ALBERTA GRID RISK SHARING POOL

JUNE 2019 OPERATIONAL REPORT

ACTUARIAL HIGHLIGHTS

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FACILITY Association

ACTUARIAL HIGHLIGHTS

RSP ALBERTA GRID

OPERATIONAL REPORT

JUNE 2019

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1 Summary

1.1 Valuation Schedule (Fiscal Year 2019)

The June 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 decreased 2.0 points to 89.8%; discount rate increased 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 decreased 0.3 points to 88.8%; discount rate decreased 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 increased 0.9 points to 89.7%; discount rate decreased 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 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[1]

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

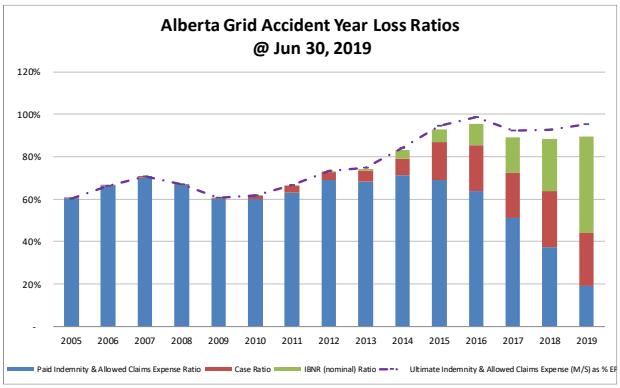
Consideration and assessment of potential impacts of legal decisions and changes in legislation / regulation constitutes a regular part of the valuation process. Descriptions of some of the more recent changes are provided below.

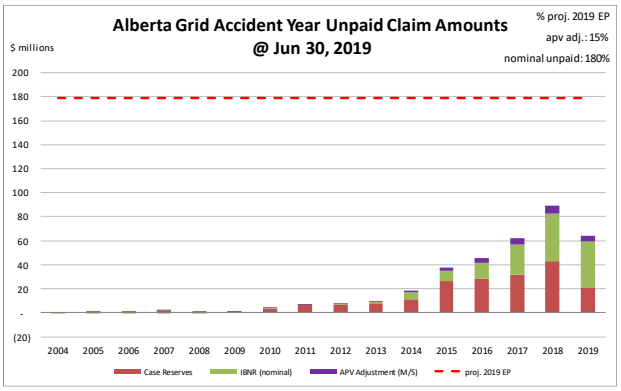
In the **Alberta Treasury Board and Finance Notice 04-2018** (Clarification of Minor Injury Regulation), dated **May 17, 2018**, the Alberta Superintendent of Insurance advised that clarifying amendments have been made to the definition of minor injuries under the Minor Injury Regulation (MIR). With the **most recent** valuation (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.

1.4 Current Provision Summary

The charts immediately below show the current levels of claim liabilities[2] booked by accident year[3]. 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 ($26.4 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

[1]This 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.

[2]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.

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

of the right chart at the bottom of the previous page). 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	189,381	54.3%
ibnr	132,652	38.1%
M/S apv adjust.	26,418	7.6%
M/S total	348,451	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 59% of the IBNR balance relates to accident years 2018 and 2019 (see Exhibit B). Approximately 86% 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	96,356	103.5%
prem def/(dpac)	(9,178)	(9.9%)
M/S apv adjust.	5,911	6.3%
M/S total	93,089	100.0%

policy liabilities ($000s)

	amt	%
claim	322,033	72.9%
premium	87,178	19.7%
M/S apv adjust.	32,329	7.3%
M/S total	441,540	100.0%

2 Activity During the Month of June 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 Report[4].

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	(224)	(224)	4,303	387	(2,924)	(371)	1,379	16
2017	(241)	(241)	955	(204)	(714)	(64)	241	(268)
2018	(154)	(154)	1,060	(1,452)	(970)	739	89	(714)
2019	14,616	103	3,322	(548)	1,210	(1,245)	4,532	(1,792)
TOTAL	13,997	(517)	9,641	(1,816)	(3,399)	(941)	6,242	(2,758)

(Recorded transaction amounts exclude IBNR & other actuarial provisions)

It is typically unusual to see actual earned premium transactions affecting accident years older than the first prior accident year – the changes in 2018 and prior accident years reflect activity undertaken by certain members to remove risks from the RSP, reflecting recent audit findings.

