAY **recorded** and **paid** activity relative to year-to-date **earned premium**, as evidenced by the average of monthly ratios over the past several years shown in the tables at the top of the next page. These tables show, in each row, the average monthly ratio for each calendar year. That is, each row in the left table (as at Dec) provides the average of the 12 monthly-ratios (i.e. Jan, Feb, ... Dec) for that row’s calendar year, whereas each row in the right table (as at April) provides the average of the 4 monthly ratios (i.e. Jan-Apr) for that row’s calendar year.



CAY avg of mthly ratios for yr

as at	Rec'd	yr-on-yr chg	Paid	yr-on-yr chg
Dec 2009	11.5%		4.4%	
Dec 2010	10.9%	(0.6%)	4.5%	0.1%
Dec 2011	12.8%	1.9%	4.8%	0.3%
Dec 2012	12.4%	(0.4%)	4.7%	(0.1%)
Dec 2013	12.6%	0.2%	4.8%	0.1%
Dec 2014	13.8%	1.2%	5.3%	0.5%
Dec 2015	14.4%	0.6%	5.5%	0.2%
Dec 2016	14.0%	(0.4%)	5.4%	(0.1%)
Dec 2017	15.5%	1.5%	5.6%	0.2%

CAY avg of mthly ratios for yr

as at	Rec'd	yr-on-yr chg	Paid	yr-on-yr chg
Apr 2009	22.1%		5.6%	
Apr 2010	19.0%	(3.1%)	5.9%	0.3%
Apr 2011	25.6%	6.6%	6.3%	0.4%
Apr 2012	21.7%	(3.9%)	5.9%	(0.4%)
Apr 2013	23.3%	1.6%	6.0%	0.1%
Apr 2014	23.9%	0.6%	6.7%	0.7%
Apr 2015	25.9%	2.0%	7.3%	0.6%
Apr 2016	23.8%	(2.1%)	7.2%	(0.1%)
Apr 2017	31.2%	7.4%	8.0%	0.8%
Apr 2018	30.3%	(0.9%)	7.7%	(0.3%)

Both **recorded** and **paid** ratios for Dec. 2017 relative to Dec. 2009 have increased at an annual rate of almost 4% over and above any premium rate level increases. At this point, we are only monitoring, but the valuation team has been advised and is taking this information into consideration. Further, while the average of the 12 monthly ratios at December for 2016 was down from 2015, the December 12-month average ratios for calendar year 2017 were at the highest level for both **recorded** and **paid**.

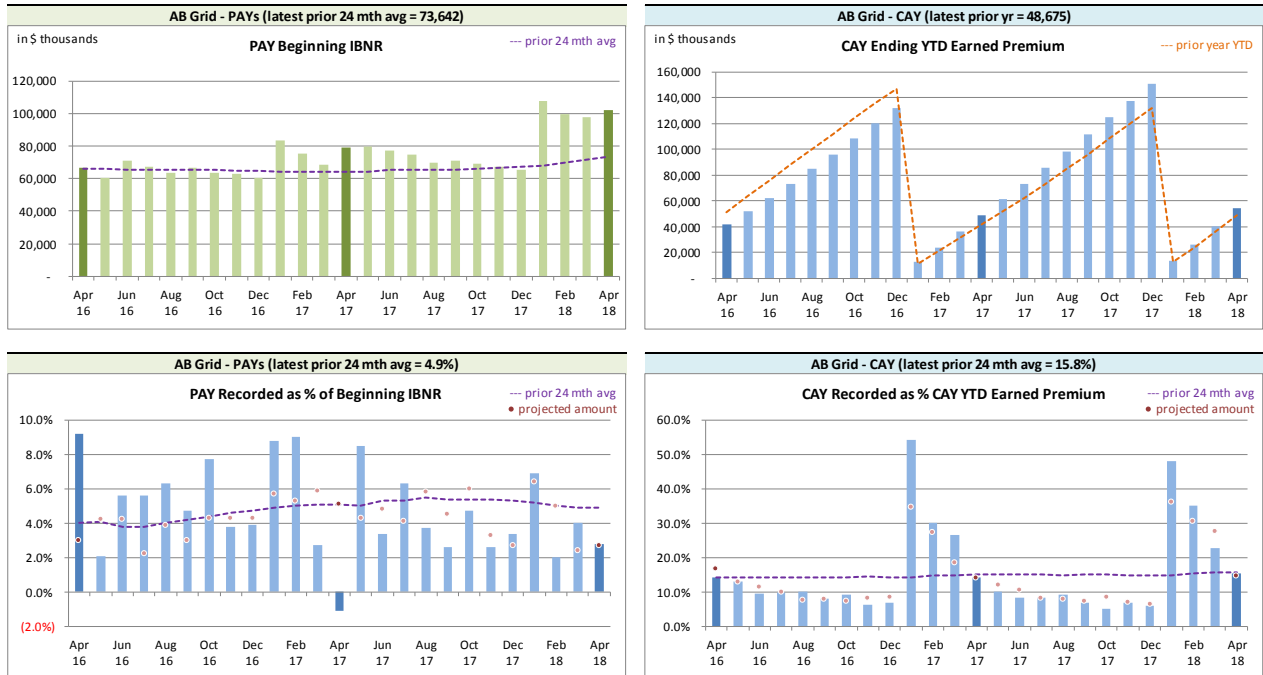
As can be seen in the right table above, (average of 4 months to April of each year), both the **recorded** and **paid** ratio were the second highest ratios in the last 10 years, though down from 2017 (the highest **recorded** and **paid** ratios). However, these ratios are more volatile earlier in the year due to smaller year-to-date earned premium levels.

