ALBERTA GRID RISK SHARING POOL

JANUARY 2019 OPERATIONAL REPORT

ACTUARIAL HIGHLIGHTS

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FACILITY Association

ACTUARIAL HIGHLIGHTS

RSP ALBERTA GRID

OPERATIONAL REPORT

JANUARY 2019

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1   Summary

1.1   Valuation Schedule (Fiscal Year 2019)

The January 2019 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 2019.

ALBERTA GRID RISK SHARING POOL FISCAL YEAR 2019 – SCHEDULE OF VALUATIONS			
Valuation Date	**Discount Rate (per annum)**	**Operational Report**	**Description of Changes**
Sep. 30, 2018 (completed)	2.28% mfad 25 bp	Oct. 2018	updated valuation (roll forward): accident year 2018 loss ratio <u>decreased</u> 2.0 points to 89.8%; discount rate <u>increased</u> by 41 basis points; no change to selected margins for adverse deviations
Dec. 31, 2018		Mar. 2019	update valuation:
Mar. 31, 2019		May 2019	update valuation (roll forward)
Jun. 30, 2019		Aug. 2019	update valuation
Sep. 30, 2019		Oct. 2019	update valuation (roll forward)

Under the proposed schedule for fiscal year 2019, the "off-half" valuation quarters ending March 31, 2019 and September 30, 2019 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). With the **most recent** valuation (September 30, 2018), reform adjustments related to changes in the definition of minor injuries under the MIR, were included with the updated industry trend analysis (completed using industry data as at December 31, 2017), impacting the selection of ultimates.

The **Supreme Court of Canada** rendered its judgment on **Saadati v Moorhead** (**2017** SCC 28, **rendered on June 2, 2017**). Saadati was involved in a collision in July of 2005 in British Columbia and sued the at-fault driver for damages. According 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, and at this point we do not believe this judgment will have a further impact on our valuation results.

The **Minister of Treasury Board and Finance issued Ministerial Order 14/2018**, on **October 31, 2018**, which states unless otherwise directed by the Minister, the AIRB may not approve filings from insurers for cumulative rate increases on private passenger vehicles greater than +5.0% during the period between December 1, 2018 and August 31, 2019. At the current time, no adjustments have been made to our valuation estimates or views based on this order.

1.4   Current Provision Summary

The charts at the top of the next page show the current levels of claim liabilities[1] booked by accident year[2]. 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 2019 full year earned premium (the red hash-mark line) to provide some perspective.

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[1]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.

[2]Accident year 2004 was an incomplete year and therefore has been excluded from the loss ratio chart.
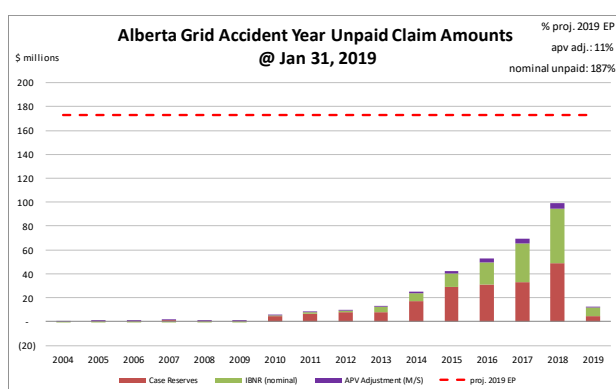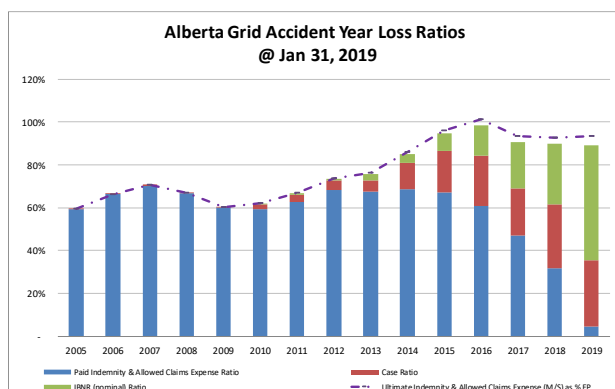
"M/S" refers to "Member Statement" values – that is, actuarial present value adjustments at the selected discount rate.

The current actuarial present value adjustments balance ($18.8 million – see table immediately below) represents 11% of the earned premium projected for the full year 2019 (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	194,149	56.8%
ibnr	129,192	37.8%
M/S apv adjust.	18,753	5.5%
M/S total	342,094	100.0%

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 RSP is in case reserves. Approximately 41% of the IBNR balance relates to accident years 2018 and 2019 (see Exhibit B). Approximately 81% of the M/S total claim liabilities are related to accident years 2015-2019 inclusive (i.e. the most recent 5 accident years), and approximately 1% is related to accident years 2009 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	86,519	107.0%
prem def/(dpac)	(9,136)	(11.3%)
M/S apv adjust.	3,460	4.3%
M/S total	80,843	100.0%

policy liabilities ($000s)

	amt	%
claim	323,341	76.5%
premium	77,383	18.3%
M/S apv adjust.	22,213	5.3%
M/S total	422,937	100.0%

2 Activity During the Month of January 2019

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[3].