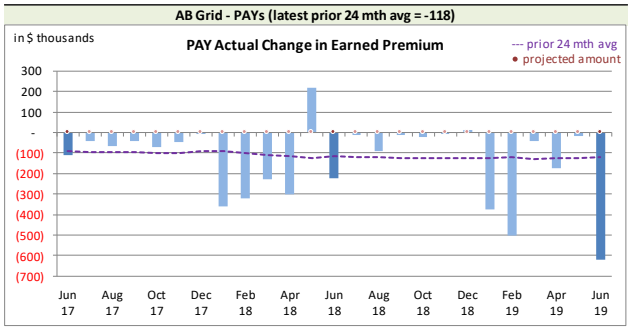
[4]There may be rounding differences in values in this document compared with the associated Bulletin and/or Operational Report.

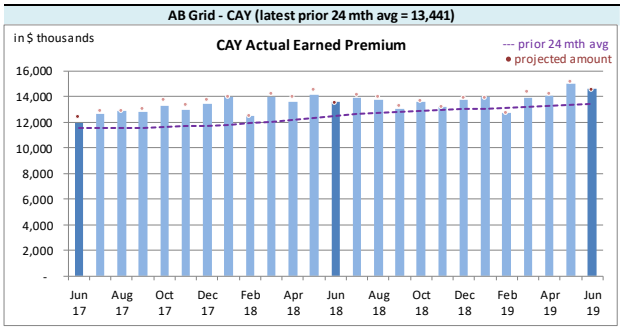
Claims transaction activity is generally volatile and changes from one month to the next are anticipated due to this natural "process variance" (i.e. random variation). Each month, the projection variances are reviewed for signs of projection bias and to identify potential ways to reduce the level of 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**[5] 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*

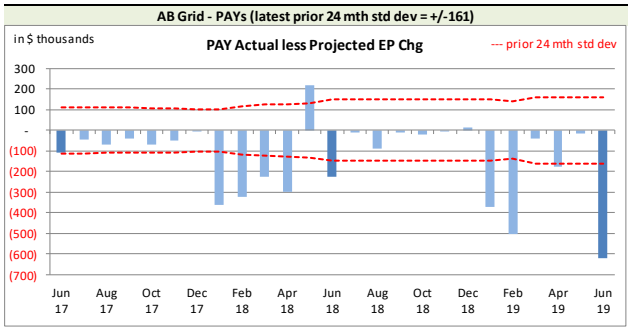


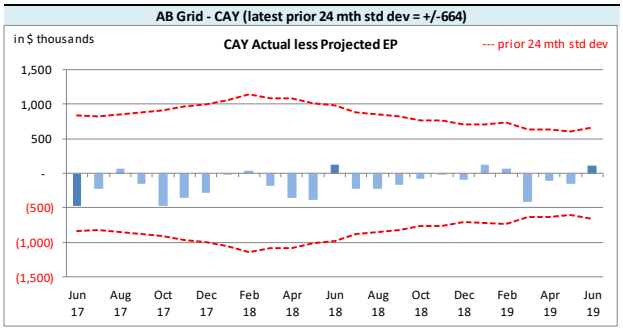


Earned premium changes during a given calendar month in relation to prior accident years tend to be at modest levels, although relatively high levels generally occur at the beginning of each year. As commented on early, this month's variances are related certain members' activity in relation to recent 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*





[5]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.

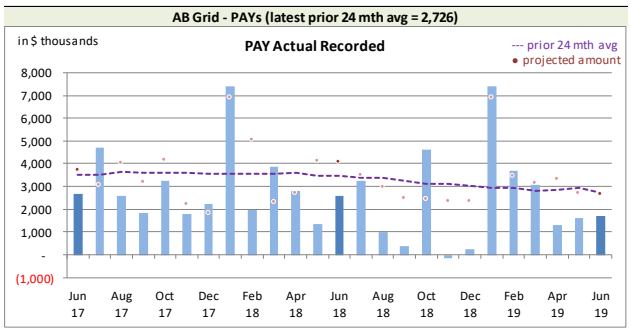
On Latest $ thousands		
Earned Premium	PAYs	CAY
Mthly Avg EP Chg (prior 24 mths)	(118)	13,441
std dev	161	664
A-P <> std dev	10	-
% <> std dev	40.0%	0.0%
norm <> std dev	31.7%	31.7%

