



ALBERTA GRID RISK SHARING POOL

MAY 2019 OPERATIONAL REPORT

ACTUARIAL HIGHLIGHTS

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ACTUARIAL HIGHLIGHTS**RSP ALBERTA GRID****OPERATIONAL REPORT****MAY 2019**

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1 Summary

1.1 Valuation Schedule (Fiscal Year 2019)

The May 2019 Operational Report incorporates the results of an updated valuation (as at March 31, 2019) – the impact of the implementation of the valuation is discussed in section 1.2. 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 (completed)	1.93% mfad 25 bp	Mar. 2019	updated valuation: accident year 2019 loss ratio <u>decreased</u> 0.3 points to 88.8%; discount rate <u>decreased</u> by 35 basis points; no change to selected margins for adverse deviations
Mar. 31, 2019 (completed)	1.44% mfad 25 bp	May 2019	updated valuation (roll forward): accident year 2019 loss ratio <u>increased</u> 0.9 points to 89.7%; discount rate <u>decreased</u> by 49 basis points; no change to selected margins for adverse deviations
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 New Valuation

A valuation of the Alberta Grid Risk Sharing Pool (“RSP”) as at March 31, 2019 has been completed since last month’s Operational Report and the results of that valuation have been incorporated into this month’s Report. The valuation was completed by the Facility Association’s internal actuarial group in conjunction with, and approved by, the Appointed Actuary, under the hybrid model for actuarial services. Additional detail will be provided in an “Actuarial Highlights – Quarterly Valuation” report which we anticipate will be posted to the FA website later in July 2019.

The valuation implementation impact is summarized in the tables on the next page.

Summary of Impact (\$000s) of Implementing Result of Valuation as at March 31, 2019¹

AB Grid	unfav / (fav) for the month and ytd					
	IMPACT in \$000s from changes in:					
	ults & payout patterns			dsct rate	margins	
	Nominal	apv adj.	sub-tot	apv adj.	apv adj.	TOTAL
	[1]	[2]	[3]	[4]	[5]	[6]
PAYs	565	(21)	544	3,515	-	4,059
CAY	628	41	669	780	-	1,449
Prem Def	672	38	710	1,100	-	1,810
TOTAL	1,865	58	1,923	5,395	-	7,318

As indicated in the table above, the incorporation of the new valuation had an estimated **\$7.3 million unfavourable impact** on the month's net result from operations, adding an estimated 18.5 points (see table immediately below) to the **year-to-date Combined Operating Ratio** to end at **118.1%**.

Summary of Impact (% YTD EP) of Implementing Result of Valuation as at March 31, 2019

AB Grid	ytd EP 39,615 (actual)					
	IMPACT unfav / (fav) as % ytd EP from changes in:					
	ults & payout patterns			dsct rate	margins	
	Nominal	apv adj.	sub-tot	apv adj.	apv adj.	TOTAL
	[1]	[2]	[3]	[4]	[5]	[6]
PAYs	1.4%	(0.1%)	1.4%	8.9%	-	10.2%
CAY	1.6%	0.1%	1.7%	2.0%	-	3.7%
Prem Def	1.7%	0.1%	1.8%	2.8%	-	4.6%
TOTAL	4.7%	0.1%	4.9%	13.6%	-	18.5%

The impact of the nominal changes is shown in column [1] of the two preceding summary tables. The change in the selected nominal ultimates was unfavourable by \$1.9 million overall. This reflects the impact attributable to the changes in the selected ultimate loss ratios (i.e. for each accident year, it is the product of life-to-date earned premium for the accident year and the change in the selected ultimate loss ratio).

The prior accident years overall showed a \$0.6 million unfavourable nominal variance, which is attributed to process variance. The overall unfavourable impact is 0.2% of the prior accident years' nominal unpaid balance of \$275.8 million determined at the end of last month (April 2019).

The current accident year and premium deficiency impacts are a result of the change in the selected loss ratios for accident year **2019** (up 0.9 points to **89.7%**) and **2020** (no change at **91.3%**).

The impacts related to actuarial present value ("apv") adjustments are split into the impact prior to any

¹In these tables, "PAYs" refers to prior accident years, "CAY" refers to the current accident year, and "Prem Def" refers to the provision for premium deficiency or the deferred policy acquisition asset (as applicable). "Nominal" refers to changes excluding any actuarial present value adjustments, whereas "apv adj." refers to actuarial present value adjustments.

The columns under the heading "ults & payout patterns" reflect the impact of changes in the valuation selected ultimates and claims payment patterns (i.e. based on unchanged selection of discount rates and margins for adverse deviation). The column "dsct rate" reflects the impact of the change in the selected discount rate and the column "margins" reflects the impact of any changes in selected margins for adverse deviations.

change in the selected discount rate and selected margins for adverse deviations or “MfADs” (at the level they were selected i.e. coverage and accident half-year), the impact of then updating the discount rate, and finally the impact of any changes to the MfADs (at the level they were selected). The changes in actuarial present value adjustments are shown in the summary tables in columns [2], [4], and [5].

Column [2] recognizes that changing the nominal selections also changed the unpaid estimates (including changes to the relative mix by government line, which had an impact on the weighted-average MfADs). It also reflects the fact that we updated the projected emergence of claims payments, resulting in a change in the projected cash flows. These changes generated an unfavourable change of \$0.1 million in the actuarial present value adjustments, prior to any changes in the selected discount rate and/or MfADs.

Updated projected cash flows were reviewed against the selected risk-free yield curve, derived from Government of Canada benchmark bond yields monthly series using values for March 2019. Column [4] accounts for the change in the **discount rate** selected (decreased 49 basis point to **1.44%**), indicating an unfavourable impact of \$5.4 million. The impact *related only to claims liabilities* (i.e. PAYs plus CAY) was \$4.3 million at May 2019 (projected \$4.8 million impact at December 31, 2019) – this compares to the \$4.5 million change one would estimate as the impact by interpolation using the interest rate sensitivity table provided in last month’s Actuarial Highlights.