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[3]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	Earned Premium		Paid Indemnity & Allowed Claims Expense		Case increase / (decrease)		Recorded increase / (decrease)	
Accident Year	Actual	Actual less Projected	Actual	Actual less Projected	Actual	Actual less Projected	Actual	Actual less Projected
Prior	(14)	(14)	2,913	748	(1,646)	(817)	1,267	(69)
2017	(1)	(1)	811	150	616	263	1,426	412
2018	(359)	(359)	5,097	(1,906)	(401)	2,044	4,696	138
2019	14,009	121	612	55	4,334	(1,543)	4,946	(1,488)
TOTAL	13,634	(254)	9,433	(953)	2,903	(53)	12,336	(1,006)

(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**[4] 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*
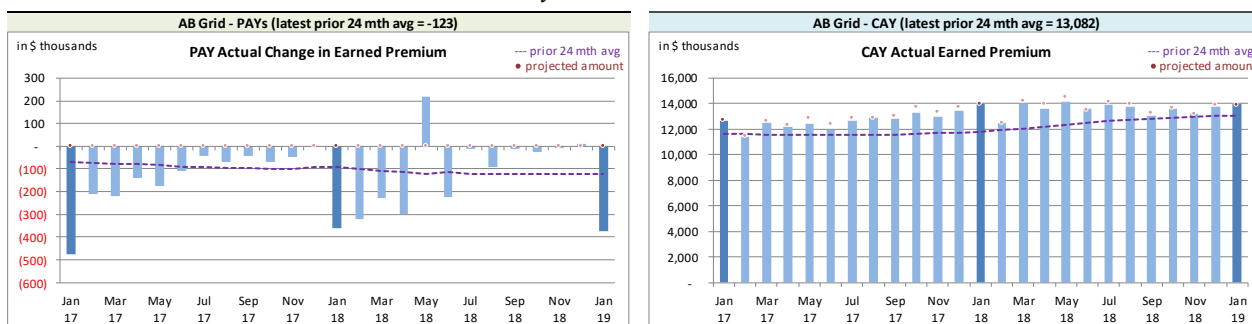
Earned premium changes during a given calendar month in relation to prior accident years tend to be at modest levels, although relatively high levels generally occur at the beginning of each year.

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

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[4]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.

*Alberta Grid RSP Actual vs. Projected Summary: **Earned Premium** Variances by Calendar Month*
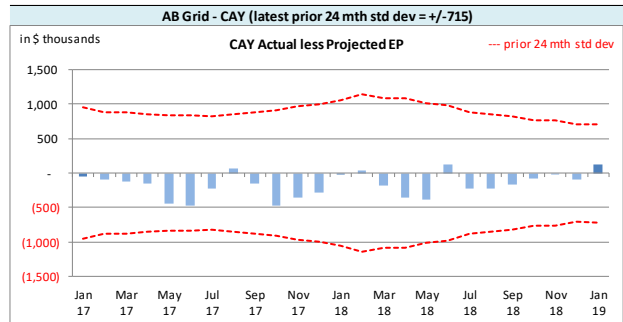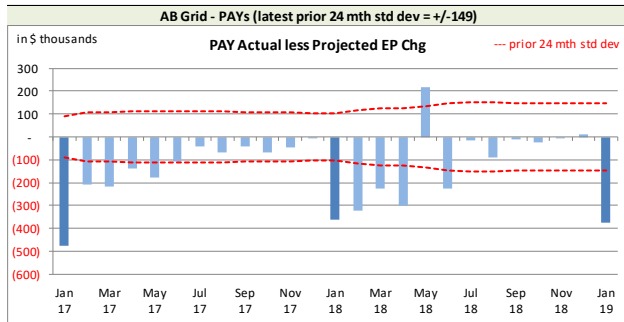
On Latest $ thousands		
Earned Premium	PAYs	CAY
Mthly Avg EP Chg (prior 24 mths)	(123)	13,082
std dev	149	715
A-P <> std dev	12	-
% <> std dev	48.0%	0.0%
norm <> std dev	31.7%	31.7%

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[5], 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[6], with actuals being generally lower than projected, and while we modified our projections processes in response, 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.
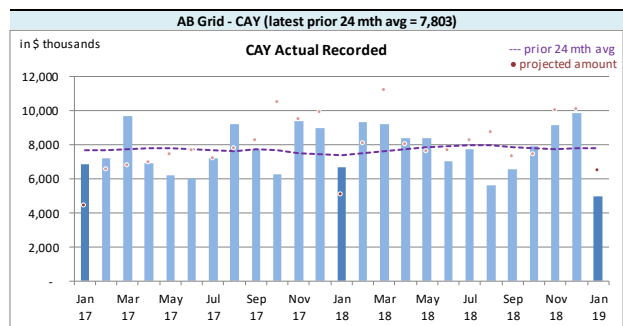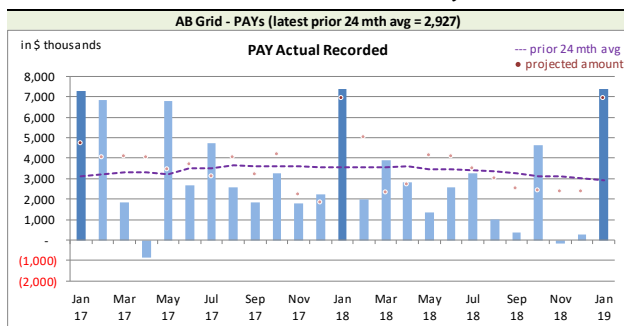
*Alberta Grid RSP Actual **Recorded** by Calendar Month*

Recorded activity variances from the previous month's projections are shown in the charts at the top of the next page, including the "prior 24-month standard deviation" levels to show how the variances from projection compare with historical standard deviations.