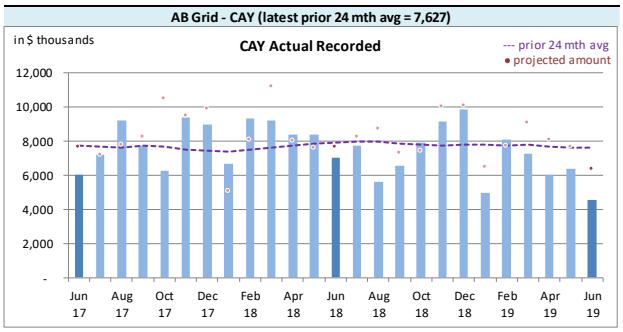
We project **earned premium** changes from known unearned premium and projected written premium levels, but upload the total projections as current accident year (CAY). This process has generated prior accident years' (PAYs) bias[6], with actuals generally lower than projected, although the magnitude is not high relative to monthly premium. In addition to the PAYs' bias, the CAY has also shown bias[7], 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*



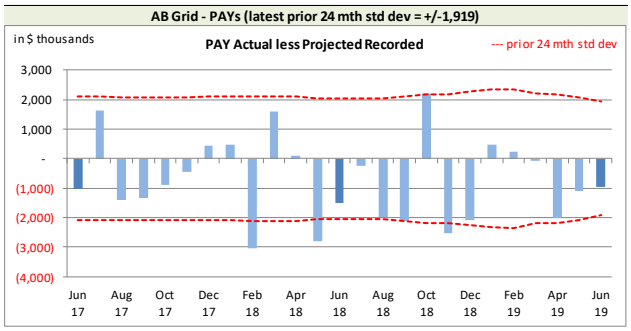


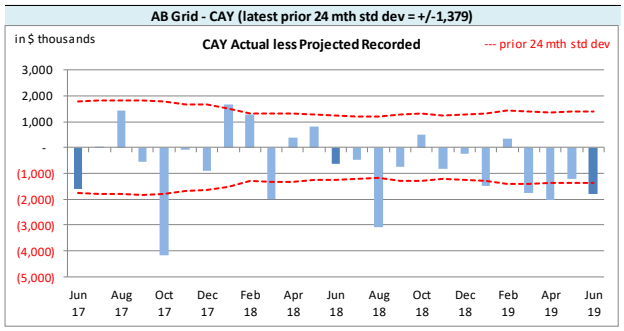
Recorded activity variances from the previous month's projections are shown in the charts at the top of the next page, including the "prior 24-month standard deviation" levels to show how the variances from projection compare with historical standard deviations.

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

[7]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 June 2019 has only 6 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)	2,726	7,627
std dev	1,919	1,379
A-P <> std dev	5	8
% <> std dev	20.0%	32.0%
norm <> std dev	31.7%	31.7%

With respect to **recorded** indemnity & allowed claims expense activity, 20% 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, but on a lagging 12-month basis, bias is indicated (our projections tend to be too high and we are considering this for future projections).

The current accident year (CAY) **recorded** variances fell outside of one standard deviation 32% 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, but it is indicated on a lagging 12-month basis (our projections tend to be too high and we are considering this for future projections).

The CAY **recorded** variance (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 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 June 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 levels[8].

[8]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).

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%)