Column [5] accounts for any changes to selected MfADs. The selected **investment rate MfAD** was **left unchanged at 25 basis points** and the selected **claims development MfADs** at the coverage and accident year level were **left unchanged** as well.

Consideration was given to recent legal decisions and changes in legislation / regulation as noted above and outlined in section 1.4.

1.3 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.

1.4 Consideration of Recent Legal Decisions and Changes in Legislation / Regulation²

There have been no changes in these descriptions since last month’s Highlights, other than updated current valuation date references.

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

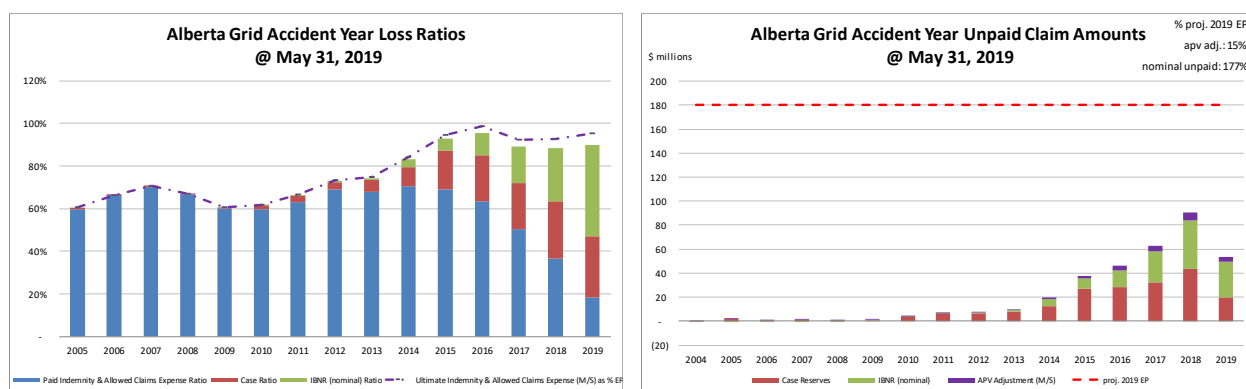
²This link is to a helpful guide on how bills become laws: <http://www.ontla.on.ca/lao/en/media/laointernet/pdf/bills-and-lawmaking-background-documents/how-bills-become-law-en.pdf>.

amendments have been made to the definition of minor injuries under the Minor Injury Regulation (MIR). With the most recent valuation (March 31, 2019), 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 June 30, 2018), impacting the selection of ultimates.

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 explicit adjustments have been made to our valuation estimates or views based on this order.

1.5 Current Provision Summary

The charts immediately below show the current levels of claim liabilities³ booked by accident year⁴. 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.



"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 (\$26.2 million – see table at the top of the next page) represents 15% 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.

³Claim 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.

⁴Accident year 2004 was an incomplete year and therefore has been excluded from the loss ratio chart.

claim liabilities (\$000s)		
	amt	%
case	192,780	55.8%
ibnr	126,348	36.6%
M/S apv adjust.	26,223	7.6%
M/S total	345,351	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 55% of the IBNR balance relates to accident years 2018 and 2019 (see Exhibit B). Approximately 84% 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)			policy liabilities (\$000s)		
	amt	%		amt	%
unearned prem	92,371	103.7%	claim	319,128	73.5%
prem def/(dpac)	(8,928)	(10.0%)	premium	83,443	19.2%
M/S apv adjust.	5,657	6.3%	M/S apv adjust.	31,880	7.3%
M/S total	89,100	100.0%	M/S total	434,451	100.0%

2 Activity During the Month of May 2019

2.1 Recorded Premium and Claims Activity

The table immediately below summarizes the extent to which premiums and claims amounts recorded during the month differ from projections reflected in the prior month's Operational Report⁵.

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	0	0	4,404	861	(3,993)	(1,629)	410	(769)
2017	2	2	1,360	219	(1,561)	(1,109)	(201)	(890)
2018	(17)	(17)	1,279	(1,272)	110	1,830	1,389	558
2019	14,968	(160)	3,909	94	2,483	(1,313)	6,393	(1,219)
TOTAL	14,953	(175)	10,952	(99)	(2,960)	(2,220)	7,991	(2,319)

(Recorded transaction amounts exclude IBNR & other actuarial provisions)

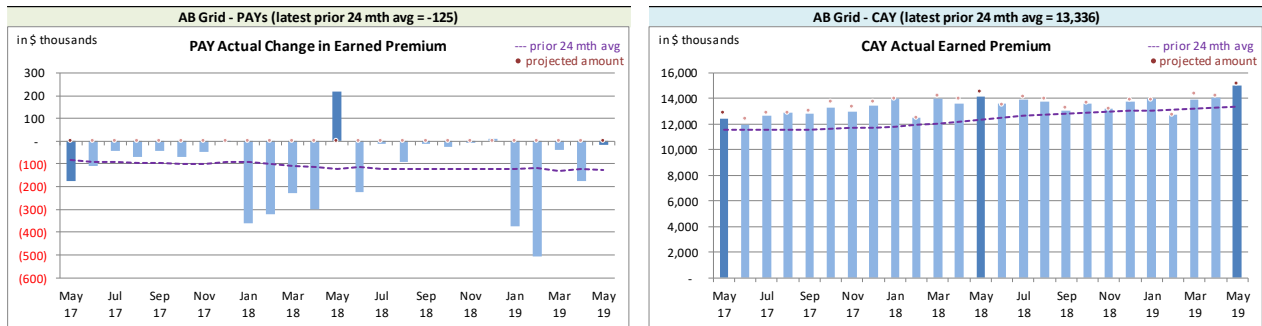
Claims transaction activity is generally volatile and changes from one month to the next are anticipated due to this natural “process variance” (i.e. random variation). Each month, the projection variances are reviewed for signs of projection bias and to identify potential ways to reduce the level of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

⁵There may be rounding differences in values in this document compared with the associated Bulletin and/or Operational Report.