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[5]The PAYs' variances will show bias as the projection upload forces all earned premium projections to be attributed to the CAY.

[6]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 January 2019 has only 4 months where the actuals were higher than projected, and as the 95% confidence range is 7 to 17, bias continues to be indicated.

*Alberta Grid RSP Actual vs Projected Summary: **Recorded** Variances by Calendar Month*
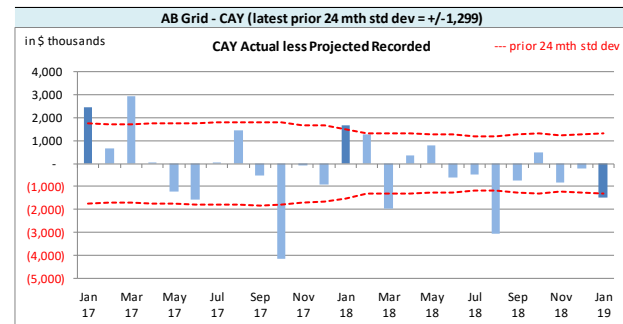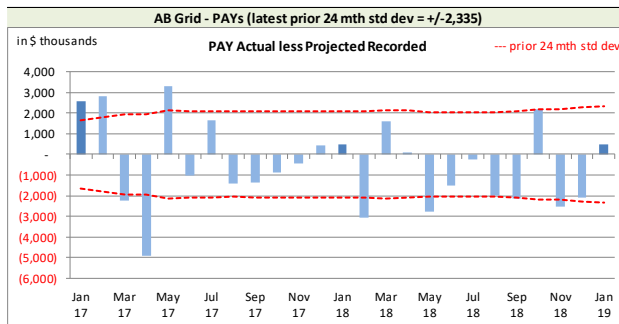
On Latest $ thousands		
Recorded	PAYs	CAY
Mthly Avg Recorded (prior 24 mths)	2,927	7,803
std dev	2,335	1,299
A-P <> std dev	10	7
% <> std dev	40.0%	28.0%
norm <> std dev	31.7%	31.7%

With respect to **recorded** indemnity & allowed claims expense activity, 40% of the prior accident years' (PAYs) variances over the last 25 calendar months have fallen outside of one standard deviation of the actual **recorded** amounts (see table on left), suggesting the projection process has performed worse than simply projecting the prior 24-month average amount (assuming it follows a normal distribution). Bias has not been indicated at a 95% confidence level on a lagging 24-month basis.

The current accident year (CAY) **recorded** variances fell outside of one standard deviation 28% of the time over the last 25 calendar months (see table above), suggesting that the projection process has performed no better than simply projecting the prior 24-month average amount. Bias has not been indicated at a 95% confidence level on a lagging 24-month basis.

The CAY **recorded** variance (see right chart above) was outside of one standard deviation this month. The activity was reviewed and confirmed, with the variance attributed to process variance.

We note that there may have been 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 provides the January ratios for that row's calendar year.

In particular, the *left* table at the top of the next page (showing average monthly ratios for each calendar year), the 2018 average **recorded** ratio at 14.9% was the 2nd highest ratio over the last 10 years, but the 2018 **paid** ratio at 5.3% was consistent with the immediately prior 5 years. These ratios overall may indicate a change in levels at around 2013/2014, to more elevated levels[7].

In contrast, the *right* table at the top of the next page (showing year-to-date ratios at Jan for each calendar year), there is no statistically significant difference in either the recorded ratio or paid ratio

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[7]A two-sample t-test of means for 2009-2013 vs 2014-2018 for both recorded and paid ratios result in p-values below 5%, such that we would then reject the hypothesis that the means are not different. That is, there would be less than a 5% probability of randomly having the size of differences in the mean ratios for 2009-2013 vs 2014-2018 if the ratios really are from the same overall distribution. Put another way, we have statistical evidence that the mean ratios for the period 2009-2013 and 2014-2018 are different (but not absolute proof that they are different).

over the periods 2009-2013 vs 2014-2019 at the 5% confidence level.

Alberta Grid RSP year-to-date CAY claims activity (ratio to EP)

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%
Dec 2018	14.9%	(0.6%)	5.3%	(0.3%)

CAY avg of mthly ratios for yr

as at	Rec'd	yr-on-yr chg	Paid	yr-on-yr chg
Jan 2009	35.3%		3.7%	
Jan 2010	26.3%	(9.0%)	3.8%	0.1%
Jan 2011	36.4%	10.1%	4.3%	0.5%
Jan 2012	34.3%	(2.1%)	3.3%	(1.0%)
Jan 2013	40.1%	5.8%	3.4%	0.1%
Jan 2014	33.8%	(6.3%)	3.2%	(0.2%)
Jan 2015	43.9%	10.1%	2.8%	(0.4%)
Jan 2016	32.1%	(11.8%)	4.0%	1.2%
Jan 2017	54.1%	22.0%	4.0%	0.0%
Jan 2018	47.9%	(6.2%)	5.2%	1.2%
Jan 2019	35.3%	(12.6%)	4.4%	(0.8%)

There has been strong (80%) correlation between the ytd monthly average **recorded** ratios but weak (5%) correlation between the ytd monthly average **paid** ratios at January each year and the corresponding ytd monthly average ratios at December, suggesting the January **recorded** ratio is predictive of where the 2019 ytd monthly average **recorded** ratios will be at year-end (that is, the 12 monthly ratios Jan 2019 – Dec 2019), but January ytd monthly **paid** ratios would be poor predictors of December ytd monthly paid ratios. Using simple regression and ignoring that there may be an underlying change in ratios at around 2013/2014, we forecast the average of the 12 monthly ratios for calendar year 2019 (i.e. the average of the monthly ratios for Jan 2019 – Dec 2019) will be 12.8% (95% prediction interval of 10.6% to 15.1%) for **recorded** and 5.1% (95% prediction interval of 3.9% to 6.2%) for **paid** (and again, the **paid** prediction will likely be poor, given the lack of correlation). The results are presented in charts at the top of the next page.

