



**ALBERTA GRID RISK SHARING POOL**

**APRIL 2017 OPERATIONAL REPORT**

**ACTUARIAL HIGHLIGHTS**

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**ACTUARIAL HIGHLIGHTS**

**RSP ALBERTA GRID**

**OPERATIONAL REPORT**

**APRIL 2017**

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## 1 Summary

### 1.1 Valuation Schedule (Fiscal Year 2017)

The April 2017 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 2017.

ALBERTA GRID RISK SHARING POOL FISCAL YEAR 2017 – SCHEDULE OF VALUATIONS			
Valuation Date	Discount Rate (per annum)	Operational Report	Description of Changes
Sep. 30, 2016 (completed)	0.54% mfad: 25 bp	Oct. 2016	updated valuation (roll forward): accident year 2016 loss ratio increased 2.0 points to 83.5%; discount rate decreased by 6 basis points; no change to selected margins for adverse deviations
Dec. 31, 2016 (completed)	1.06% mfad: 25 bp	Mar. 2017	updated valuation: accident year 2016 loss ratio increased 5.8 points to 89.3%; accident year 2017 loss ratio increased 6.3 points to 84.2%; discount rate increased by 52 basis points; no change to selected margins for adverse deviations
Mar. 31, 2017		May 2017	update valuation (roll forward):
Jun. 30, 2017		Aug. 2017	update valuation:
Sep. 30, 2017		Oct. 2017	update valuation (roll forward):

Under the proposed schedule for fiscal year 2017, the “off-half” valuation quarters ending March 31, 2017 and September 30, 2017 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

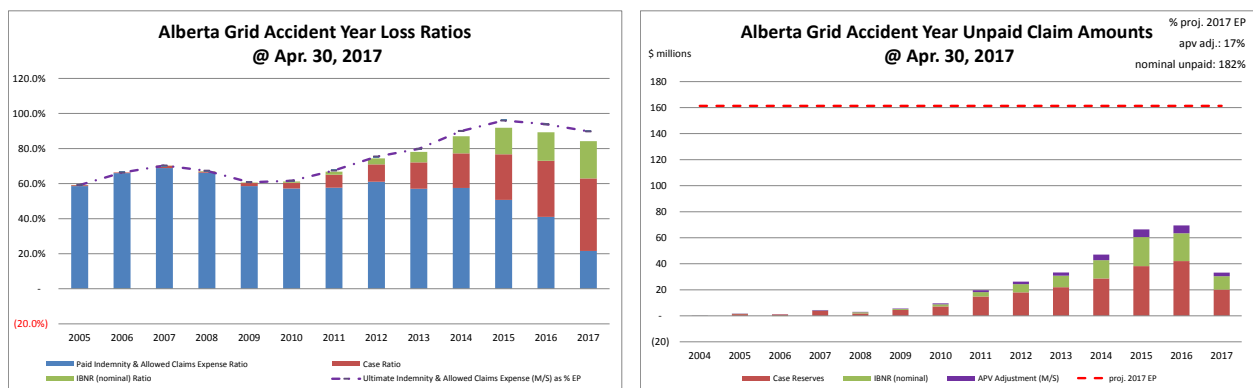
Consideration and assessment of potential impacts of legal decisions and changes in legislation /

regulation constitutes a regular part of the valuation process. Descriptions of some of the more recent changes are provided below (there have been no changes in these descriptions since last month’s Highlights).

**Alberta Bill 39** (Enhancing Consumer Protection in Auto Insurance Act) was introduced into the Legislature by the Minister of Finance on November 6, 2013, and received Royal Assent on December 11, 2013. Bill 39 includes various amendments and provisions such as allowing for both mandatory and optional auto insurance premiums to be regulated by the independent Automobile Insurance Rate Board (AIRB), the introduction of an Insurer file and approve system for premium adjustments instead of an annual industry-wide rate adjustment, improved access to health care after a collision and strengthened Insurance Company solvency requirements. No specific adjustments have been made to the most recent valuation (December 31, 2016) assumptions based on Bill 39.

**1.4 Current Provision Summary**

The charts immediately below show the current levels of claim liabilities<sup>1</sup> booked by accident year<sup>2</sup>. The left chart displays life-to-date payments, case reserves, IBNR, and the total including actuarial present value adjustments against accident year earned premium. The right chart shows the associated dollar amounts for the components of the claim liabilities and the current projected amount of 2017 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 (\$26.6 million – see table at top of next page) represents 17% of the earned premium projected for the full year 2017 (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.

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

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

claim liabilities (\$000s)

	amt	%
case	203,978	63.6%
ibnr	90,058	28.1%
M/S apv adjust.	26,646	8.3%
M/S total	320,682	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 pool is in case reserves. Approximately 35% of the IBNR balance relates to accident years 2016 and 2017 (see Exhibit B). Approximately 78% of the M/S total claim

liabilities are related to accident years 2013-2017 inclusive (i.e. the most recent 5 accident years).