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

The charts immediately below show actual **earned premium**⁶ 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.

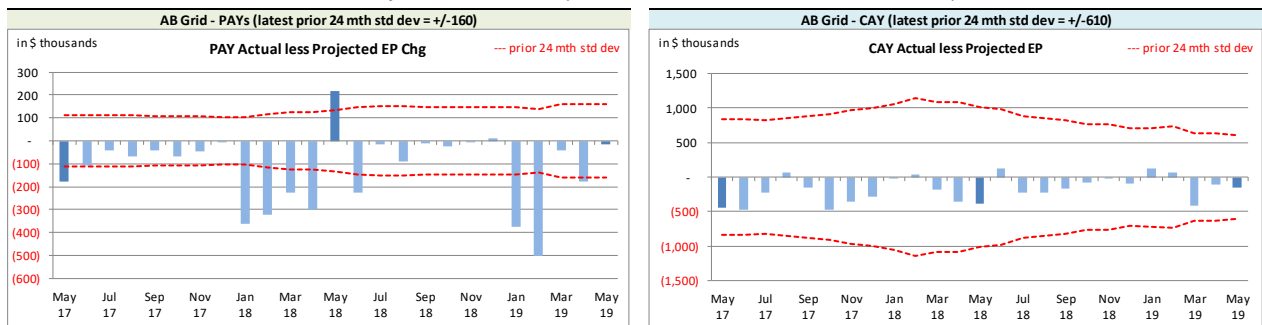
Alberta Grid RSP Actual Earned Premium by Calendar Month



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. As commented on early, this month’s variances are related a member’s activity in relation to recent audit findings.

The associated variances between the actual changes and the projections from the previous month are shown in the charts immediately below. **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.

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



⁶Premium 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.

On Latest \$ thousands		
Earned Premium	PAYs	CAY
Mthly Avg EP Chg (prior 24 mths)	(125)	13,336
std dev	160	610
A-P <> std dev	10	-
% <> std dev	40.0%	0.0%
norm <> std dev	31.7%	31.7%

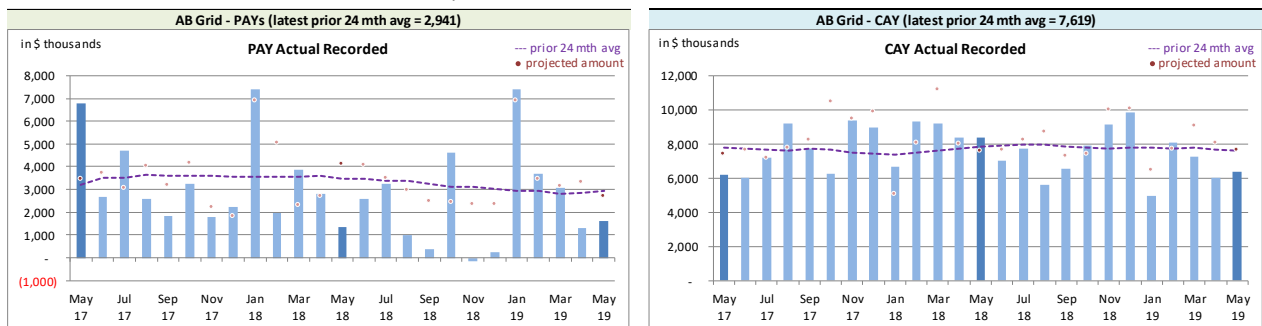
We project **earned premium** changes from known unearned premium and projected written premium levels, but upload the total projections as current accident year (CAY). This process has generated prior accident years' (PAYs) bias⁷, with actuals generally lower than projected, although the magnitude is not high relative to monthly

premium. In addition to the PAYs' bias, the CAY has also shown bias⁸, 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

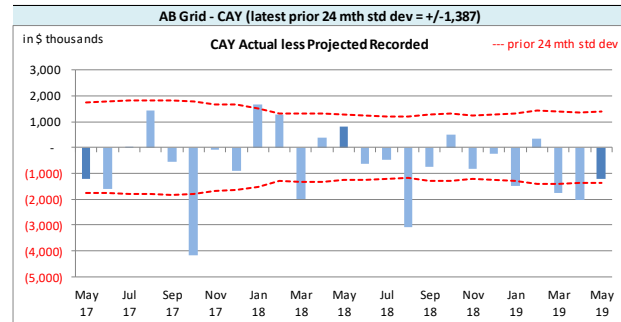
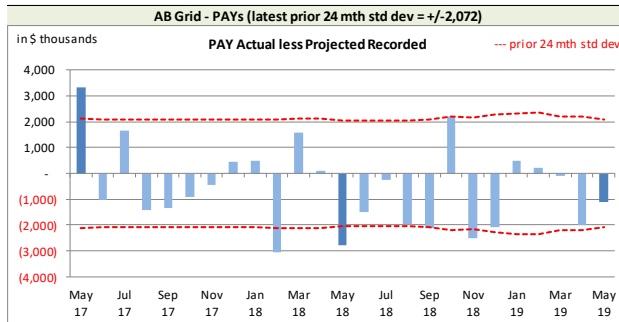


Recorded activity variances from the previous month's projections are shown in the charts at the top of the next page, including the "prior 24-month standard deviation" levels to show how the variances from projection compare with historical standard deviations.

⁷The PAYs' variances will show bias as the projection upload forces all earned premium projections to be attributed to the CAY.

⁸We 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 2019 has only 5 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	CAY
Mthly Avg Recorded (prior 24 mths)	2,941	7,619
std dev	2,072	1,387
A-P <> std dev	6	7
% <> std dev	24.0%	28.0%
norm <> std dev	31.7%	31.7%

With respect to **recorded** indemnity & allowed claims expense activity, 24% 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 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) **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.