Alberta Grid RSP average of monthly CAY claims activity ratios to EP

AB Grid RSP	Avg CAY Rec'd ratios - as at Jan

Avg CAY Rec'd ratios - as at Jan

35.3%

avg mthly ratios for yr at Jan

AB Grid RSP	Avg CAY Paid ratios - as at Jan

Avg CAY Paid ratios - as at Jan

4.4%

avg mthly ratios for yr at Jan

AB Grid RSP	Avg CAY Rec'd ratios - as at Dec

Avg CAY Rec'd ratios - as at Dec

12.8%

95% prediction interval 10.6% to 15.1%

avg mthly ratios for yr at Dec

AB Grid RSP	Avg CAY Paid ratios - as at Dec

Avg CAY Paid ratios - as at Dec

5.1%

95% prediction interval 3.9% to 6.2%

avg mthly ratios for yr at Dec

We are taking this information into consideration as part of our projection process.

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[8] **Recorded** activity by Calendar Month*
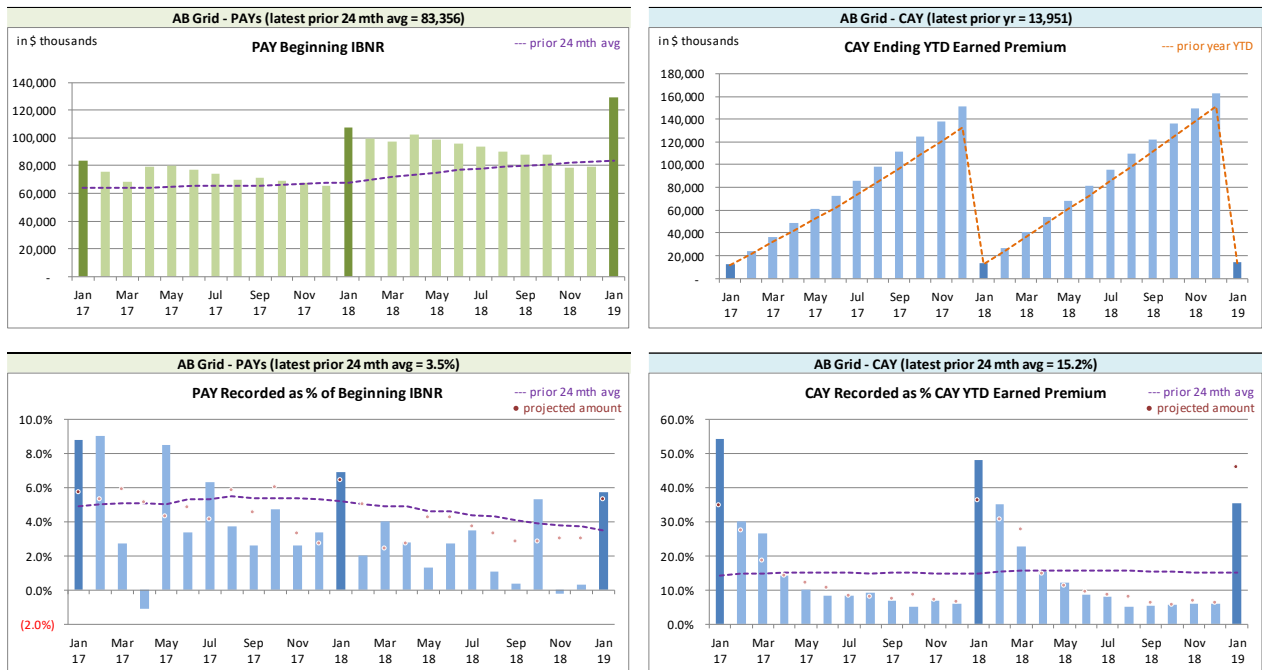
We track beginning prior accident years' IBNR as **recorded** activity "comes out of" IBNR. Changes in the prior accident years' beginning IBNR (see upper left chart above) occur for several possible reasons:

- 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.

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[8]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*
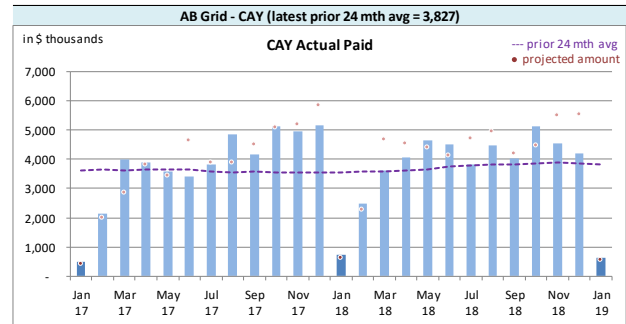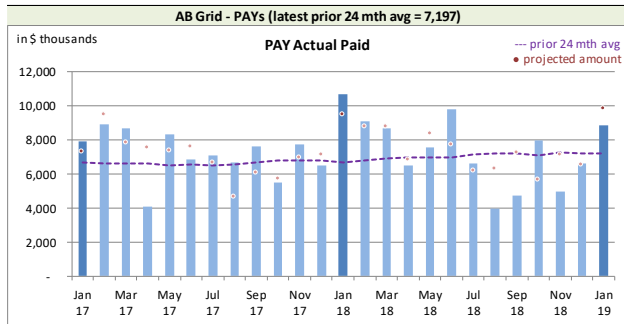
Paid activity variances from the previous month's projections are shown in the charts immediately below, including the "prior 24-month standard deviation" levels to show how the variances from projection compare with historical standard deviations.