Note that we have NOT found similar changes in the results for the Alberta Non-Grid RSP nor in the FARM Alberta results.

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. Note in particular the changes in the level of PAY beginning IBNR over the months, as a response to valuations and showing up as a beginning IBNR change one month after the valuation is implemented (i.e. April, June, September, and November).

*Alberta 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:

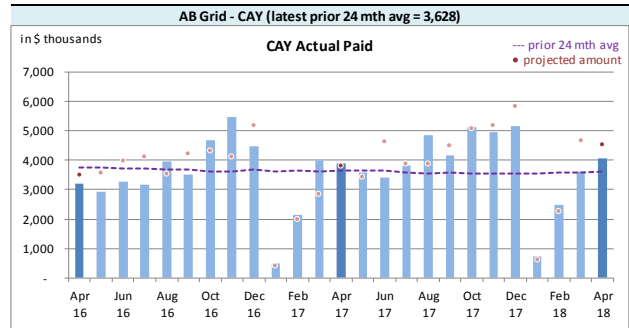
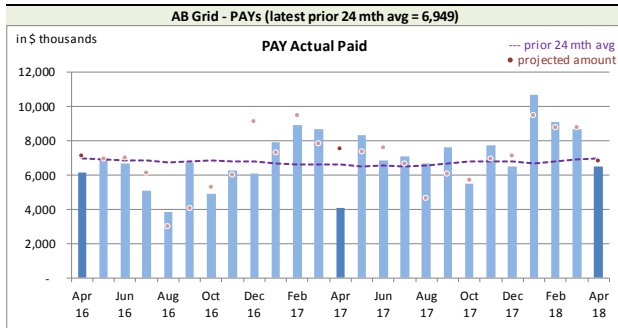
- to offset actual **recorded** activity (through loss ratio matching);
- the annual switchover as a current accident year becomes a prior accident year (occurs in January); and
- when a new valuation is implemented, where the valuation resulted in changes to the selection of prior accident years’ ultimate (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.