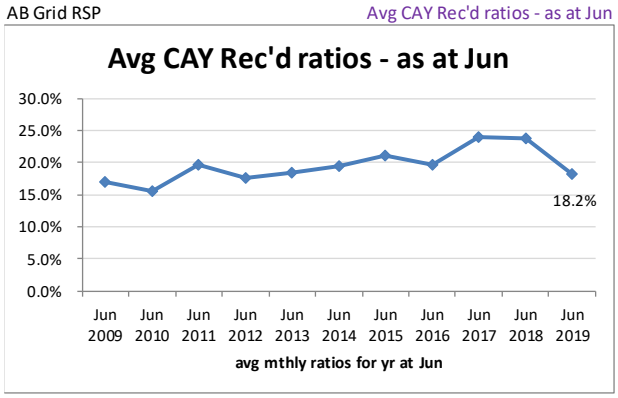
CAY avg of mthly ratios for yr

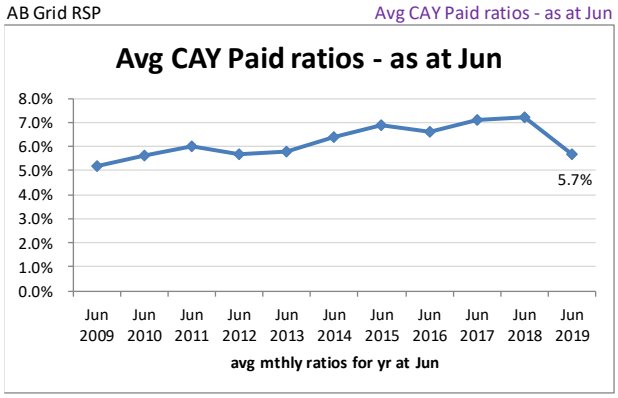
as at	Rec'd	yr-on-yr chg	Paid	yr-on-yr chg
Jun 2009	17.0%		5.2%	
Jun 2010	15.5%	(1.5%)	5.6%	0.4%
Jun 2011	19.7%	4.2%	6.0%	0.4%
Jun 2012	17.6%	(2.1%)	5.7%	(0.3%)
Jun 2013	18.4%	0.8%	5.8%	0.1%
Jun 2014	19.4%	1.0%	6.4%	0.6%
Jun 2015	21.0%	1.6%	6.9%	0.5%
Jun 2016	19.6%	(1.4%)	6.6%	(0.3%)
Jun 2017	23.9%	4.3%	7.1%	0.5%
Jun 2018	23.7%	(0.2%)	7.2%	0.1%
Jun 2019	18.2%	(5.5%)	5.7%	(1.5%)

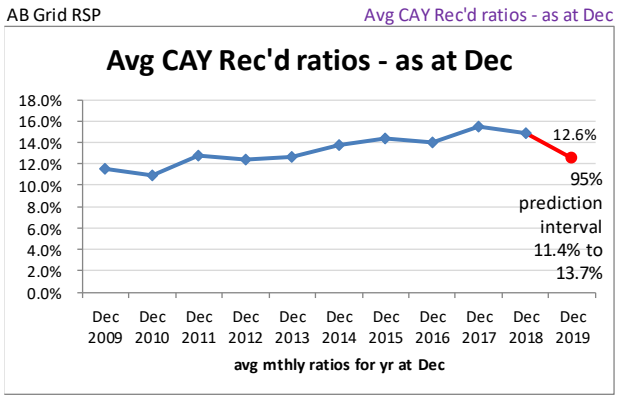
There has been very strong (95%) correlation between the ytd monthly average **recorded** ratios and very strong (95%) correlation between the ytd monthly average **paid** ratios at June each year and the corresponding ytd monthly average ratios at December, suggesting the June **recorded** ratio is 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 12.6% (95% prediction interval of 11.4% to 13.7%) for **recorded** and 4.7% (95% prediction interval of 4.3% to 5.1%) for **paid**. The results are presented in charts at the top of the next page.

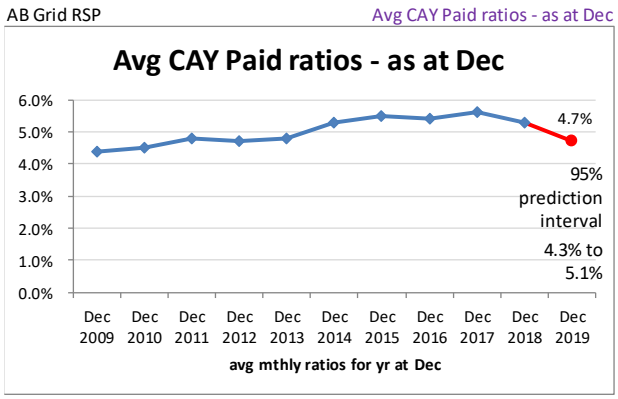
Similarly, for the year-to-date levels (to June), the two-sample t-test of means for 2009-2013 vs 2014-2019 for recorded ratios results in p-values below 5%, such that we would reject the hypothesis that the means are not different.