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 on 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 May ratios for that row's calendar year.

In particular, per the *left* table on 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 levels⁹.

⁹A 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).

Similarly, for the year-to-date levels (to May), the two-sample t-test of means for 2009-2013 vs 2014-2019 for recorded ratios results in p-values below 5%, such that we would reject the hypothesis that the means are not different.

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

CAY avg of mthly ratios for yr

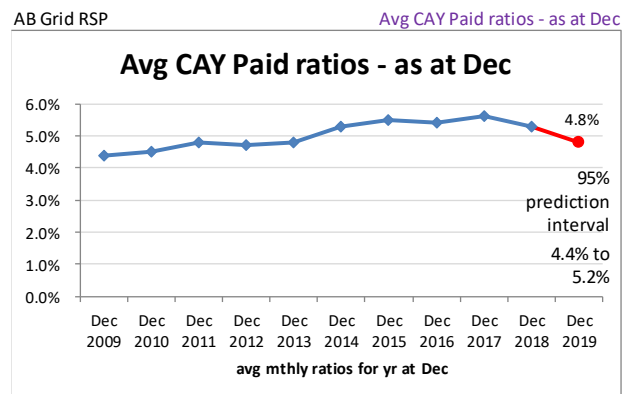
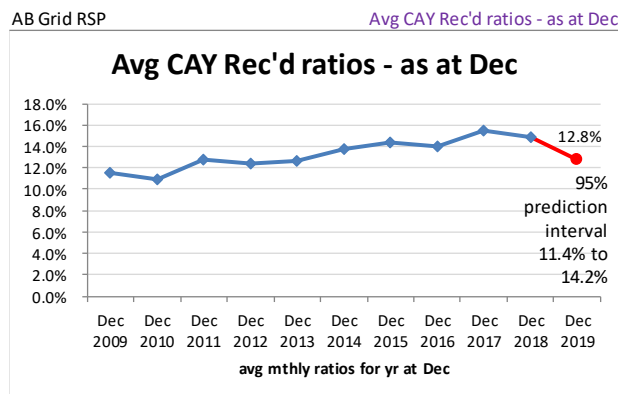
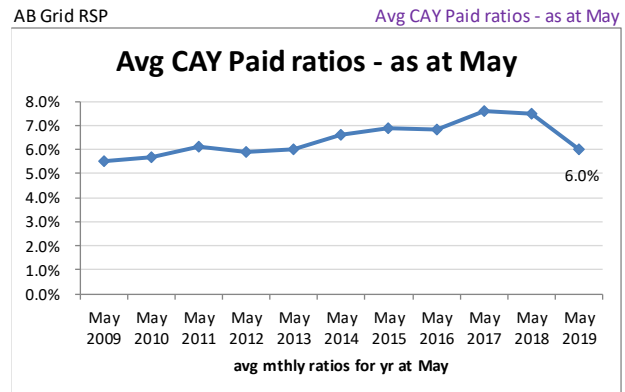
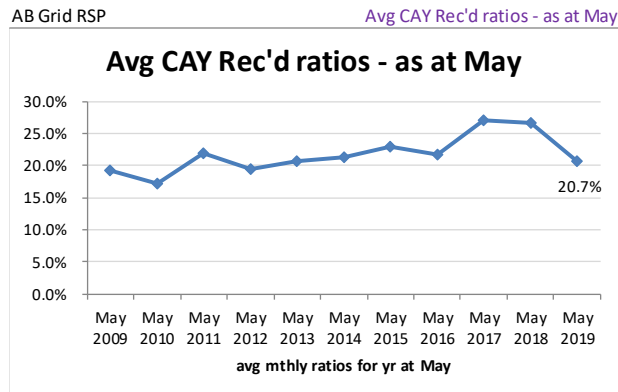
as at	Rec'd	yr-on-yr chg	Paid	yr-on-yr chg
Dec 2009	11.5%		4.4%	
Dec 2010	10.9%	(0.6%)	4.5%	0.1%
Dec 2011	12.8%	1.9%	4.8%	0.3%
Dec 2012	12.4%	(0.4%)	4.7%	(0.1%)
Dec 2013	12.6%	0.2%	4.8%	0.1%
Dec 2014	13.8%	1.2%	5.3%	0.5%
Dec 2015	14.4%	0.6%	5.5%	0.2%
Dec 2016	14.0%	(0.4%)	5.4%	(0.1%)
Dec 2017	15.5%	1.5%	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
May 2009	19.3%		5.5%	
May 2010	17.1%	(2.2%)	5.7%	0.2%
May 2011	22.0%	4.9%	6.1%	0.4%
May 2012	19.4%	(2.6%)	5.9%	(0.2%)
May 2013	20.6%	1.2%	6.0%	0.1%
May 2014	21.3%	0.7%	6.6%	0.6%
May 2015	23.0%	1.7%	6.9%	0.3%
May 2016	21.6%	(1.4%)	6.8%	(0.1%)
May 2017	27.0%	5.4%	7.6%	0.8%
May 2018	26.7%	(0.3%)	7.5%	(0.1%)
May 2019	20.7%	(6.0%)	6.0%	(1.5%)

There has been very strong (93%) correlation between the ytd monthly average **recorded** ratios and very strong (93%) correlation between the ytd monthly average **paid** ratios at May each year and the corresponding ytd monthly average ratios at December, suggesting the May **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). Using simple regression, 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 11.4% to 14.2%) for **recorded** and 4.8% (95% prediction interval of 4.4% to 5.2%) for **paid**. 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