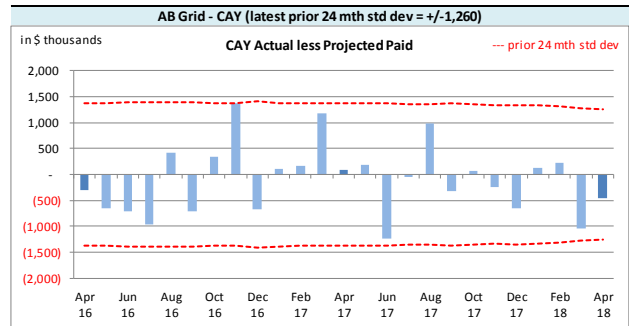
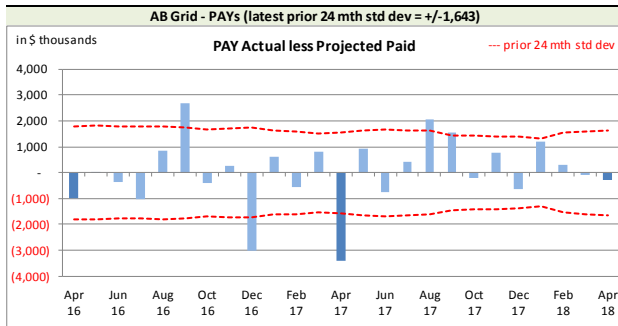
<sup>7</sup>Our recorded activity projections for the prior accident years are based on selected ratios of recorded activity to beginning unpaid balances, whereas the current accident year projections are based on selected ratios of year-to-date IBNR to year-to-date selected ultimate (i.e. selected LR 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 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 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)		6,949	3,628
std dev		1,643	1,260
A-P <> std dev		5	-
% <> std dev		20.0%	0.0%
norm <> std dev		31.7%	31.7%

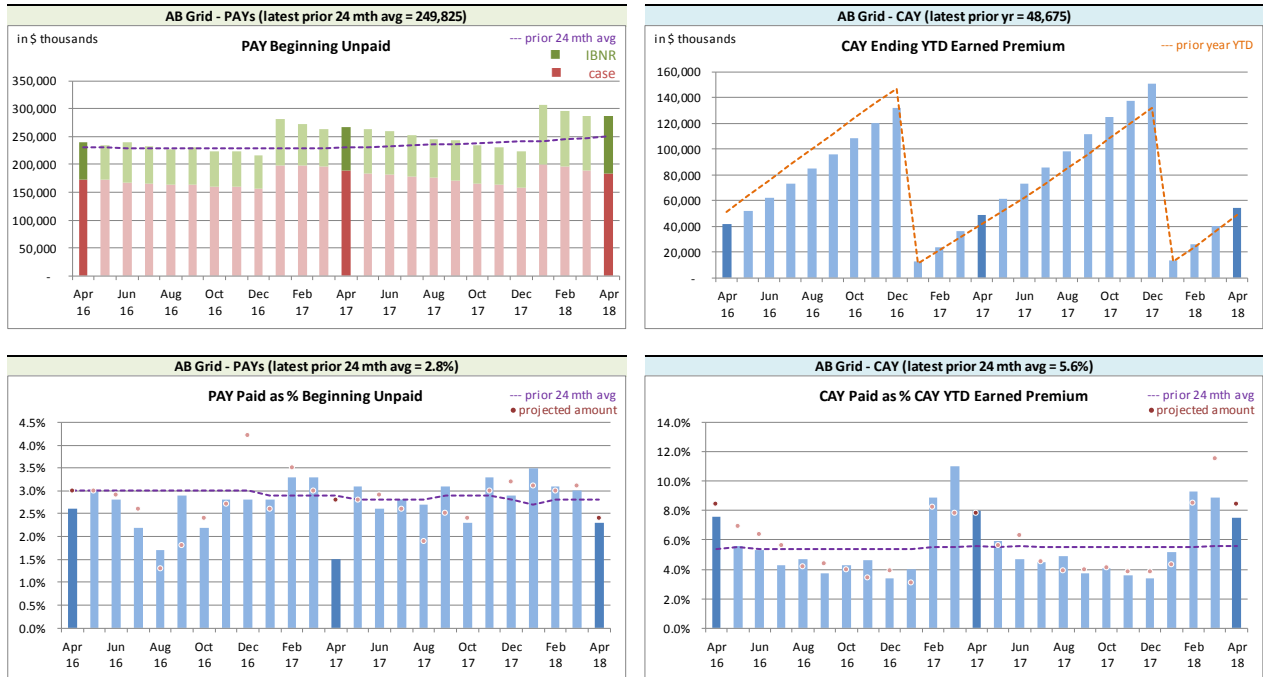
With respect to **paid** indemnity & allowed claims expense, the prior accident years’ (PAYs) variances (left chart above) have fallen outside one standard deviation of the overall period 20% of the time, suggesting the projection process has performed better than simply projecting from the preceding 24-month average. No bias has been

indicated at a 95% confidence level on a lagging 24-month basis.

