# ALBERTA GRID RISK SHARING POOL

# NOVEMBER 2019 OPERATIONAL REPORT

# ACTUARIAL HIGHLIGHTS

Related Bulletin: [F19-098 Alberta Risk Sharing Pools - November 2019 Operational Reports](#)

For your convenience, bookmarks have been added to this document.  To view them, please click on the BOOKMARK tab at the left.

Should you require any further information, please call Shawn Doherty, Senior Vice President Actuarial & CFO at (416) 644-4968.

# ACTUARIAL HIGHLIGHTS

## RSP ALBERTA GRID

## OPERATIONAL REPORT

## NOVEMBER 2019

---

### TABLE OF CONTENTS

---

# 1    Summary

**Key Points**

   (a) The month's activities were generally aligned with projections from last month.

## 1.1    Valuation Schedule (Fiscal Year 2019)

The November 2019 Operational Report leverages actuarial assumptions consistent with last month (that is, it does not reflect the results of an updated valuation).  The table below summarizes the implemented 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 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 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 49 basis points;  no change to selected margins for adverse deviations |
| Jun. 30, 2019 (completed) | 1.41% mfad 25 bp | Aug. 2019 | updated valuation: accident year 2019 loss ratio decreased 2.9 points to 86.8%;  discount rate decreased 3 basis points;  selected margins for adverse deviations were updated |
| Sep. 30, 2019 (completed) | 1.44% mfad 25 bp | Oct. 2019 | update valuation (roll forward):  accident year 2019 loss ratio decreased 2.4 points to 84.4%; discount rate increased 3 basis points;  no change to selected margins for adverse deviations |

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

Mr. Cosimo Pantaleo of Ernst & Young LLP (EY) has assumed the Appointed Actuary's role effective as of October 24, 2019, from Liam McFarlane (the Appointed Actuary from June 1, 2013), due to Mr. McFarlane's departure from EY.

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 (September 30, 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 December 31, 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. **This order lapsed in August 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 at the top of the next page 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.

---

[1]This url to a pdf is to a helpful guide on how bills become laws: https://www.ola.org/sites/default/files/common/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.
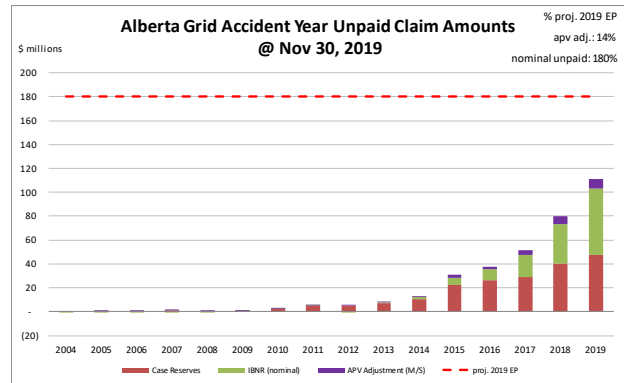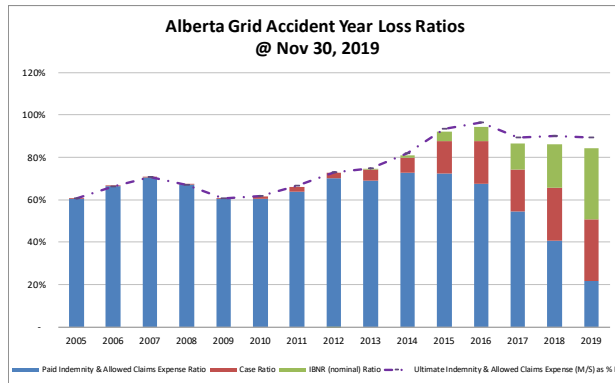
*"M/S" refers to "Member Statement" values – that is, actuarial present value adjustments at the selected discount rate.*

The current actuarial present value adjustments balance ($25.7 million – see table below) represents 14% of the earned premium projected for the full year 2019 (see the upper right corner of the right chart above). If our current estimates of the nominal unpaid amounts prove to match actual claims payments, the actuarial present value adjustments will be released into the net operating result over future periods.

claim liabilities ($000s)

|  | amt | % |
|---|---|---|
| case | 199,178 | 56.9% |
| ibnr | 124,948 | 35.7% |
| M/S apv adjust. | 25,668 | 7.3% |
| M/S total | 349,794 | 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 71% of the IBNR balance relates to accident years 2018 and 2019 (see Exhibit B). Approximately 89% 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 below summarize the premium liabilities and the total policy liabilities.