*Alberta Grid RSP Actual vs Projected Summary: **Paid** Variances by Calendar Month*
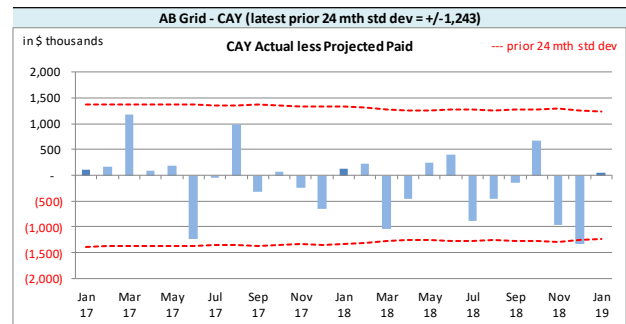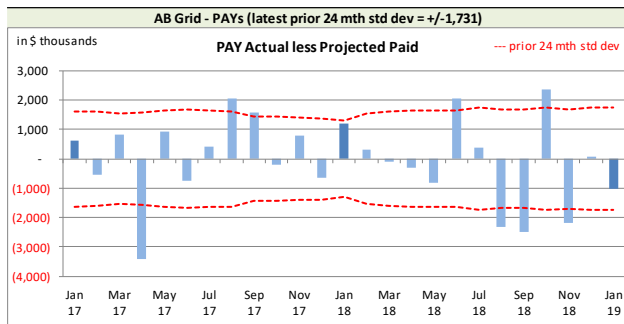
On Latest $ thousands		
Paid	PAYs	CAY
Mthly Avg Paid (prior 24 mths)	7,197	3,827
std dev	1,731	1,243
A-P <> std dev	8	1
% <> std dev	32.0%	4.0%
norm <> std dev	31.7%	31.7%

With respect to **paid** indemnity & allowed claims expense, 32% of the prior accident years' (PAYs) variances over the last 25 calendar months have fallen outside of one standard deviation of the actual **paid** amounts (see table on left), suggesting the projection process has performed no better than simply projecting the prior 24-month average amount (assuming it follows a normal distribution). Bias has not been indicated at a 95% confidence level on a lagging 24-month basis.

The current accident year (CAY) **paid** variances fell outside one standard deviation 4% of the time over the last 25 calendar months (see table above), suggesting the projection process has performed better than simply projecting the prior 24-month average amount. Bias has not 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[9] **Paid** activity by Calendar Month*
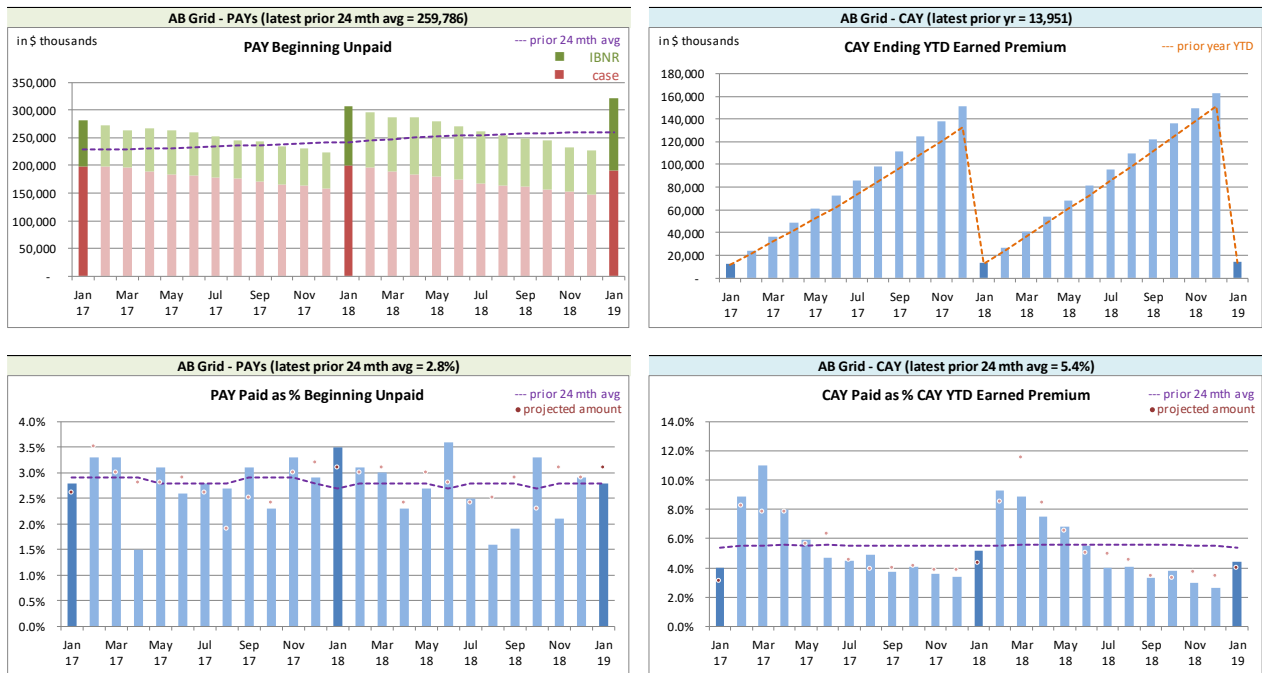
We track beginning prior accident years' unpaid balance (case and IBNR) as **paid** activity "comes out of" the unpaid balance. Changes in the prior accident years' beginning unpaid balance (see upper left chart above) occur for several possible reasons:

- 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[10], 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 this month's Operational Report and the associated one-month

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[9]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.

[10]For ease of discussion, "IBNR" is used in place of "provisions for incurred but not recorded (IBNR) and development".

projections from last month's Report.

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

Table 02			actuarial present value adjustments					
	IBNR		Discount Amount		Provisions for Adverse Deviations		IBNR + actuarial present value adjustments	
Accident Year	Actual	Actual less Projected	Actual	Actual less Projected	Actual	Actual less Projected	Actual	Actual less Projected
Prior	43,652	56	(7,123)	38	16,381	(82)	52,910	12
2017	32,382	(413)	(3,982)	10	8,055	(18)	36,455	(421)
2018	45,622	(461)	(6,340)	(106)	11,169	188	50,451	(379)
2019	7,536	1,596	(807)	(3)	1,400	7	8,129	1,600
TOTAL	129,192	778	(18,252)	(61)	37,005	95	147,945	812

The IBNR provision is $0.8 million higher 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 below summarizes the variances in the provisions for premium deficiency liability / (deferred policy acquisition cost asset) included in this month's 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:	(9,136)	(133)	3,460	57	(5,676)	(76)
balance as % unearned premium:	(10.6%)	-	4.0%	-	(6.6%)	-
actual unearned premium:	86,519					
less projected:	1,381					

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[11] 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 below summarizes the calendar year-to-date results for indemnity & allowed claims expenses[12], 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 91.5% rather than 89.1% (the valuation ultimate ratio for accident year 2019), 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	(336)	(2.5%)	779	5.7%	443	3.2%	#N/A	#N/A
CAY	12,482	91.5%	593	4.3%	13,075	95.9%	#N/A	#N/A
TOTAL	12,146	89.1%	1,372	10.1%	13,518	99.1%	#N/A	#N/A

("% EP" based on 2019 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

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[11]"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).

[12]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

FACILITY Association

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 Dec. 2018	Actual Jan. 2019	Projected Feb. 2019	Projected Mar. 2019	Projected Dec. 2019
	2004	(71)	(71)	(71)	(71)	(71)
	2005	(156)	(151)	(151)	(151)	(151)
	2006	(71)	(89)	(86)	(84)	(53)
	2007	(233)	(215)	(210)	(204)	(129)
	2008	24	24	24	24	17
	2009	(117)	(109)	(106)	(103)	(65)
	2010	801	791	768	746	501
	2011	1,698	1,885	1,829	1,774	1,184
	2012	2,467	2,201	2,135	2,071	1,381
	2013	4,770	5,165	5,011	4,860	3,218
discount rate	2014	8,382	7,646	7,416	7,193	4,776
2.28%	2015	13,960	13,738	13,346	12,513	8,620
	2016	22,123	22,095	21,501	21,072	15,682
interest rate margin	2017	37,552	36,455	36,048	35,327	28,266
25 basis pts	2018	55,634	50,451	48,384	47,279	40,072
	2019	-	8,129	12,166	17,210	53,178
	TOTAL	146,763	147,945	148,004	149,456	156,426
	Change		1,182	59	1,452	

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 Dec. 2018	Actual Jan. 2019	Projected Feb. 2019	Projected Mar. 2019	Projected Dec. 2019
51.6%	2004	(79)	(79)	(79)	(79)	(79)
59.4%	2005	(198)	(198)	(198)	(198)	(198)
66.3%	2006	(80)	(99)	(96)	(93)	(60)
70.6%	2007	(300)	(280)	(272)	(264)	(172)
67.1%	2008	(21)	(22)	(21)	(20)	(13)
60.4%	2009	(158)	(154)	(149)	(145)	(94)
61.9%	2010	489	480	466	452	296
66.7%	2011	1,201	1,411	1,369	1,328	872
73.5%	2012	1,875	1,645	1,596	1,548	1,016
75.8%	2013	4,047	4,398	4,266	4,138	2,714
85.2%	2014	7,139	6,276	6,088	5,905	3,876
94.7%	2015	12,042	11,669	11,319	10,527	7,063
98.6%	2016	18,975	18,605	18,047	17,686	12,887
90.6%	2017	33,809	32,382	32,058	31,417	24,870
89.8%	2018	50,641	45,622	43,797	42,921	36,513
89.1%	2019	-	7,536	11,131	15,713	48,036
	TOTAL	129,382	129,192	129,322	130,836	137,527
	Change		(190)	130	1,514	