The current accident year (CAY) **paid** variances (right chart above) have **not** fallen outside one standard deviation of the overall period, suggesting the projection process has performed better than simply projecting from the preceding 24-month average. No bias has been indicated at a 95% confidence level on a lagging 24-month basis.

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

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

Table 02

Accident Year	IBNR		actuarial present value adjustments				IBNR + actuarial present value adjustments	
	Actual	Actual less Projected	Discount Amount		Provisions for Adverse Deviations		Actual	Actual less Projected
			Actual	Actual less Projected	Actual	Actual less Projected		
Prior	34,808	530	(5,011)	14	15,257	(34)	45,054	510
2016	23,939	(338)	(2,896)	(8)	7,711	23	28,754	(323)
2017	40,350	(581)	(4,171)	(8)	10,066	19	46,245	(570)
2018	15,434	(691)	(1,982)	(8)	4,530	16	17,982	(683)
TOTAL	114,531	(1,080)	(14,060)	(10)	37,564	24	138,035	(1,066)

The IBNR provision is \$1.1 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.

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 immediately below summarizes the variances in the provisions for premium deficiency liability / (deferred policy acquisition cost asset) included in the April 2018 Operational Report and the one-month projections from last month's Report. This RSP is in a deferred policy acquisition cost asset position (shown as a negative amount) prior to and after actuarial present value adjustments. Actuarial present value adjustments decrease the asset 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 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:	(7,260)	239	4,533	(153)	(2,727)	86
balance as % unearned premium:	(8.8%)	-	5.5%	-	(3.3%)	-
actual unearned premium:	82,301					
less projected:	(2,770)					

### 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 immediately below 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 92.7% rather than 90.7% (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 Grid RSP Summary of Operations due to rounding.)

*Alberta 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	7,688	14.6%	426	0.8%	8,114	15.4%	(778)	(7.1%)
CAY	48,993	92.7%	2,548	4.8%	51,541	97.6%	12,868	(0.2%)
TOTAL	56,681	107.3%	2,974	5.6%	59,655	112.9%	12,090	(7.4%)

(“% 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

<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.

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 presented in section 6, Exhibit B, refer to the estimates derived on the basis of various actuarial methodologies applied to the experience of the Alberta 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 Mar. 2018	Actual Apr. 2018	Projected May. 2018	Projected Jun. 2018	Projected Dec. 2018
	2004	(72)	(72)	(72)	(72)	(72)
	2005	25	24	21	20	18
	2006	(162)	(140)	(137)	(130)	(94)
	2007	99	(811)	(790)	(750)	(542)
	2008	114	112	106	100	80
	2009	273	273	263	250	190
	2010	1,276	1,304	1,255	1,192	901
	2011	1,660	1,577	1,514	1,439	1,091
	2012	4,146	4,019	3,879	3,684	2,753
discount rate	2013	6,705	6,580	6,359	6,040	4,491
1.75%	2014	11,878	11,677	11,133	10,546	8,044
	2015	20,637	20,511	19,455	18,460	15,032
interest rate margin	2016	29,670	28,754	27,460	26,503	22,085
25 basis pts	2017	47,411	46,245	44,858	43,902	37,857
	2018	13,493	17,982	24,136	29,845	47,845
<b>TOTAL</b>		<b>137,153</b>	<b>138,035</b>	<b>139,440</b>	<b>141,029</b>	<b>139,679</b>
Change			882	1,405	1,589	