Alberta Grid RSP 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 influence[9] ***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:

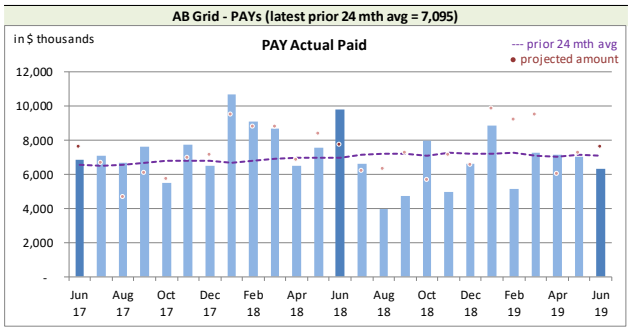
- to offset actual **recorded** activity (through loss ratio matching);
- the annual switchover as a current accident year becomes a prior accident year (occurs in January); and
- when a new valuation is implemented, where the valuation resulted in changes to the selection of prior accident years' ultimate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

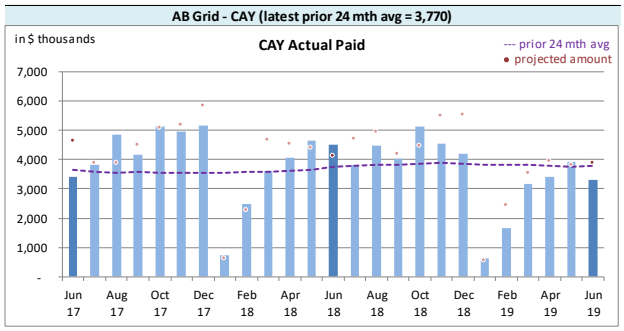
2.1.c AvsP: Paid Indemnity & Allowed Claims Expense

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.

[9]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.

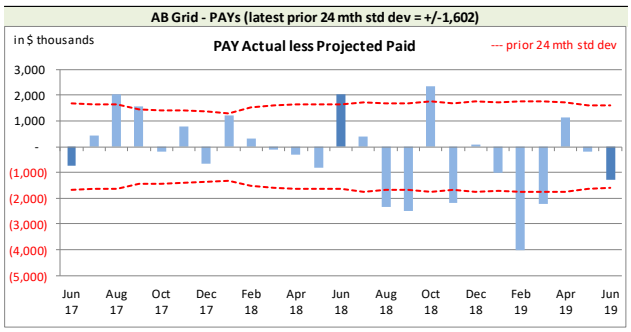
*Alberta Grid RSP Actual **Paid** activity by Calendar Month*

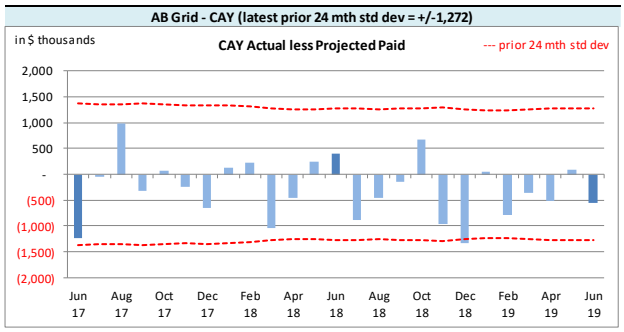




Paid activity variances from the previous month's projections are shown in the charts immediately below, including the "prior 24-month standard deviation" levels to show how the variances from projection compare with historical standard deviations.

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





On Latest $ thousands		
Paid	PAYs	CAY
Mthly Avg Paid (prior 24 mths)	7,095	3,770
std dev	1,602	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, but on a lagging 12-month basis, bias is indicated (our projections tend to be too high and we are considering this for future projections).

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[10] ***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[11], 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

[10]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.

[11]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

	IBNR		actuarial present value adjustments: Discount Amount		actuarial present value adjustments: 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	29,306	(230)	(3,733)	(6)	13,591	(42)	39,164	(278)
2017	24,972	53	(2,215)	-	7,219	(2)	29,976	51
2018	39,913	577	(3,466)	(55)	10,381	166	46,828	688
2019	38,461	1,885	(2,562)	(27)	7,203	78	43,102	1,936
TOTAL	132,652	2,285	(11,976)	(88)	38,394	200	159,070	2,397

The IBNR provision is $2.3 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 immediately 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:	(9,178)	115	5,911	(70)	(3,267)	45
balance as % unearned premium:	(9.5%)	-	6.1%	-	(3.4%)	-
actual unearned premium:	96,356					
less projected:	(1,163)					

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[12] 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[13], 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 91.6% 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.)

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	(16,434)	(19.9%)	4,396	5.3%	(12,038)	(14.6%)	(1,132)	1.3%
CAY	75,664	91.6%	4,641	5.6%	80,305	97.2%	13,873	0.4%
TOTAL	59,229	71.7%	9,037	10.9%	68,266	82.6%	12,741	1.7%

("% 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

[12] "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).