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

FACILITY Association

EXHIBIT C

Premium Liabilities

TABLE EXHIBIT C	Amounts in $000s				
Premium Liabilities	Actual Dec. 2018	Actual Jan. 2019	Projected Feb. 2019	Projected Mar. 2019	Projected Dec. 2019
(1) unearned premium (UP)	88,454	86,519	84,713	84,605	95,792
FOR MEMBER SHARING					
(2) expected future costs ratio {% of (1)}	93.4%	93.4%	93.5%	93.5%	95.1%
(3) expected future costs {(1) x (2)}	82,641	80,843	79,173	79,123	91,097
(4) premium deficiency / (deferred policy acquisition cost)	(5,813)	(5,676)	(5,540)	(5,482)	(4,695)
Excluding Actuarial Present Value Adjustments					
(5) expected future costs ratio {% of (1)}	89.4%	89.4%	89.5%	89.5%	91.0%
(6) expected future costs {(1) x (5)}	79,105	77,383	75,787	75,738	87,199
(7) premium deficiency / (deferred policy acquisition cost)	(9,349)	(9,136)	(8,926)	(8,867)	(8,593)

EXHIBIT D

Projected Year-end Policy Liabilities

The table below presents the projected policy liabilities as at December 31, 2019, broken down by component.

Alberta Grid	Projected Balances as at Dec. 31, 2019 ($000s)									
ending 2019	nominal values			actuarial present value adjustments (apvs)						
Acc Yr	Case	IBNR	Total Unpaid	discount	investment PfAD	nominal development PfAD	development PfAD discount	development PfAD	Total apvs	TOTAL
2004	-	(79)	(79)	-	-	8	-	8	8	(71)
2005	772	(198)	574	(10)	1	57	(1)	56	47	621
2006	145	(60)	85	(2)	-	9	-	9	7	92
2007	846	(172)	674	(25)	3	67	(2)	65	43	717
2008	476	(13)	463	(16)	2	46	(2)	44	30	493
2009	541	(94)	447	(16)	2	45	(2)	43	29	476
2010	3,122	296	3,418	(137)	14	342	(14)	328	205	3,623
2011	4,325	872	5,197	(208)	21	520	(21)	499	312	5,509
2012	5,075	1,016	6,091	(244)	24	609	(24)	585	365	6,456
2013	5,407	2,714	8,121	(309)	32	812	(31)	781	504	8,625
2014	11,708	3,876	15,584	(655)	62	1,558	(65)	1,493	900	16,484
2015	23,406	7,063	30,469	(1,493)	152	3,047	(149)	2,898	1,557	32,026
2016	26,879	12,887	39,766	(2,147)	239	4,971	(268)	4,703	2,795	42,561
2017	29,572	24,870	54,442	(3,321)	327	6,805	(415)	6,390	3,396	57,838
2018	33,244	36,513	69,757	(4,674)	488	8,301	(556)	7,745	3,559	73,316
PAYs (sub-total):	145,518	89,491	235,009	(13,257)	1,367	27,197	(1,550)	25,647	13,757	248,766
CAY (2019)	55,010	48,036	103,046	(7,007)	721	12,262	(834)	11,428	5,142	108,188
claims liabilities:	200,528	137,527	338,055	(20,264)	2,088	39,459	(2,384)	37,075	18,899	356,954

	Unearned Premium	Premium Defiency / (DPAC)	Total Provision	discount	investment PfAD	nominal development PfAD	development PfAD discount	development PfAD	Total apvs	TOTAL*
premium liabilities:	95,792	(8,593)	87,199	(5,126)	521	9,036	(533)	8,503	3,898	91,097

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

policy liabilities:			425,254	(25,390)	2,609	48,495	(2,917)	45,578	22,797	448,051

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 (Sep. 30, 2018)

Accident Year	Third Party Liability	Accident Benefits	Other Coverages	Total
	Margins	Margins	Margins	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%	8.5%	10.0%
2013	10.0%	10.0%	9.9%	10.0%
2014	10.0%	10.0%	10.0%	10.0%
2015	10.0%	10.0%	10.0%	10.0%
2016	12.5%	10.0%	12.5%	12.5%
2017	12.4%	10.0%	12.5%	12.5%
2018	12.2%	10.0%	8.2%	11.9%
2019	11.8%	10.0%	5.1%	10.4%
prem liab	11.8%	10.0%	5.1%	10.4%

discount rate:	2.28%
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 to Dec. 31, 2019, and are based on more up-to-date information). We have included the most recent valuation selection (2.28%), the prior valuation assumption (1.87%) 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

	Actuarial Present Value of Provisions at Various Discount Rates - Dec. 31, 2018 projected Unpaid							
AY	1.28%	1.78%	2.28%	2.78%	3.28%	3.78%	1.87%	1.76%
2004	-	-	-	-	-	-	-	-
2005	837	832	827	822	817	812	831	832
2006	255	253	251	249	247	245	252	253
2007	1,249	1,240	1,230	1,221	1,212	1,203	1,238	1,240
2008	1,192	1,182	1,173	1,163	1,154	1,146	1,180	1,182
2009	916	908	900	893	885	878	907	909
2010	5,995	5,943	5,891	5,840	5,791	5,742	5,933	5,945
2011	7,863	7,793	7,725	7,659	7,594	7,530	7,781	7,797
2012	10,131	10,046	9,962	9,880	9,800	9,722	10,030	10,049
2013	14,396	14,262	14,130	14,001	13,876	13,751	14,237	14,267
2014	26,583	26,298	26,014	25,739	25,473	25,209	26,245	26,309
2015	43,967	43,445	42,925	42,423	41,938	41,458	43,345	43,464
2016	55,220	54,473	53,736	53,024	52,332	51,654	54,338	54,500
2017	71,927	70,852	69,801	68,789	67,805	66,843	70,660	70,899
2018	104,823	103,231	101,676	100,169	98,718	97,302	102,946	103,299
Total	345,354	340,758	336,241	331,872	327,642	323,495	339,923	340,945
	curr - 100 bp	curr - 50 bp	curr val assumption	curr + 50bp	curr + 100bp	curr + 150bp	prior val assumption	prior fyr end assumption