*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 Mar. 2018	Actual Apr. 2018	Projected May. 2018	Projected Jun. 2018	Projected Dec. 2018
	51.6%	2004	(80)	(80)	(80)	(80)	(80)
	59.3%	2005	(45)	(45)	(44)	(42)	(31)
	66.3%	2006	(170)	(148)	(144)	(137)	(99)
	70.3%	2007	(44)	(954)	(925)	(879)	(643)
	67.1%	2008	4	2	2	2	2
	60.4%	2009	159	159	154	146	108
	62.0%	2010	794	825	800	760	558
	66.0%	2011	920	861	835	793	581
	74.0%	2012	3,146	3,055	2,963	2,815	2,065
	76.3%	2013	5,479	5,392	5,230	4,968	3,643
	86.0%	2014	9,754	9,601	9,121	8,574	6,435
	95.6%	2015	16,169	16,140	15,172	14,262	11,389
	100.1%	2016	24,772	23,939	22,742	21,832	17,990
	92.8%	2017	41,344	40,350	39,139	38,356	32,944
	90.7%	2018	11,496	15,434	21,003	26,111	41,084
		<b>TOTAL</b>	<b>113,698</b>	<b>114,531</b>	<b>115,968</b>	<b>117,481</b>	<b>115,946</b>
		Change		833	1,437	1,513	

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

## EXHIBIT C

## Premium Liabilities

TABLE EXHIBIT C

Premium Liabilities	Amounts in \$000s				
	Actual	Actual	Projected	Projected	Projected
	Mar. 2018	Apr. 2018	May. 2018	Jun. 2018	Dec. 2018
(1) unearned premium (UP)	82,278	82,301	85,599	88,750	90,616
<b>FOR MEMBER SHARING</b>					
(2) expected future costs ratio {% of (1)}	96.6%	96.7%	96.8%	96.9%	98.1%
(3) expected future costs {(1) x (2)}	79,485	79,574	82,859	86,022	88,902
(4) premium deficiency / (deferred policy acquisition cost)	(2,793)	(2,727)	(2,740)	(2,728)	(1,714)
<b>Excluding Actuarial Present Value Adjustments</b>					
(5) expected future costs ratio {% of (1)}	91.1%	91.2%	91.3%	91.4%	92.5%
(6) expected future costs {(1) x (5)}	74,957	75,041	78,140	81,122	83,838
(7) premium deficiency / (deferred policy acquisition cost)	(7,321)	(7,260)	(7,459)	(7,628)	(6,778)

**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 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	-	(80)	(80)	-	-	8	-	8	8	(72)	
2005	646	(31)	615	(13)	2	61	(1)	60	49	664	
2006	173	(99)	74	(2)	-	7	-	7	5	79	
2007	2,010	(643)	1,367	(36)	4	137	(4)	133	101	1,468	
2008	1,081	2	1,083	(31)	4	108	(3)	105	78	1,161	
2009	1,026	108	1,134	(33)	5	113	(3)	110	82	1,216	
2010	4,329	558	4,887	(151)	20	489	(15)	474	343	5,230	
2011	6,853	581	7,434	(245)	37	743	(25)	718	510	7,944	
2012	7,623	2,065	9,688	(291)	39	969	(29)	940	688	10,376	
2013	8,679	3,643	12,322	(394)	49	1,232	(39)	1,193	848	13,170	
2014	18,161	6,435	24,596	(885)	123	2,460	(89)	2,371	1,609	26,205	
2015	32,110	11,389	43,499	(1,827)	261	5,437	(228)	5,209	3,643	47,142	
2016	34,429	17,990	52,419	(2,464)	315	6,552	(308)	6,244	4,095	56,514	
2017	33,912	32,944	66,856	(3,477)	468	8,357	(435)	7,922	4,913	71,769	
<b>PAYs (sub-total):</b>	<b>151,032</b>	<b>74,862</b>	<b>225,894</b>	<b>(9,849)</b>	<b>1,327</b>	<b>26,673</b>	<b>(1,179)</b>	<b>25,494</b>	<b>16,972</b>	<b>242,866</b>	
<b>CAY (2018)</b>	<b>60,045</b>	<b>41,084</b>	<b>101,129</b>	<b>(5,259)</b>	<b>708</b>	<b>11,933</b>	<b>(621)</b>	<b>11,312</b>	<b>6,761</b>	<b>107,890</b>	
<b>claims liabilities:</b>	<b>211,077</b>	<b>115,946</b>	<b>327,023</b>	<b>(15,108)</b>	<b>2,035</b>	<b>38,606</b>	<b>(1,800)</b>	<b>36,806</b>	<b>23,733</b>	<b>350,756</b>	
	Unearned Premium	Premium Deficiency / (DPAC)	Total Provision	discount	investment PfAD	nominal development PfAD	development PfAD discount	development PfAD	Total apvs	TOTAL*	
<b>premium liabilities:</b>	90,616	(6,778)	83,838	(3,593)	501	8,522	(366)	8,156	5,064	88,902	
*Total may not be sum of parts, as apvs apply to future costs within UPR											
<b>policy liabilities:</b>			<b>410,861</b>	<b>(18,701)</b>	<b>2,536</b>	<b>47,128</b>	<b>(2,166)</b>	<b>44,962</b>	<b>28,797</b>	<b>439,658</b>	