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

premium liabilities (\$000s)

	amt	%
unearned prem	72,026	109.6%
prem def/(dpac)	(11,025)	(16.8%)
M/S apv adjust.	4,698	7.2%
M/S total	65,699	100.0%

policy liabilities (\$000s)

	amt	%
claim	294,036	76.1%
premium	61,001	15.8%
M/S apv adjust.	31,344	8.1%
M/S total	386,381	100.0%

## 2 Activity During the Month of April 2017

### 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<sup>3</sup>.

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

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	1,803	(2,223)	(2,472)	32	(669)	(2,191)
2015	(2)	(2)	762	(771)	(2,212)	(1,829)	(1,450)	(2,600)
2016	(136)	(136)	1,530	(424)	(261)	322	1,269	(102)
2017	12,164	(148)	3,884	89	3,046	(76)	6,930	13
TOTAL	12,027	(286)	7,979	(3,328)	(1,899)	(1,551)	6,081	(4,880)

(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". 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

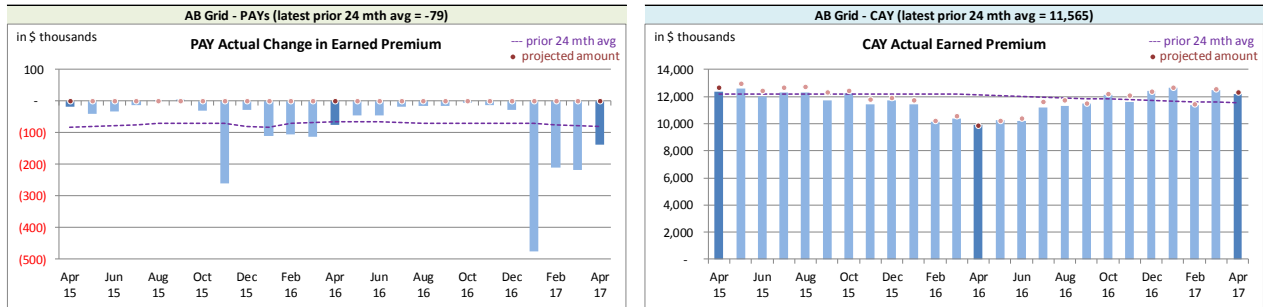
The charts at the top of the next page show actual **earned premium**<sup>4</sup> activity in each of the most recent 25 calendar months, along with a "prior 24-month average" to show how each month's actual

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

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

compares with the average amount of the preceding 24 calendar months.

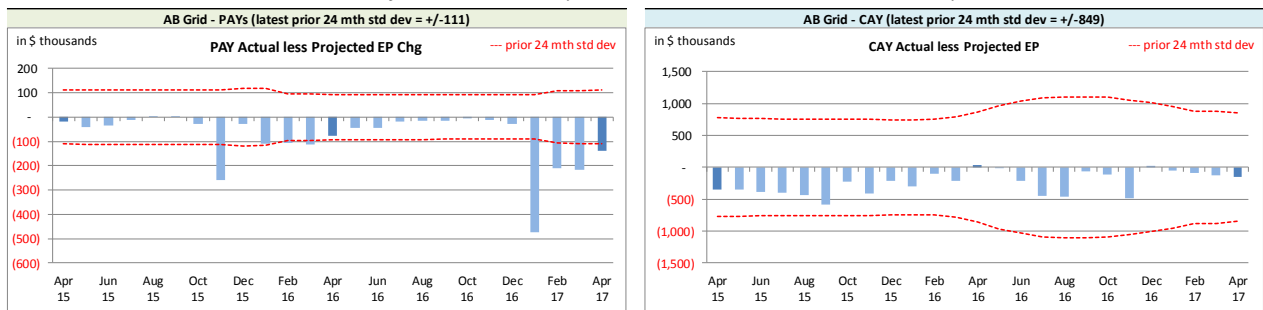
*Alberta Grid RSP Actual Earned Premium by Calendar Month*



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

The associated variance 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*



On Latest \$ thousands			
<b>Earned Premium</b>	PAYS	CAY	
Mthly Avg EP Chg (prior 24 mths)	(79)	11,565	
std dev	111	849	
A-P <> std dev	7	-	
% <> std dev	28.0%	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' bias<sup>5</sup>, with actuals generally lower than projected. However, the magnitude is not high relative to monthly

premium, and the variances are within the prior 24-month standard deviation more often than indicated by a normal distribution (see table above). In addition to the prior accident years' bias, the CAY has also shown bias, with actuals being generally lower than projected. Starting with the August 2016 projections, we have modified our projections processes in an attempt to account for

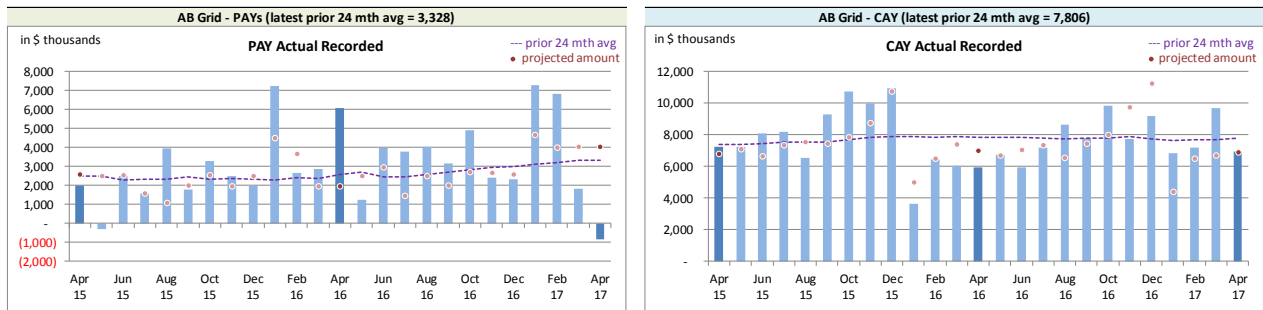
<sup>5</sup>The prior accident years (PAYS) variances will show bias as the projection upload forces all earned premium projections to be attributed to the current accident year.