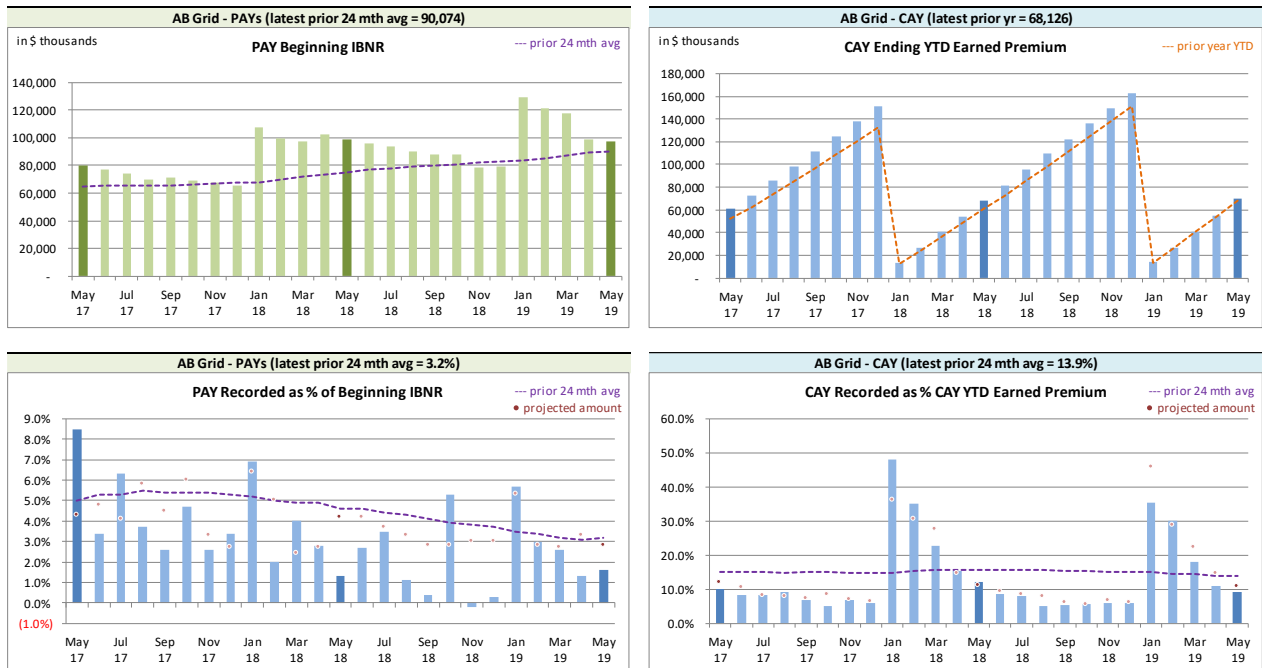


We are taking this information into consideration as part of our projection process.

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 influence¹⁰ 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:

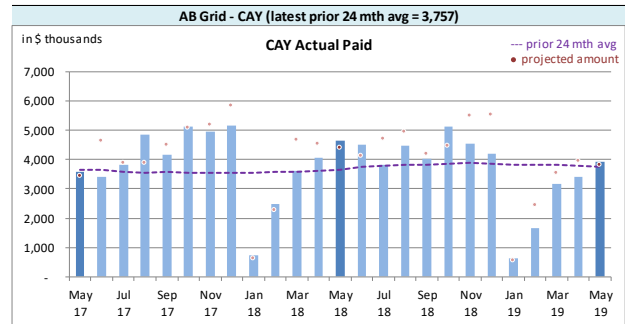
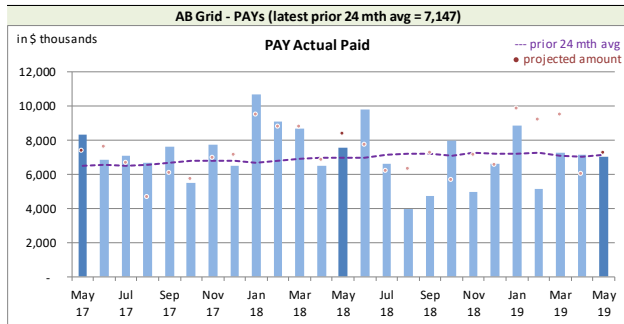
- to offset actual **recorded** activity (through loss ratio matching);
- the annual switchover as a current accident year becomes a prior accident year (occurs in January); and
- when a new valuation is implemented, where the valuation resulted in changes to the selection of prior accident years' ultimate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

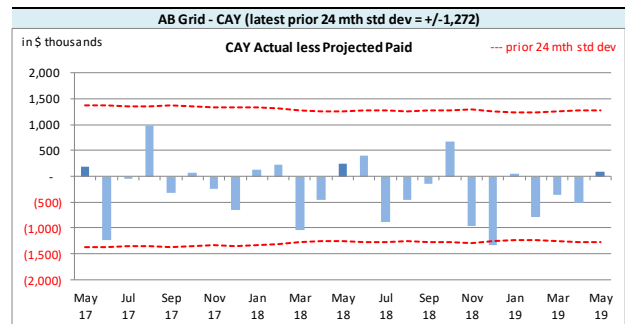
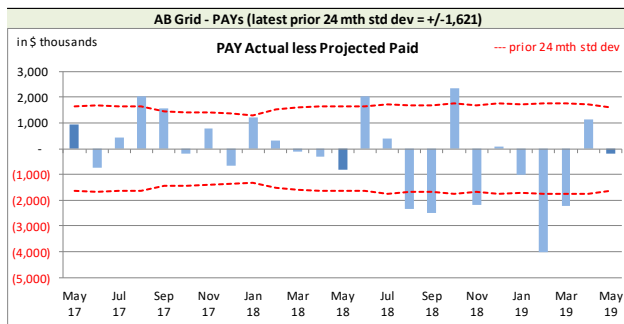
¹⁰Our recorded activity projections for the prior accident years are based on selected ratios of recorded activity to beginning unpaid balances, whereas the current accident year projections are based on selected ratios of year-to-date IBNR to year-to-date selected ultimate (i.e. selected LR x earned 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)	7,147	7,147	3,757
std dev	1,621	1,621	1,272
A-P <> std dev	9		1
% <> std dev	36.0%		4.0%
norm <> std dev	31.7%		31.7%