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 (Dec. 31, 2017)

Accident Year	Third Party Liability	Accident Benefits	Other Coverages	Total
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%	9.8%	10.0%
2011	10.0%	10.0%	10.0%	10.0%
2012	10.0%	10.0%	9.8%	10.0%
2013	10.0%	10.0%	10.0%	10.0%
2014	10.0%	10.0%	10.0%	10.0%
2015	12.5%	10.0%	12.5%	12.5%
2016	12.5%	10.0%	12.1%	12.5%
2017	12.4%	10.0%	12.5%	12.5%
2018	12.1%	10.0%	6.7%	11.8%
prem liab	11.7%	10.0%	5.1%	10.2%

discount rate: 1.75%  
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 (1.75%), 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							
	0.75%	1.25%	1.75%	2.25%	2.75%	3.25%	1.76%	1.76%
2004	-	-	-	-	-	-	-	-
2005	677	673	669	665	661	657	669	669
2006	456	453	449	446	443	439	449	449
2007	1,756	1,742	1,729	1,716	1,704	1,691	1,729	1,729
2008	850	843	836	829	822	816	836	836
2009	1,991	1,975	1,959	1,943	1,927	1,912	1,958	1,958
2010	4,797	4,754	4,712	4,670	4,629	4,589	4,711	4,711
2011	7,099	7,031	6,964	6,900	6,836	6,774	6,963	6,963
2012	10,449	10,358	10,270	10,183	10,098	10,015	10,268	10,268
2013	15,064	14,925	14,789	14,655	14,525	14,398	14,787	14,787
2014	28,037	27,744	27,457	27,176	26,901	26,632	27,452	27,452
2015	48,340	47,751	47,174	46,616	46,068	45,530	47,165	47,165
2016	59,039	58,234	57,446	56,679	55,933	55,203	57,435	57,435
2017	75,274	74,127	73,014	71,933	70,875	69,848	72,990	72,990
2018	121,697	119,838	118,037	116,291	114,587	112,935	117,998	117,998
<b>Total</b>	<b>375,526</b>	<b>370,448</b>	<b>365,505</b>	<b>360,702</b>	<b>356,009</b>	<b>351,439</b>	<b>365,410</b>	<b>365,410</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							
	0.75%	1.25%	1.75%	2.25%	2.75%	3.25%	1.76%	1.76%
Total	10,021	4,943	-	(4,803)	(9,496)	(14,066)	(95)	(95)
	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							
	0.75%	1.25%	1.75%	2.25%	2.75%	3.25%	1.76%	1.76%
2004	-	-	-	-	-	-	-	-
2005	1.2%	0.6%	-	(0.6%)	(1.2%)	(1.8%)	-	-
2006	1.6%	0.9%	-	(0.7%)	(1.3%)	(2.2%)	-	-
2007	1.6%	0.8%	-	(0.8%)	(1.4%)	(2.2%)	-	-
2008	1.7%	0.8%	-	(0.8%)	(1.7%)	(2.4%)	-	-
2009	1.6%	0.8%	-	(0.8%)	(1.6%)	(2.4%)	(0.1%)	(0.1%)
2010	1.8%	0.9%	-	(0.9%)	(1.8%)	(2.6%)	(0.0%)	(0.0%)
2011	1.9%	1.0%	-	(0.9%)	(1.8%)	(2.7%)	(0.0%)	(0.0%)
2012	1.7%	0.9%	-	(0.8%)	(1.7%)	(2.5%)	(0.0%)	(0.0%)