CAY bias. 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**

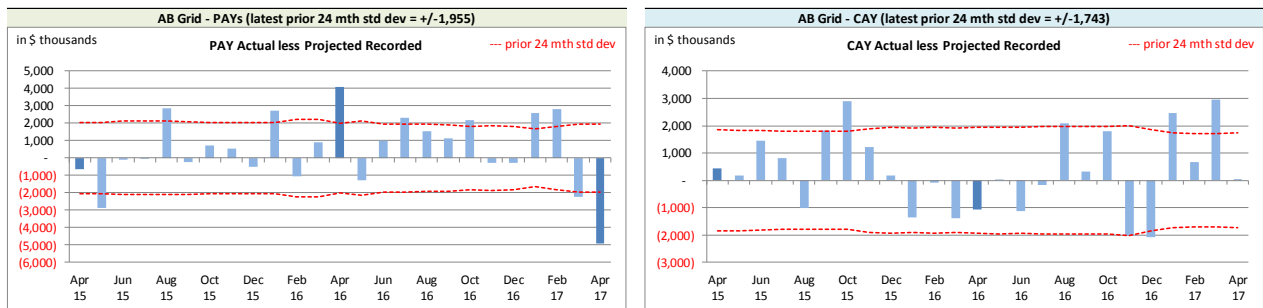
Actual **recorded** activity (**paid** and case reserve changes) over the last 25-month period are shown in the charts immediately below, including the “prior 24-month average” level.

*Alberta Grid RSP Actual Recorded by Calendar Month*



**Recorded** activity variances from the previous month’s projections are shown in the charts immediately below, including the “prior 24-month standard deviation” levels.

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



On Latest \$ thousands			
	<b>Recorded</b>	PAYs	CAY
Mthly Avg Recorded (prior 24 mths)		3,328	7,806
std dev		1,955	1,743
A-P <> std dev		10	7
% <> std dev		40.0%	28.0%
norm <> std dev		31.7%	31.7%

With respect to **recorded** indemnity & allowed claims expense activity, 40% of the prior accident years’ (PAYs) variances (left chart above) over the last 25 months have fallen outside of one standard deviation of the actual **recorded** amounts, suggesting the projection process is performing worse than simply

projecting from the prior 24-month average. From the end of 2015 until the end of 2016 there may have been evidence of bias in the projections with actuals being higher than projections. A similar pattern was not evident in the **paid** activity where actuals have generally been lower than projections over the same timeframe, suggesting there may be changes in case reserve activity. We have not identified the same potential “case reserve” effect for the Alberta non-Grid RSP (there, both **recorded** and **paid** activity appear to be moving in tandem). This has also been noted by the valuation team and investigation continues.

The PAYs’ **recorded** variance for the current month was outside the one standard deviation band.

This low level of recorded activity has not been seen since March of 2015. That led to an investigation which uncovered a member company had been converting claims to a new system and in the process of transferring the claims, some case reserves that had been taken down were not reinstated before the end of the month, artificially lowering the recorded activity for the month. Based on discussions with the member, our projections reflect the anticipation of remediation of this issue next month.

The current accident year (CAY) **recorded** variances (right chart in the middle of the previous page) seemed to be indicating bias in 2015 (where actuals tended to be higher than projections). Adjustments to the projection process appear to have addressed this issue. However, as CAY **recorded** variances have been greater than one standard deviation 28% of the time; the projection process appears to perform little better than simply projecting the most recent prior 24-month average.

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

CAY avg of mthly ratios for yr				CAY avg of mthly ratios for yr					
as at	Rec'd	yr-on-yr chg	Paid	yr-on-yr chg	as at	Rec'd	yr-on-yr chg	Paid	yr-on-yr chg
Dec 2009	11.5%		4.4%		Apr 2009	22.1%		5.6%	
Dec 2010	10.9%	(0.6%)	4.5%	0.1%	Apr 2010	19.0%	(3.1%)	5.9%	0.3%
Dec 2011	12.8%	1.9%	4.8%	0.3%	Apr 2011	25.6%	6.6%	6.3%	0.4%
Dec 2012	12.4%	(0.4%)	4.7%	(0.1%)	Apr 2012	21.7%	(3.9%)	5.9%	(0.4%)
Dec 2013	12.6%	0.2%	4.8%	0.1%	Apr 2013	23.3%	1.6%	6.0%	0.1%
Dec 2014	13.8%	1.2%	5.3%	0.5%	Apr 2014	23.9%	0.6%	6.7%	0.7%
Dec 2015	14.4%	0.6%	5.5%	0.2%	Apr 2015	25.9%	2.0%	7.3%	0.6%
Dec 2016	14.0%	(0.4%)	5.4%	(0.1%)	Apr 2016	23.8%	(2.1%)	7.2%	(0.1%)
					Apr 2017	31.2%	7.4%	8.0%	0.8%