	Dollar Impact Relative to Valuation Assumption							
AY	1.28%	1.78%	2.28%	2.78%	3.28%	3.78%	1.87%	1.76%
Total	9,113	4,517	-	(4,369)	(8,599)	(12,746)	3,682	4,704
	curr - 100 bp	curr - 50 bp	curr val assumption	curr + 50bp	curr + 100bp	curr + 150bp	prior val assumption	prior fyr end assumption

	Percentage Impact Relative to Valuation Assumption							
AY	1.28%	1.78%	2.28%	2.78%	3.28%	3.78%	1.87%	1.76%
2004	-	-	-	-	-	-	-	-
2005	1.2%	0.6%	-	(0.6%)	(1.2%)	(1.8%)	0.5%	0.6%
2006	1.6%	0.8%	-	(0.8%)	(1.6%)	(2.4%)	0.4%	0.8%
2007	1.5%	0.8%	-	(0.7%)	(1.5%)	(2.2%)	0.7%	0.8%
2008	1.6%	0.8%	-	(0.9%)	(1.6%)	(2.3%)	0.6%	0.8%
2009	1.8%	0.9%	-	(0.8%)	(1.7%)	(2.4%)	0.8%	1.0%
2010	1.8%	0.9%	-	(0.9%)	(1.7%)	(2.5%)	0.7%	0.9%
2011	1.8%	0.9%	-	(0.9%)	(1.7%)	(2.5%)	0.7%	0.9%
2012	1.7%	0.8%	-	(0.8%)	(1.6%)	(2.4%)	0.7%	0.9%
2013	1.9%	0.9%	-	(0.9%)	(1.8%)	(2.7%)	0.8%	1.0%
2014	2.2%	1.1%	-	(1.1%)	(2.1%)	(3.1%)	0.9%	1.1%
2015	2.4%	1.2%	-	(1.2%)	(2.3%)	(3.4%)	1.0%	1.3%
2016	2.8%	1.4%	-	(1.3%)	(2.6%)	(3.9%)	1.1%	1.4%
2017	3.0%	1.5%	-	(1.4%)	(2.9%)	(4.2%)	1.2%	1.6%
2018	3.1%	1.5%	-	(1.5%)	(2.9%)	(4.3%)	1.2%	1.6%
Total	2.7%	1.3%	-	(1.3%)	(2.6%)	(3.8%)	1.1%	1.4%
	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 - Discounted**					**M/S IBNR - in $000s**	

| | **Values** | | | | | | |
AccYear	**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	(71)	-	-	-	-	-	(71)
2005	(156)	5	-	-	5	(3.2%)	(151)
2006	(71)	3	(21)	-	(18)	25.4%	(89)
2007	(233)	3	15	-	18	(7.7%)	(215)
2008	24	1	(1)	-	-	-	24
2009	(117)	6	2	-	8	(6.8%)	(109)
2010	801	(17)	7	-	(10)	(1.2%)	791
2011	1,698	(34)	221	-	187	11.0%	1,885
2012	2,467	(70)	(196)	-	(266)	(10.8%)	2,201
2013	4,770	(41)	436	-	395	8.3%	5,165
2014	8,382	(10)	(726)	-	(736)	(8.8%)	7,646
2015	13,960	(318)	96	-	(222)	(1.6%)	13,738
2016	22,123	(207)	179	-	(28)	(0.1%)	22,095
2017	37,552	(676)	(421)	-	(1,097)	(2.9%)	36,455
2018	55,634	(4,804)	(379)	-	(5,183)	(9.3%)	50,451
2019	-	6,529	1,600	-	8,129	100.0%	8,129
Grand Total	**146,763**	**370**	**812**	**-**	**1,182**	**0.8%**	**147,945**

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 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	(79)	-	-	-	-	-	(79)
2005	(198)	-	-	-	-	-	(198)
2006	(80)	2	(21)	-	(19)	23.8%	(99)
2007	(300)	6	14	-	20	(6.7%)	(280)
2008	(21)	-	(1)	-	(1)	4.8%	(22)
2009	(158)	3	1	-	4	(2.5%)	(154)
2010	489	(10)	1	-	(9)	(1.8%)	480
2011	1,201	(24)	234	-	210	17.5%	1,411
2012	1,875	(38)	(192)	-	(230)	(12.3%)	1,645
2013	4,047	(81)	432	-	351	8.7%	4,398
2014	7,139	(143)	(720)	-	(863)	(12.1%)	6,276
2015	12,042	(482)	109	-	(373)	(3.1%)	11,669
2016	18,975	(569)	199	-	(370)	(1.9%)	18,605
2017	33,809	(1,014)	(413)	-	(1,427)	(4.2%)	32,382
2018	50,641	(4,558)	(461)	-	(5,019)	(9.9%)	45,622
2019	-	5,940	1,596	-	7,536	100.0%	7,536
Grand Total	**129,382**	**(968)**	**778**	**-**	**(190)**	**(0.1%)**	**129,192**