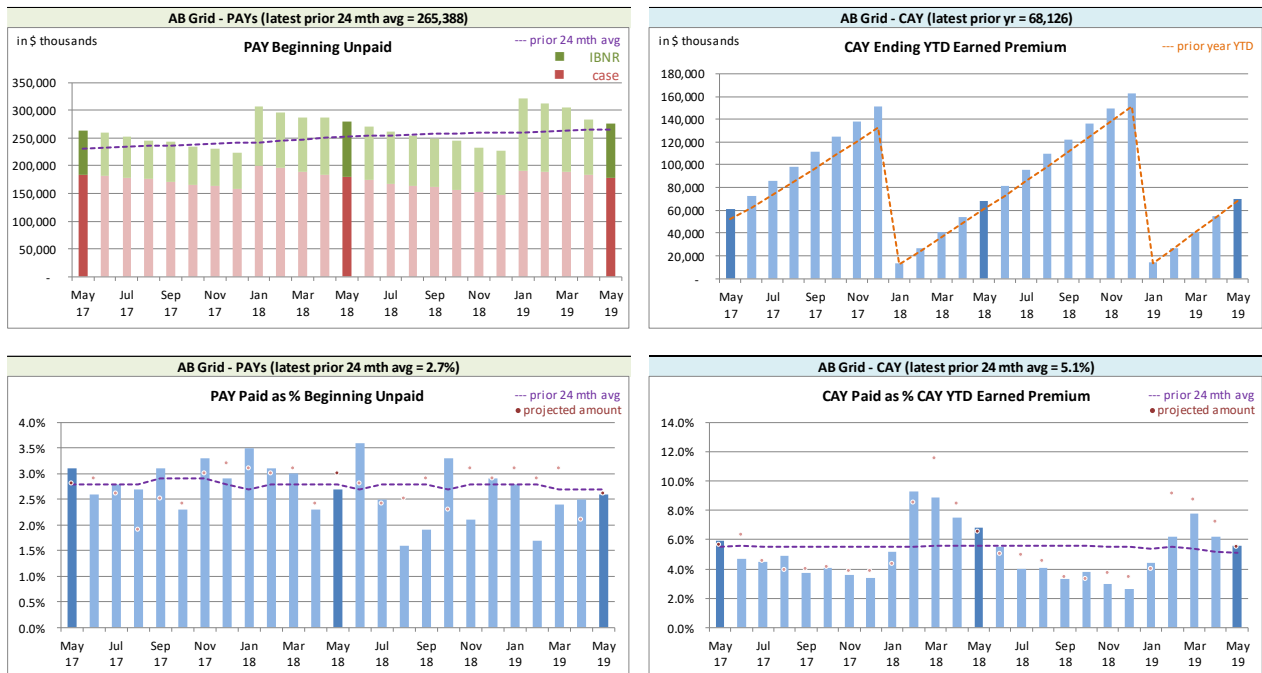
With respect to **paid** indemnity & allowed claims expense, 36% of the prior accident years' (PAYs) variances over the last 25 calendar months have fallen outside of one standard deviation of the actual **paid** amounts (see table on left), suggesting the projection process has performed no better than simply projecting the prior 24-month average

amount (assuming it follows a normal distribution), and we are actively looking into the projection process for means of improving this result. We do note that 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 influence¹¹ 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 IBNR¹², 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

¹¹Our 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.

¹²For 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					
Accident Year	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	30,899	(908)	(3,844)	1,382	14,064	(148)	41,119 326
2017	25,428	3,135	(2,260)	592	7,368	398	30,536 4,125
2018	40,139	(573)	(3,516)	1,102	10,532	302	47,155 831
2019	29,882	1,704	(2,141)	675	6,020	130	33,761 2,509
TOTAL	126,348	3,358	(11,761)	3,751	37,984	682	152,571 7,791

The IBNR provision is \$3.4 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, and due to the valuation implementation.

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 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, and due to the valuation implementation.

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:	(8,928)	662	5,657	1,148	(3,271)	1,810
balance as % unearned premium:	(9.7%)	0.7%	6.1%	1.3%	(3.5%)	2.0%
actual unearned premium:	92,371					
less projected:	188					

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 loss¹³ 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 expenses¹⁴, 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 91.1% rather than 89.7% (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.)

¹³“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).

¹⁴Allowed 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 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	(15,869)	(23.1%)	4,963	7.2%	(10,906)	(15.9%)	3,686	11.3%
CAY	62,552	91.1%	3,879	5.7%	66,431	96.8%	15,322	1.6%
TOTAL	46,683	68.0%	8,842	12.9%	55,525	80.9%	19,007	12.9%

(*“% 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, and due to the valuation implementation.

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, and due to the valuation implementation.

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 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

 IBNR + M/S actuarial present
 value adjustments

 discount rate
 1.44%

 interest rate margin
 25 basis pts

Amounts in \$000s					
Accident Year	Actual Apr. 2019	Actual May. 2019	Projected Jun. 2019	Projected Jul. 2019	Projected Dec. 2019
2004	(71)	(71)	(71)	(71)	(71)
2005	(2,451)	33	33	33	33
2006	(95)	(94)	(89)	(88)	(70)
2007	136	(29)	(26)	(27)	(18)
2008	(1)	26	25	24	21
2009	169	209	199	192	158
2010	920	759	725	704	579
2011	1,102	935	893	866	717
2012	1,796	1,428	1,362	1,325	1,088
2013	2,730	2,126	2,026	1,973	1,616
2014	7,776	6,979	6,644	6,483	5,276
2015	11,401	11,053	10,487	9,875	7,841
2016	18,799	17,765	17,234	16,887	14,169
2017	27,183	30,536	29,925	29,051	25,161
2018	47,329	47,155	46,140	45,184	40,131
2019	24,832	33,761	41,166	48,668	63,701
TOTAL	141,555	152,571	156,673	161,079	160,332
Change		11,016	4,102	4,406	