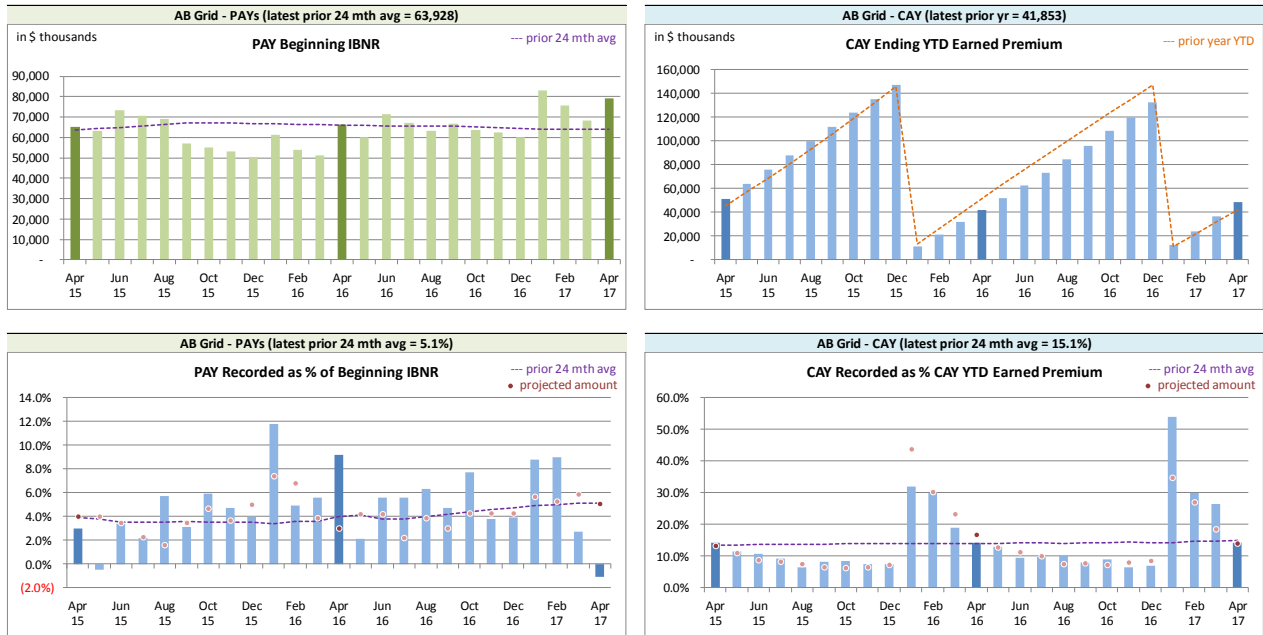
Both **recorded** and **paid** ratios for Dec. 2016 relative to Dec. 2009 have increased at an annual rate of almost 3% over and above any premium rate level increases. At this point, we are only monitoring, but the valuation team has been advised and are taking this information into consideration. Further, while the average of the 12 monthly ratios at December for 2016 was down from 2015, they were still the second highest ratios overall, and, four months into 2017, the 4-month average ratios for calendar year 2017 are at the highest levels in the Apr. table for both **recorded** and **paid**.

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

We have included, for reference, additional charts at the top of the next page related to levels influencing **recorded** activity. Note in particular the changes in the level of PAY beginning IBNR over the months, as a response to valuations and showing up as a beginning IBNR change one month after the valuation is implemented (i.e. April, June, September, and November).



*Alberta Grid RSP Levels that influence<sup>6</sup> Recorded activity by Calendar Month*



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

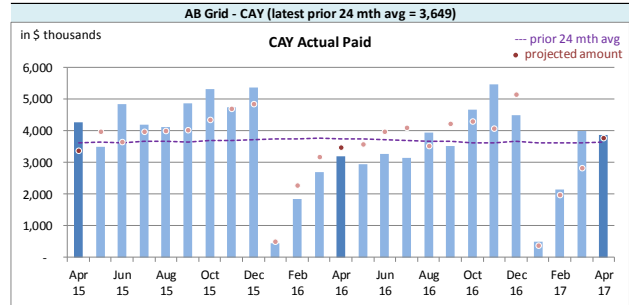
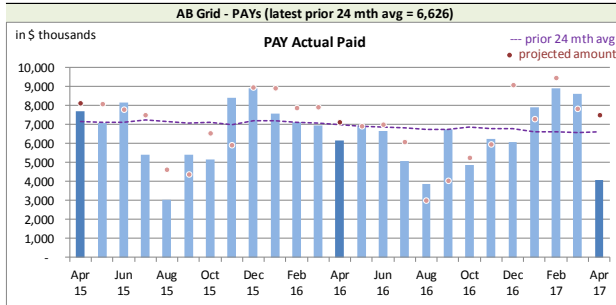
- to offset actual **recorded** activity (through loss ratio matching);
- the annual switchover as a current accident year becomes a prior accident year (occurs in January); and
- when a new valuation is implemented, where the valuation resulted in changes to the selection of prior accident years’ ultimate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

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

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

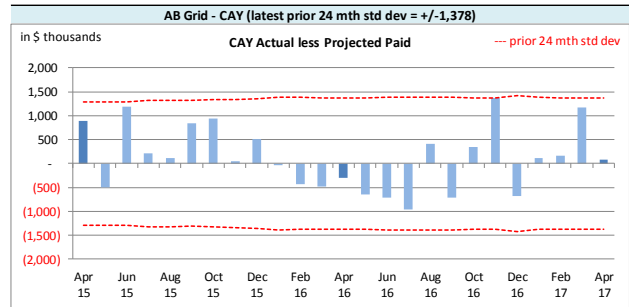
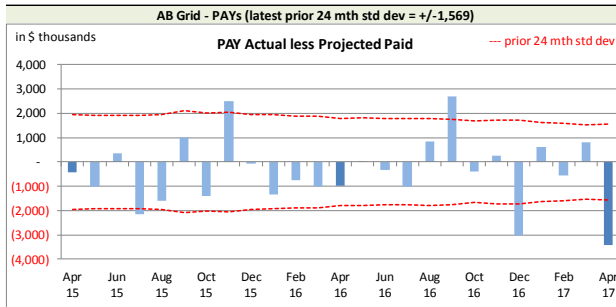
<sup>6</sup>Our recorded activity projections for the prior accident years are based on selected ratios of recorded activity to beginning unpaid balances, whereas the current accident year projections are based on selected ratios of year-to-date IBNR to year-to-date selected ultimate (i.e. selected LR x earned premium), deriving year-to-date recorded as selected ultimate less IBNR. In both cases, the ratio selection is based on our review of the more recent recorded activity and recent AvsP analyses.

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



The charts immediately below show the actual less projected **paid** variances for the last 25 calendar months, along with bands for the “prior 24-month standard deviations” to show how the variances from projection compare with historical standard deviations.