[13] Allowed claims expenses are first party legal and other expenses as listed in the RSP Claims Guide. Claims expenses paid through the member company expense allowance are NOT included in this analysis.

Operational Report.

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

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

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

6 EXHIBITS

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

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

EXHIBIT A

IBNR for Member Sharing – includes Actuarial Present Value Adjustments

TABLE EXHIBIT A

IBNR + M/S actuarial present value adjustments

discount rate
1.44%

interest rate margin
25 basis pts

Amounts in $000s					
Accident Year	Actual May. 2019	Actual Jun. 2019	Projected Jul. 2019	Projected Aug. 2019	Projected Dec. 2019
2004	(71)	(71)	(71)	(71)	(71)
2005	33	(270)	(270)	(270)	(270)
2006	(94)	(92)	(91)	(87)	(73)
2007	(29)	(375)	(369)	(352)	(293)
2008	26	21	21	21	18
2009	209	205	198	191	163
2010	759	606	588	570	484
2011	935	572	551	539	463
2012	1,428	1,266	1,231	1,191	1,012
2013	2,126	2,007	1,953	1,887	1,600
2014	6,979	7,069	6,902	6,651	5,613
2015	11,053	11,114	10,458	10,006	8,293
2016	17,765	17,112	16,770	16,045	14,076
2017	30,536	29,976	29,103	28,278	25,160
2018	47,155	46,828	45,858	44,940	40,730
2019	33,761	43,102	51,137	58,781	63,466
TOTAL	152,571	159,070	163,969	168,320	160,371
Change		6,499	4,899	4,351	

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

EXHIBIT B

IBNR

TABLE EXHIBIT B — Amounts in $000s

IBNR

Ultimate Loss Ratio	Accident Year	Actual May. 2019	Actual Jun. 2019	Projected Jul. 2019	Projected Aug. 2019	Projected Dec. 2019
51.6%	2004	(79)	(79)	(79)	(79)	(79)
60.4%	2005	(107)	(304)	(304)	(304)	(304)
66.3%	2006	(104)	(103)	(101)	(97)	(81)
70.7%	2007	(135)	(481)	(471)	(452)	(379)
67.1%	2008	(29)	(33)	(32)	(31)	(26)
60.5%	2009	140	136	133	128	108
61.6%	2010	447	322	316	303	254
66.3%	2011	433	71	70	67	56
73.0%	2012	864	720	706	678	569
74.4%	2013	1,423	1,330	1,303	1,251	1,050
83.2%	2014	5,619	5,796	5,680	5,453	4,580
93.0%	2015	8,583	8,679	8,071	7,667	6,244
95.7%	2016	13,844	13,252	12,987	12,338	10,692
89.1%	2017	25,428	24,972	24,223	23,496	20,794
88.4%	2018	40,139	39,913	39,115	38,333	34,636
89.7%	2019	29,882	38,461	45,672	52,527	54,474
	TOTAL	126,348	132,652	137,289	141,278	132,588
	Change		6,304	4,637	3,989	

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

EXHIBIT C

Premium Liabilities

TABLE EXHIBIT C	Amounts in $000s				
Premium Liabilities	Actual May. 2019	Actual Jun. 2019	Projected Jul. 2019	Projected Aug. 2019	Projected Dec. 2019
(1) unearned premium (UP)	92,371	96,356	99,584	102,728	107,584
FOR MEMBER SHARING					
(2) expected future costs ratio {% of (1)}	96.5%	96.6%	96.8%	97.0%	97.8%
(3) expected future costs {(1) x (2)}	89,100	93,089	96,366	99,597	105,263
(4) premium deficiency / (deferred policy acquisition cost)	(3,271)	(3,267)	(3,218)	(3,131)	(2,321)
Excluding Actuarial Present Value Adjustments					
(5) expected future costs ratio {% of (1)}	90.3%	90.5%	90.6%	90.8%	91.6%
(6) expected future costs {(1) x (5)}	83,443	87,178	90,247	93,273	98,580
(7) premium deficiency / (deferred policy acquisition cost)	(8,928)	(9,178)	(9,337)	(9,455)	(9,004)