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 Apr. 2019	Actual May. 2019	Projected Jun. 2019	Projected Jul. 2019	Projected Dec. 2019
51.6%	2004	(79)	(79)	(79)	(79)	(79)
60.4%	2005	(2,522)	(107)	(107)	(107)	(107)
66.3%	2006	(104)	(104)	(99)	(97)	(78)
70.7%	2007	40	(135)	(128)	(125)	(101)
67.1%	2008	(50)	(29)	(28)	(27)	(22)
60.5%	2009	105	140	133	130	105
61.6%	2010	612	447	425	416	335
66.3%	2011	644	433	411	403	326
73.0%	2012	1,264	864	821	805	648
74.4%	2013	2,057	1,423	1,352	1,325	1,068
83.2%	2014	6,506	5,619	5,338	5,231	4,218
93.0%	2015	9,259	8,583	8,068	7,503	5,805
95.7%	2016	15,254	13,844	13,429	13,160	10,834
89.1%	2017	22,982	25,428	24,919	24,171	20,751
88.4%	2018	41,543	40,139	39,336	38,549	34,134
89.7%	2019	22,356	29,882	36,576	43,231	54,676
	TOTAL	119,867	126,348	130,367	134,489	132,513
	Change		6,481	4,019	4,122	

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

EXHIBIT C
Premium Liabilities
TABLE EXHIBIT C

	Amounts in \$000s				
	Actual Apr. 2019	Actual May. 2019	Projected Jun. 2019	Projected Jul. 2019	Projected Dec. 2019
Premium Liabilities					
(1) unearned premium (UP)	88,391	92,371	97,519	100,268	107,972
FOR MEMBER SHARING					
(2) expected future costs ratio {% of (1)}	94.3%	96.5%	96.6%	96.8%	97.8%
(3) expected future costs {(1) x (2)}	83,354	89,100	94,207	97,024	105,642
(4) premium deficiency / (deferred policy acquisition cost)	(5,037)	(3,271)	(3,312)	(3,244)	(2,330)
Excluding Actuarial Present Value Adjustments					
(5) expected future costs ratio {% of (1)}	89.4%	90.3%	90.5%	90.6%	91.6%
(6) expected future costs {(1) x (5)}	79,039	83,443	88,226	90,863	98,935
(7) premium deficiency / (deferred policy acquisition cost)	(9,352)	(8,928)	(9,293)	(9,405)	(9,037)

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 ending 2019		Projected Balances as at Dec. 31, 2019 (\$000s)							
		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
2004	-	(79)	(79)	-	-	8	-	8	8
2005	1,684	(107)	1,577	(19)	3	158	(2)	156	140
2006	175	(78)	97	(2)	-	10	-	10	8
2007	1,129	(101)	1,028	(22)	4	103	(2)	101	83
2008	565	(22)	543	(12)	2	54	(1)	53	43
2009	583	105	688	(17)	3	69	(2)	67	53
2010	2,802	335	3,137	(75)	13	314	(8)	306	244
2011	4,858	326	5,184	(135)	21	518	(13)	505	391
2012	5,021	648	5,669	(136)	23	567	(14)	553	440
2013	6,092	1,068	7,160	(179)	29	716	(18)	698	548
2014	10,054	4,218	14,272	(400)	71	1,427	(40)	1,387	1,058
2015	23,369	5,805	29,174	(934)	146	2,917	(93)	2,824	2,036
2016	25,123	10,834	35,957	(1,223)	216	4,495	(153)	4,342	3,335
2017	29,301	20,751	50,052	(1,952)	350	6,256	(244)	6,012	4,410
2018	37,440	34,134	71,574	(3,006)	501	8,875	(373)	8,502	5,997
PAYs (sub-total):	148,196	77,837	226,033	(8,112)	1,382	26,487	(963)	25,524	18,794
CAY (2019)	61,205	54,676	115,881	(4,983)	811	13,790	(593)	13,197	9,025
claims liabilities:	209,401	132,513	341,914	(13,095)	2,193	40,277	(1,556)	38,721	27,819
	Unearned Premium	Premium Deficiency / (DPAC)	Total Provision	discount	investment PfAD	nominal development PfAD	development PfAD discount	development PfAD	Total apvs
premium liabilities:	107,972	(9,037)	98,935	(3,746)	591	10,252	(390)	9,862	6,707
*Total may not be sum of parts, as apvs apply to future costs within UPR									
policy liabilities:			440,849	(16,841)	2,784	50,529	(1,946)	48,583	34,526

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, 2019 from the valuation), followed by the selected discount rate and the associated margin for investment income.

Selected Claims Development MfADs (Mar. 31, 2019)

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%	8.8%	10.0%
2013	10.0%	10.0%	9.9%	10.0%
2014	10.0%	10.0%	9.9%	10.0%
2015	10.0%	10.0%	10.0%	10.0%
2016	12.5%	10.0%	12.5%	12.5%
2017	12.5%	10.0%	12.5%	12.5%
2018	12.4%	10.0%	12.5%	12.4%
2019	12.2%	10.0%	7.1%	11.9%
2020	11.9%	10.0%	5.1%	10.4%
prem liab	11.9%	10.0%	5.1%	10.4%