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



On Latest \$ thousands		
<b>Paid</b>	PAYs	CAY
Mthly Avg Paid (prior 24 mths)	6,626	3,649
std dev	1,569	1,378
A-P <> std dev	5	-
% <> std dev	20.0%	0.0%
norm <> std dev	31.7%	31.7%

With respect to **paid** indemnity & allowed claims expense, the prior accident years’ (PAYs) variances (left chart above) have fallen outside one standard deviation of the overall period 20% of the time, a lower percent than suggested by a normal distribution, indicating the projection process may be better than simply projecting

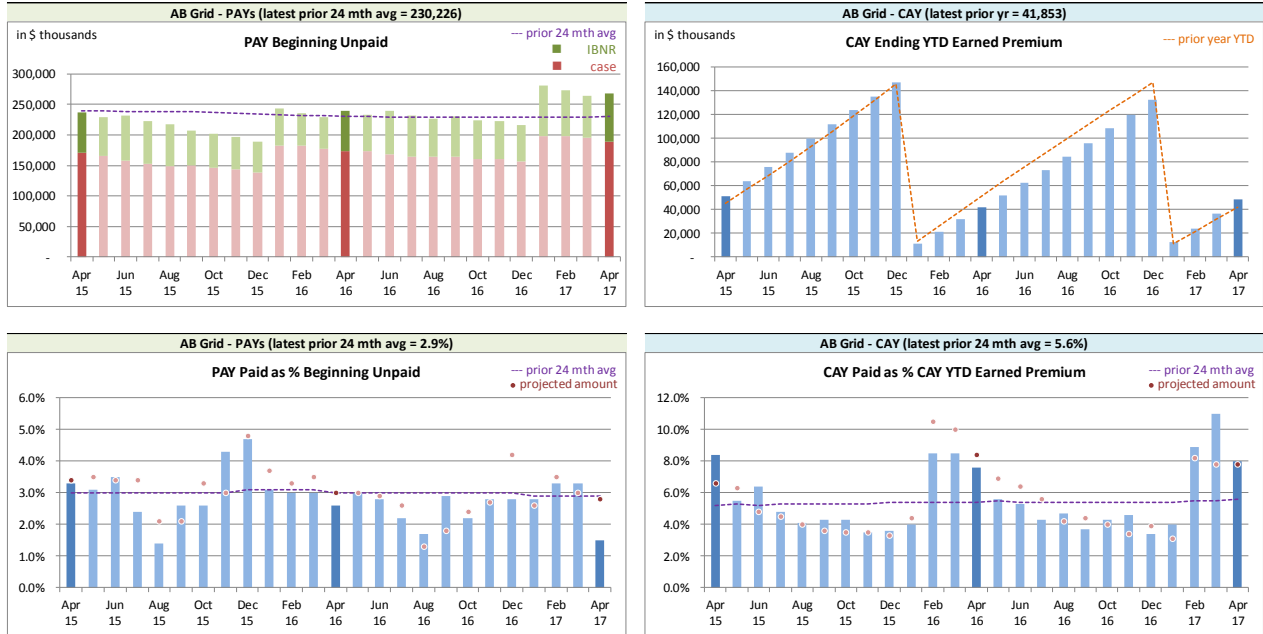
from the preceding 24-month average. However, there appears to be evidence of bias (actuals tend to be lower than projected) – as discussed with respect to **recorded** activity potentially showing bias the other way (i.e. with actuals tending to be higher than projected), this bias divergence may suggest a change in case reserve activity relative to historical norms. We have taken measures to try and eliminate the bias and for now they seem to be successful. We will continue to monitor.

The PAYs’ **paid** variance for the current month was outside the one standard deviation band. The activity was reviewed and confirmed, with the variance attributed to process variance.

The current accident year (CAY) **paid** variances (right chart above) indicated bias through 2015 (where actuals tend to be higher than our projections) and 2016 (where efforts to address the 2015 bias may have generated bias the other way), further adjustments to the projection process appear to have addressed these issues. The CAY **paid** variances have **not** fallen outside one standard deviation of the overall period, suggesting the projection process is better than simply projecting from the preceding 24-month average.

We have included, for reference, additional charts immediately below related to levels influencing paid activity.

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



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

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

**2.2 Actuarial Provisions**

An “ultimate loss ratio matching method” (described in section 3) is used to determine the month’s IBNR<sup>8</sup>, and factors are applied to the nominal unpaid claims liability (case plus IBNR) to determine the discount amount (shown as a negative value to indicate its impact of reducing the liability) and the Provisions for Adverse Deviations. The loss ratios and the factors used to determine the

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

<sup>8</sup>For ease of discussion, “IBNR” is used in place of “provisions for incurred but not recorded (IBNR) and development”.

projections and actuals were based on the applicable valuation. The table immediately below summarizes variances in provisions included in the April 2017 Operational Report and the associated one-month projections from last month's Report.

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

Table 02

Accident Year	actuarial present value adjustments							
	IBNR		Discount Amount		Provisions for Adverse Deviations		IBNR + actuarial present value adjustments	
	Actual	Actual less Projected	Actual	Actual less Projected	Actual	Actual less Projected	Actual	Actual less Projected
Prior	35,932	2,189	(3,435)	(51)	15,469	241	47,966	2,379
2015	22,366	2,598	(1,877)	(24)	7,757	99	28,246	2,673
2016	21,456	(19)	(2,158)	(10)	8,173	39	27,471	10
2017	10,304	(138)	(974)	7	3,691	(27)	13,021	(158)
TOTAL	90,058	4,630	(8,444)	(78)	35,090	352	116,704	4,904

The IBNR provision is \$4.6 million higher than projected from last month, counterbalancing the recorded claims activity and adjusting for the earned premium variance impacts indicated in section 2.1.