2013	1.9%	0.9%	-	(0.9%)	(1.8%)	(2.6%)	(0.0%)	(0.0%)
2014	2.1%	1.0%	-	(1.0%)	(2.0%)	(3.0%)	(0.0%)	(0.0%)
2015	2.5%	1.2%	-	(1.2%)	(2.3%)	(3.5%)	(0.0%)	(0.0%)
2016	2.8%	1.4%	-	(1.3%)	(2.6%)	(3.9%)	(0.0%)	(0.0%)
2017	3.1%	1.5%	-	(1.5%)	(2.9%)	(4.3%)	(0.0%)	(0.0%)
2018	3.1%	1.5%	-	(1.5%)	(2.9%)	(4.3%)	(0.0%)	(0.0%)
<b>Total</b>	<b>2.7%</b>	<b>1.4%</b>	<b>-</b>	<b>(1.3%)</b>	<b>(2.6%)</b>	<b>(3.8%)</b>	<b>(0.0%)</b>	<b>(0.0%)</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 Grid					
AccountCode Desc		IBNR - Discou		M/S IBNR - in \$000s			
AccYear	Values						
	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	Sum of Current Month Final Amount
2004	(72)	-	-	-	-	-	(72)
2005	25	(1)	-	-	(1)	(4.0%)	24
2006	(162)	9	13	-	22	(13.6%)	(140)
2007	99	(2)	(908)	-	(910)	(919.2%)	(811)
2008	114	(3)	1	-	(2)	(1.8%)	112
2009	273	(10)	10	-	-	-	273
2010	1,276	(56)	84	-	28	2.2%	1,304
2011	1,660	(69)	(14)	-	(83)	(5.0%)	1,577
2012	4,146	(186)	59	-	(127)	(3.1%)	4,019
2013	6,705	(311)	186	-	(125)	(1.9%)	6,580
2014	11,878	(509)	308	-	(201)	(1.7%)	11,677
2015	20,637	(897)	771	-	(126)	(0.6%)	20,511
2016	29,670	(593)	(323)	-	(916)	(3.1%)	28,754
2017	47,411	(596)	(570)	-	(1,166)	(2.5%)	46,245
2018	13,493	5,172	(683)	-	4,489	33.3%	17,982
<b>Grand Total</b>	<b>137,153</b>	<b>1,948</b>	<b>(1,066)</b>	<b>-</b>	<b>882</b>	<b>0.6%</b>	<b>138,035</b>

EXHIBIT G

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

RSP **Alberta Grid**  
AccountCode Desc **IBNR - Undiscounted**

IBNR - in \$000s

AccYear	Values				Sum of Total Change	Sum of % Total Change	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			
2004	(80)	-	-	-	-	-	(80)
2005	(45)	2	(2)	-	-	-	(45)
2006	(170)	9	13	-	22	(12.9%)	(148)
2007	(44)	2	(912)	-	(910)	2,068.2%	(954)
2008	4	-	(2)	-	(2)	(50.0%)	2
2009	159	(8)	8	-	-	-	159
2010	794	(40)	71	-	31	3.9%	825
2011	920	(46)	(13)	-	(59)	(6.4%)	861
2012	3,146	(157)	66	-	(91)	(2.9%)	3,055
2013	5,479	(274)	187	-	(87)	(1.6%)	5,392
2014	9,754	(488)	335	-	(153)	(1.6%)	9,601
2015	16,169	(808)	779	-	(29)	(0.2%)	16,140
2016	24,772	(495)	(338)	-	(833)	(3.4%)	23,939
2017	41,344	(413)	(581)	-	(994)	(2.4%)	40,350
2018	11,496	4,629	(691)	-	3,938	34.3%	15,434
<b>Grand Total</b>	<b>113,698</b>	<b>1,913</b>	<b>(1,080)</b>	-	<b>833</b>	<b>0.7%</b>	<b>114,531</b>