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	679	(304)	375	(5)	1	38	-	38	34	409
2006	183	(81)	102	(2)	-	10	-	10	8	110
2007	1,451	(379)	1,072	(23)	4	107	(2)	105	86	1,158
2008	589	(26)	563	(13)	2	56	(1)	55	44	607
2009	603	108	711	(17)	3	71	(2)	69	55	766
2010	2,704	254	2,958	(71)	12	296	(7)	289	230	3,188
2011	5,336	56	5,392	(140)	22	539	(14)	525	407	5,799
2012	5,142	569	5,711	(137)	23	571	(14)	557	443	6,154
2013	6,129	1,050	7,179	(179)	29	718	(18)	700	550	7,729
2014	9,340	4,580	13,920	(390)	70	1,392	(39)	1,353	1,033	14,953
2015	23,108	6,244	29,352	(939)	147	2,935	(94)	2,841	2,049	31,401
2016	25,791	10,692	36,483	(1,240)	219	4,560	(155)	4,405	3,384	39,867
2017	28,744	20,794	49,538	(1,932)	347	6,192	(241)	5,951	4,366	53,904
2018	38,097	34,636	72,733	(3,055)	509	9,019	(379)	8,640	6,094	78,827
PAYs (sub-total):	147,896	78,114	226,010	(8,143)	1,388	26,512	(966)	25,546	18,791	244,801
CAY (2019)	60,979	54,474	115,453	(4,964)	808	13,739	(591)	13,148	8,992	124,445
claims liabilities:	208,875	132,588	341,463	(13,107)	2,196	40,251	(1,557)	38,694	27,783	369,246
	Unearned Premium	Premium Deficiency / (DPAC)	Total Provision	discount	investment PfAD	nominal development PfAD	development PfAD discount	development PfAD	Total apvs	TOTAL*
premium liabilities:	107,584	(9,004)	98,580	(3,733)	589	10,215	(388)	9,827	6,683	105,263
										*Total may not be sum of parts, as apvs apply to future costs within UPR
policy liabilities:			**440,043**	**(16,840)**	**2,785**	**50,466**	**(1,945)**	**48,521**	**34,466**	**474,509**

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	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%	8.8%	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

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 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	33	-	(303)	-	(303)	(918.2%)	(270)
2006	(94)	5	(3)	-	2	(2.1%)	(92)
2007	(29)	3	(349)	-	(346)	1,193.1%	(375)
2008	26	(1)	(4)	-	(5)	(19.2%)	21
2009	209	(10)	6	-	(4)	(1.9%)	205
2010	759	(34)	(119)	-	(153)	(20.2%)	606
2011	935	(42)	(321)	-	(363)	(38.8%)	572
2012	1,428	(66)	(96)	-	(162)	(11.3%)	1,266
2013	2,126	(100)	(19)	-	(119)	(5.6%)	2,007
2014	6,979	(335)	425	-	90	1.3%	7,069
2015	11,053	(566)	627	-	61	0.6%	11,114
2016	17,765	(531)	(122)	-	(653)	(3.7%)	17,112
2017	30,536	(611)	51	-	(560)	(1.8%)	29,976
2018	47,155	(1,015)	688	-	(327)	(0.7%)	46,828
2019	33,761	7,405	1,936	-	9,341	27.7%	43,102
Grand Total	**152,571**	**4,102**	**2,397**	**-**	**6,499**	**4.3%**	**159,070**

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	(107)	-	(197)	-	(197)	184.1%	(304)
2006	(104)	5	(4)	-	1	(1.0%)	(103)
2007	(135)	7	(353)	-	(346)	256.3%	(481)
2008	(29)	1	(5)	-	(4)	13.8%	(33)
2009	140	(7)	3	-	(4)	(2.9%)	136
2010	447	(22)	(103)	-	(125)	(28.0%)	322
2011	433	(22)	(340)	-	(362)	(83.6%)	71
2012	864	(43)	(101)	-	(144)	(16.7%)	720
2013	1,423	(71)	(22)	-	(93)	(6.5%)	1,330
2014	5,619	(281)	458	-	177	3.2%	5,796
2015	8,583	(515)	611	-	96	1.1%	8,679
2016	13,844	(415)	(177)	-	(592)	(4.3%)	13,252
2017	25,428	(509)	53	-	(456)	(1.8%)	24,972
2018	40,139	(803)	577	-	(226)	(0.6%)	39,913
2019	29,882	6,694	1,885	-	8,579	28.7%	38,461
Grand Total	**126,348**	**4,019**	**2,285**	**-**	**6,304**	**5.0%**	**132,652**