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

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

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

The table below summarizes the variances in the provisions for deferred policy acquisition cost asset included in the April 2017 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:	(11,025)	210	4,698	(87)	(6,327)	123
balance as % unearned premium:	(15.3%)	-	6.5%	-	(8.8%)	-
actual unearned premium:	72,026					
less projected:	(1,361)					

### 3 Ultimate Loss Ratio Matching Method

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

- (a) Earned premium to-date
- (b) Ultimate loss<sup>9</sup> ratio per latest valuation
- (c) Estimated ultimate incurred = (a) x (b)
- (d) Recorded indemnity & allowed claims expense to-date
- (e) IBNR = (c) – (d)

### 4 Calendar Year-to-Date Results

The table below summarizes the calendar year-to-date results for indemnity & allowed claims expenses<sup>10</sup>, including IBNR.

In calculating the amounts as percentages of earned premium, the calendar year-to-date earned premium has been used, which includes earned premium associated with the current accident year but also earned premium adjustments related to prior accident years. Specifically, the current accident year (CAY) ratio in the table is 86.0% rather than 84.2% (the valuation ultimate ratio for accident year 2017), 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	11,642	24.4%	(5,174)	(10.9%)	6,468	13.6%	(508)	(6.0%)
CAY	40,984	86.0%	2,717	5.7%	43,701	91.7%	10,809	(0.7%)
<b>TOTAL</b>	<b>52,626</b>	<b>110.5%</b>	<b>(2,457)</b>	<b>(5.2%)</b>	<b>50,169</b>	<b>105.3%</b>	<b>10,301</b>	<b>(6.7%)</b>

(“% EP” based on 2017 calendar year-to-date earned premium; ratios may not total due to rounding)

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

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

### 5 Current Operational Report – Additional Exhibits

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

<sup>9</sup>“Loss” here refers to indemnity and allowed claims expenses, but does not include the claims expense allowance included in member company overall expense allowances (“Expense Allowance” in the Operational Report).

<sup>10</sup>Allowed claims expenses are first party legal and other expenses as listed in the RSP Claims Guide. Claims expenses paid through the member company expense allowance are NOT included in this analysis.

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

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

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

## **6 EXHIBITS**

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

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

## EXHIBIT A

## IBNR for Member Sharing – includes Actuarial Present Value Adjustments

TABLE EXHIBIT A

		Amounts in \$000s				
IBNR + M/S actuarial present value adjustments	Accident Year	Actual Mar. 2017	Actual Apr. 2017	Projected May. 2017	Projected Jun. 2017	Projected Dec. 2017
	2004	(72)	(72)	(72)	(72)	(72)
	2005	212	341	334	326	274
	2006	(207)	(119)	(121)	(116)	(100)
	2007	504	552	540	523	440
	2008	1,131	1,197	1,179	1,144	969
	2009	1,234	1,157	1,137	1,103	930
	2010	1,837	2,299	2,262	2,194	1,855
	2011	4,514	4,762	4,686	4,560	3,853
discount rate	2012	8,365	8,194	8,029	7,807	6,622
1.06%	2013	11,390	11,267	11,129	10,796	9,180
	2014	18,545	18,388	18,118	17,297	14,743
interest rate margin	2015	26,872	28,246	27,398	25,926	21,587
25 basis pts	2016	29,017	27,471	24,930	23,419	18,639
	2017	9,142	13,021	17,113	21,473	41,232
	<b>TOTAL</b>	<b>112,484</b>	<b>116,704</b>	<b>116,662</b>	<b>116,380</b>	<b>120,152</b>
	Change		4,220	(42)	(282)	

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

**EXHIBIT B**
**IBNR**

TABLE EXHIBIT B

Amounts in \$000s

IBNR	Ultimate Loss Ratio	Accident Year	Actual Mar. 2017	Actual Apr. 2017	Projected May. 2017	Projected Jun. 2017	Projected Dec. 2017
	51.6%	2004	(80)	(80)	(80)	(80)	(80)
	59.2%	2005	72	208	206	200	170
	66.3%	2006	(284)	(195)	(193)	(187)	(159)
	70.2%	2007	151	202	200	194	165
	67.2%	2008	903	969	959	930	791
	60.6%	2009	812	735	728	706	600
	61.3%	2010	1,096	1,612	1,596	1,548	1,316
	66.8%	2011	3,090	3,349	3,316	3,217	2,735
	74.4%	2012	6,435	6,279	6,153	5,968	5,075
	78.1%	2013	8,930	8,812	8,724	8,462	7,195
	87.0%	2014	14,140	14,041	13,901	13,206	11,229
	92.0%	2015	20,918	22,366	21,695	20,393	16,636
	89.3%	2016	22,846	21,456	19,096	17,759	13,602
	84.2%	2017	6,992	10,304	13,733	17,481	33,487
		<b>TOTAL</b>	<b>86,021</b>	<b>90,058</b>	<b>90,034</b>	<b>89,797</b>	<b>92,762</b>
		Change		4,037	(24)	(237)	

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



## EXHIBIT C

## Premium Liabilities

TABLE EXHIBIT C

	Amounts in \$000s				
	Actual Mar. 2017	Actual Apr. 2017	Projected May. 2017	Projected Jun. 2017	Projected Dec. 2017
Premium Liabilities					
(1) unearned premium (UP)	71,728	72,026	76,571	82,896	87,012
FOR MEMBER SHARING					
(2) expected future costs ratio {% of (1)}	91.1%	91.2%	91.4%	91.5%	93.0%
(3) expected future costs {(1) x (2)}	65,352	65,699	69,960	75,877	80,950
(4) premium deficiency / (deferred policy acquisition cost)	(6,376)	(6,327)	(6,611)	(7,019)	(6,062)
Excluding Actuarial Present Value Adjustments					
(5) expected future costs ratio {% of (1)}	84.6%	84.7%	84.8%	85.0%	86.4%
(6) expected future costs {(1) x (5)}	60,678	61,001	64,956	70,452	75,160
(7) premium deficiency / (deferred policy acquisition cost)	(11,050)	(11,025)	(11,615)	(12,444)	(11,852)

**EXHIBIT D**
**Projected Year-end Policy Liabilities**

The table below presents the projected policy liabilities as at December 31, 2017, broken down by component.