discount rate: 1.44%
 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, 2019 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 (1.44%), the prior valuation assumption (1.93%) and the prior fiscal year end valuation assumption (2.28%) 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, 2019 projected Unpaid								
AY	0.44%	0.94%	1.44%	1.94%	2.44%	2.94%	1.93%	2.28%
2004 & prior	-	-	-	-	-	-	-	-
2005	2,303	2,294	2,284	2,275	2,266	2,257	2,275	2,269
2006	173	172	170	169	168	167	169	169
2007	864	857	851	845	839	833	845	841
2008	614	609	605	600	595	591	600	597
2009	601	596	591	586	581	576	586	582
2010	3,366	3,337	3,309	3,281	3,254	3,228	3,282	3,263
2011	4,851	4,806	4,763	4,720	4,678	4,637	4,721	4,691
2012	5,357	5,311	5,266	5,222	5,178	5,136	5,223	5,192
2013	7,889	7,820	7,752	7,686	7,621	7,558	7,687	7,641
2014	16,980	16,813	16,649	16,488	16,332	16,178	16,492	16,382
2015	29,819	29,481	29,151	28,828	28,515	28,208	28,837	28,613
2016	40,637	40,150	39,672	39,207	38,754	38,309	39,217	38,894
2017	55,115	54,354	53,621	52,909	52,210	51,532	52,925	52,430
2018	82,991	81,751	80,555	79,386	78,260	77,157	79,420	78,613
2019	120,610	118,779	116,992	115,260	113,581	111,954	115,297	114,116
Total	372,170	367,130	362,231	357,462	352,832	348,321	357,576	354,293
	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	0.44%	0.94%	1.44%	1.94%	2.44%	2.94%	1.93%	2.28%
Total	9,939	4,899	-	(4,769)	(9,399)	(13,910)	(4,655)	(7,938)
	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	0.44%	0.94%	1.44%	1.94%	2.44%	2.94%	1.93%	2.28%
2004 & prior	-	-	-	-	-	-	-	-
2005	0.8%	0.4%	-	(0.4%)	(0.8%)	(1.2%)	(0.4%)	(0.7%)
2006	1.8%	1.2%	-	(0.6%)	(1.2%)	(1.8%)	(0.6%)	(0.6%)
2007	1.5%	0.7%	-	(0.7%)	(1.4%)	(2.1%)	(0.7%)	(1.2%)
2008	1.5%	0.7%	-	(0.8%)	(1.7%)	(2.3%)	(0.8%)	(1.3%)
2009	1.7%	0.8%	-	(0.8%)	(1.7%)	(2.5%)	(0.8%)	(1.5%)
2010	1.7%	0.8%	-	(0.8%)	(1.7%)	(2.4%)	(0.8%)	(1.4%)
2011	1.8%	0.9%	-	(0.9%)	(1.8%)	(2.6%)	(0.9%)	(1.5%)
2012	1.7%	0.9%	-	(0.8%)	(1.7%)	(2.5%)	(0.8%)	(1.4%)
2013	1.8%	0.9%	-	(0.9%)	(1.7%)	(2.5%)	(0.8%)	(1.4%)
2014	2.0%	1.0%	-	(1.0%)	(1.9%)	(2.8%)	(0.9%)	(1.6%)
2015	2.3%	1.1%	-	(1.1%)	(2.2%)	(3.2%)	(1.1%)	(1.8%)
2016	2.4%	1.2%	-	(1.2%)	(2.3%)	(3.4%)	(1.1%)	(2.0%)
2017	2.8%	1.4%	-	(1.3%)	(2.6%)	(3.9%)	(1.3%)	(2.2%)
2018	3.0%	1.5%	-	(1.5%)	(2.8%)	(4.2%)	(1.4%)	(2.4%)
2019	3.1%	1.5%	-	(1.5%)	(2.9%)	(4.3%)	(1.4%)	(2.5%)
Total	2.7%	1.4%	-	(1.3%)	(2.6%)	(3.8%)	(1.3%)	(2.2%)
	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

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	(71)	-	-	-	-	-	(71)
2005	(2,451)	-	22	2,462	2,484	(101.3%)	33
2006	(95)	4	(4)	1	1	(1.1%)	(94)
2007	136	(5)	(170)	10	(165)	(121.3%)	(29)
2008	(1)	1	20	6	27	(2,700.0%)	26
2009	169	(6)	37	9	40	23.7%	209
2010	920	(35)	308	(434)	(161)	(17.5%)	759
2011	1,102	(40)	28	(155)	(167)	(15.2%)	935
2012	1,796	(66)	26	(328)	(368)	(20.5%)	1,428
2013	2,730	(102)	(113)	(389)	(604)	(22.1%)	2,126
2014	7,776	(299)	398	(896)	(797)	(10.2%)	6,979
2015	11,401	(342)	222	(228)	(348)	(3.1%)	11,053
2016	18,799	(528)	60	(566)	(1,034)	(5.5%)	17,765
2017	27,183	(772)	876	3,249	3,353	12.3%	30,536
2018	47,329	(1,005)	(487)	1,318	(174)	(0.4%)	47,155
2019	24,832	6,420	1,060	1,449	8,929	36.0%	33,761
Grand Total	141,555	3,225	2,283	5,508	11,016	7.8%	152,571

EXHIBIT G

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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	(79)	-	-	-	-	-	(79)
2005	(2,522)	-	-	2,415	2,415	(95.8%)	(107)
2006	(104)	4	(4)	-	-	-	(104)
2007	40	(2)	(173)	-	(175)	(437.5%)	(135)
2008	(50)	2	19	-	21	(42.0%)	(29)
2009	105	(4)	39	-	35	33.3%	140
2010	612	(24)	297	(438)	(165)	(27.0%)	447
2011	644	(26)	16	(201)	(211)	(32.8%)	433
2012	1,264	(51)	17	(366)	(400)	(31.6%)	864
2013	2,057	(82)	(112)	(440)	(634)	(30.8%)	1,423
2014	6,506	(260)	386	(1,013)	(887)	(13.6%)	5,619
2015	9,259	(278)	189	(587)	(676)	(7.3%)	8,583
2016	15,254	(458)	96	(1,048)	(1,410)	(9.2%)	13,844
2017	22,982	(689)	892	2,243	2,446	10.6%	25,428
2018	41,543	(831)	(573)	-	(1,404)	(3.4%)	40,139
2019	22,356	5,822	1,076	628	7,526	33.7%	29,882
Grand Total	119,867	3,123	2,165	1,193	6,481	5.4%	126,348