Alberta Grid ending 2017		Projected Balances as at Dec. 31, 2017 (\$000s)							
		nominal values			actuarial present value adjustments (apvs)				TOTAL
Acc Yr	Case	IBNR	Total Unpaid	discount	investment PfAD	development PfAD	Total apvs		
2004	-	(80)	(80)	-	-	8	8	(72)	
2005	1,051	170	1,221	(21)	5	120	104	1,325	
2006	864	(159)	705	(13)	3	69	59	764	
2007	3,059	165	3,224	(55)	13	317	275	3,499	
2008	1,389	791	2,180	(46)	11	213	178	2,358	
2009	3,489	600	4,089	(90)	20	400	330	4,419	
2010	5,650	1,316	6,966	(188)	49	678	539	7,505	
2011	11,716	2,735	14,451	(376)	87	1,407	1,118	15,569	
2012	14,608	5,075	19,683	(472)	98	1,921	1,547	21,230	
2013	17,731	7,195	24,926	(598)	150	2,433	1,985	26,911	
2014	23,307	11,229	34,536	(898)	207	4,205	3,514	38,050	
2015	34,339	16,636	50,975	(1,580)	357	6,174	4,951	55,926	
2016	39,565	13,602	53,167	(1,808)	425	6,420	5,037	58,204	
<b>PAYs (sub-total):</b>	156,768	59,275	216,043	(6,145)	1,425	24,365	19,645	235,688	
<b>CAY (2017)</b>	53,306	33,487	86,793	(2,777)	608	9,914	7,745	94,538	
<b>claims liabilities:</b>	210,074	92,762	302,836	(8,922)	2,033	34,279	27,390	330,226	
	Unearned Premium	Premium Deficiency / (DPAC)	Total Provision	discount	investment PfAD	development PfAD	Total apvs	TOTAL*	
<b>premium liabilities:</b>	87,012	(11,852)	75,160	(2,022)	450	7,362	5,790	80,950	
*Total may not be sum of parts, as apvs apply to future costs within UPR									
<b>policy liabilities:</b>			<b>377,996</b>	<b>(10,944)</b>	<b>2,483</b>	<b>41,641</b>	<b>33,180</b>	<b>411,176</b>	

EXHIBIT E

Discount Rate & Margins for Adverse Deviations

The tables below present selected margins for adverse development by coverage (the total is a weighted average, based on the unpaid claims projection for December 31, 2017 from the valuation), followed by the selected discount rate and the associated margin for investment income.

Accident Year	Selected Claims Development MfADs (Dec. 31, 2016)			Total
	Third Party Liability	Accident Benefits	Other Coverages	
2004	10.0%	10.0%	10.0%	10.0%
2005	10.0%	10.0%	10.0%	10.0%
2006	10.0%	10.0%	10.0%	10.0%
2007	10.0%	10.0%	10.0%	10.0%
2008	10.0%	10.0%	10.0%	10.0%
2009	10.0%	10.0%	10.0%	10.0%
2010	10.0%	10.0%	9.6%	10.0%
2011	10.0%	10.0%	9.9%	10.0%
2012	10.0%	10.0%	9.6%	10.0%
2013	10.0%	10.0%	10.0%	10.0%
2014	12.5%	10.0%	12.5%	12.5%
2015	12.5%	10.0%	12.5%	12.5%
2016	12.4%	10.0%	12.5%	12.5%
2017	12.1%	10.0%	7.4%	11.8%
prem liab	11.8%	10.0%	5.1%	10.1%

discount rate:	1.06%
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, 2017 from the latest valuation date (projections in exhibits A to D are also to Dec. 31, 2017, but are based on more up-to-date information). We have included both the current valuation selection (1.06%), the prior valuation assumption (0.54%) and the prior fiscal year end valuation assumption (0.54%) 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, 2017 projected Unpaid								
AY	0.56%	1.06%	1.56%	2.06%	2.56%	3.06%	0.54%	0.54%
2004	-	-	-	-	-	-	-	-
2005	1,615	1,603	1,590	1,578	1,565	1,553	1,616	1,616
2006	631	626	620	615	610	606	631	631
2007	3,028	3,003	2,979	2,955	2,931	2,908	3,029	3,029
2008	2,172	2,150	2,128	2,107	2,087	2,067	2,173	2,173
2009	5,200	5,145	5,091	5,038	4,986	4,935	5,202	5,202
2010	7,224	7,132	7,043	6,957	6,871	6,789	7,227	7,227
2011	13,165	13,001	12,841	12,686	12,534	12,388	13,171	13,171
2012	19,029	18,809	18,596	18,388	18,183	17,987	19,038	19,038
2013	25,815	25,521	25,236	24,961	24,688	24,428	25,828	25,828
2014	40,583	40,074	39,579	39,098	38,628	38,174	40,601	40,601
2016	59,042	58,090	57,173	56,285	55,418	54,582	59,083	59,083
2017	102,728	101,144	99,612	98,140	96,693	95,313	102,786	102,786
<b>Total</b>	<b>336,905</b>	<b>332,140</b>	<b>327,537</b>	<b>323,080</b>	<b>318,708</b>	<b>314,518</b>	<b>337,088</b>	<b>337,088</b>
	curr - 50 bp	curr val assumption	curr + 50bp	curr + 100bp	curr + 150bp	curr + 200bp	prior val assumption	prior fyr end assumption

Dollar Impact Relative to Valuation Assumption								
AY	0.56%	1.06%	1.56%	2.06%	2.56%	3.06%	0.54%	0.54%
<b>Total</b>	4,765	-	(4,603)	(9,060)	(13,432)	(17,622)	4,948	4,948
	curr - 50 bp	curr val assumption	curr + 50bp	curr + 100bp	curr + 150bp	curr + 200bp	prior val assumption	prior fyr end assumption

Percentage Impact Relative to Valuation Assumption								
AY	0.56%	1.06%	1.56%	2.06%	2.56%	3.06%	0.54%	0.54%
2004	-	-	-	-	-	-	-	-
2005	0.7%	-	(0.8%)	(1.6%)	(2.4%)	(3.1%)	0.8%	0.8%
2006	0.8%	-	(1.0%)	(1.8%)	(2.6%)	(3.2%)	0.8%	0.8%
2007	0.8%	-	(0.8%)	(1.6%)	(2.4%)	(3.2%)	0.9%	0.9%
2008	1.0%	-	(1.0%)	(2.0%)	(2.9%)	(3.9%)	1.1%	1.1%
2009	1.1%	-	(1.0%)	(2.1%)	(3.1%)	(4.1%)	1.1%	1.1%
2010	1.3%	-	(1.2%)	(2.5%)	(3.7%)	(4.8%)	1.3%	1.3%
2011	1.3%	-	(1.2%)	(2.4%)	(3.6%)	(4.7%)	1.3%	1.3%
2012	1.2%	-	(1.1%)	(2.2%)	(3.3%)	(4.4%)	1.2%	1.2%
2013	1.2%	-	(1.1%)	(2.2%)	(3.3%)	(4.3%)	1.2%	1.2%
2014	1.3%	-	(1.2%)	(2.4%)	(3.6%)	(4.7%)	1.3%	1.3%
2016	1.6%	-	(1.6%)	(3.1%)	(4.6%)	(6.0%)	1.7%	1.7%
2017	1.6%	-	(1.5%)	(3.0%)	(4.4%)	(5.8%)	1.6%	1.6%
<b>Total</b>	<b>1.4%</b>	<b>-</b>	<b>(1.4%)</b>	<b>(2.7%)</b>	<b>(4.0%)</b>	<b>(5.3%)</b>	<b>1.5%</b>	<b>1.5%</b>
	curr - 50 bp	curr val assumption	curr + 50bp	curr + 100bp	curr + 150bp	curr + 200bp	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 - Discour**

M/S IBNR - in \$000s

AccYear	Values			Sum of Change Due to Valuation Implementation	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				
2004	(72)	-	-	-	-	-	(72)
2005	212	(7)	136	-	129	60.8%	341
2006	(207)	6	82	-	88	(42.5%)	(119)
2007	504	(16)	64	-	48	9.5%	552
2008	1,131	(34)	100	-	66	5.8%	1,197
2009	1,234	(37)	(40)	-	(77)	(6.2%)	1,157
2010	1,837	(55)	517	-	462	25.1%	2,299
2011	4,514	(135)	383	-	248	5.5%	4,762
2012	8,365	(251)	80	-	(171)	(2.0%)	8,194
2013	11,390	(520)	397	-	(123)	(1.1%)	11,267
2014	18,545	(817)	660	-	(157)	(0.8%)	18,388
2015	26,872	(1,299)	2,673	-	1,374	5.1%	28,246
2016	29,017	(1,556)	10	-	(1,546)	(5.3%)	27,471
2017	9,142	4,037	(158)	-	3,879	42.4%	13,021
<b>Grand Total</b>	<b>112,484</b>	<b>(684)</b>	<b>4,904</b>	<b>-</b>	<b>4,220</b>	<b>3.8%</b>	<b>116,704</b>

EXHIBIT G

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

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

IBNR - in \$000s

AccYear	Values				Sum of Total Change	Sum of % Total Change	Sum of Current Month Final Amount
	Sum of Prior Month Actual Amount	Sum of Projected Change	Sum of Change Due to AvsP Variances	Sum of Change Due to Valuation Implementation			
2004	(80)	-	-	-	-	-	(80)
2005	72	(2)	138	-	136	188.9%	208
2006	(284)	9	80	-	89	(31.3%)	(195)
2007	151	(5)	56	-	51	33.8%	202
2008	903	(27)	93	-	66	7.3%	969
2009	812	(24)	(53)	-	(77)	(9.5%)	735
2010	1,096	(33)	549	-	516	47.1%	1,612
2011	3,090	(93)	352	-	259	8.4%	3,349
2012	6,435	(193)	37	-	(156)	(2.4%)	6,279
2013	8,930	(447)	329	-	(118)	(1.3%)	8,812
2014	14,140	(707)	608	-	(99)	(0.7%)	14,041
2015	20,918	(1,150)	2,598	-	1,448	6.9%	22,366
2016	22,846	(1,371)	(19)	-	(1,390)	(6.1%)	21,456
2017	6,992	3,450	(138)	-	3,312	47.4%	10,304
<b>Grand Total</b>	<b>86,021</b>	<b>(593)</b>	<b>4,630</b>	<b>-</b>	<b>4,037</b>	<b>4.7%</b>	<b>90,058</b>