premium liabilities ($000s)

|  | amt | % |
|---|---|---|
| unearned prem | 116,043 | 104.9% |
| prem def/(dpac) | (12,675) | (11.5%) |
| M/S apv adjust. | 7,295 | 6.6% |
| M/S total | 110,663 | 100.0% |

policy liabilities ($000s)

|  | amt | % |
|---|---|---|
| claim | 324,126 | 70.4% |
| premium | 103,368 | 22.4% |
| M/S apv adjust. | 32,963 | 7.2% |
| M/S total | 460,457 | 100.0% |

## 2 Activity During the Month of November 2019

### 2.1 Recorded Premium and Claims Activity

The table at the top of the next page summarizes the extent to which premiums and claims amounts recorded during the month differ from projections reflected in the prior month's Operational Report[4].

---

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

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

| Table 01 | Earned Premium | | Paid Indemnity & Allowed Claims Expense | | Case increase / (decrease) | | Recorded increase / (decrease) | |
|---|---|---|---|---|---|---|---|---|
| Accident Year | Actual | Actual less Projected | Actual | Actual less Projected | Actual | Actual less Projected | Actual | Actual less Projected |
| Prior | (2) | (2) | 4,232 | 431 | (3,093) | (136) | 1,139 | 295 |
| 2017 | (9) | (9) | 959 | (12) | (821) | (219) | 138 | (231) |
| 2018 | (40) | (40) | 1,120 | (372) | (366) | 98 | 755 | (273) |
| 2019 | 16,504 | (224) | 4,316 | 352 | 5,882 | (823) | 10,198 | (470) |
| TOTAL | 16,452 | (276) | 10,627 | 400 | 1,602 | (1,079) | 12,230 | (680) |

(Recorded transaction amounts exclude IBNR & other actuarial provisions)

It is unusual to see actual earned premium transactions affecting prior accident years by this time in the calendar year – the prior accident years changes in the month reflect activity undertaken by a member reflecting recent audit findings.

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 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*
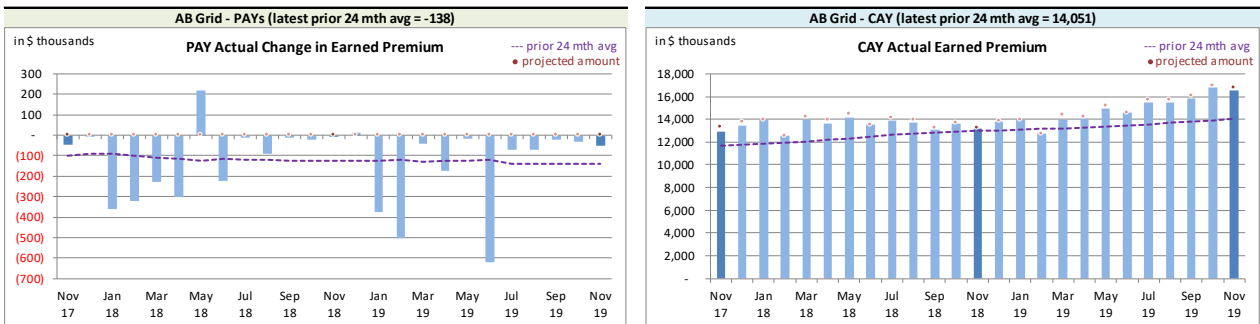


**Earned premium** changes during a given calendar month in relation to prior accident years tend to be at modest levels, although relatively high levels generally occur at the beginning of each year.

The associated variances between the actual changes and the projections from the previous month are shown in the charts at the top of the next page. **Earned premium** change projections are all attributed to the current accident year as the projection upload does not accept earned premium changes for other accident years. We do not see this limitation as being significant for our purposes, but it does mean that the actual less projection variance will equal the actual **earned premium** change in relation to

---

[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.

prior accident years.

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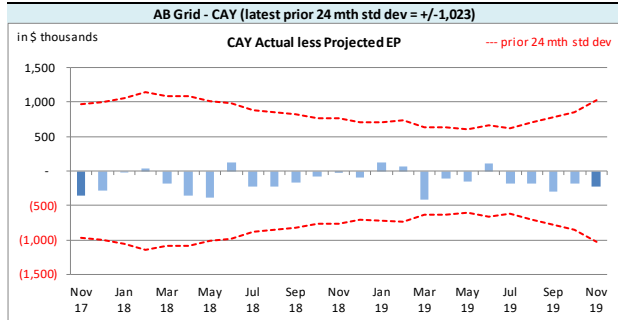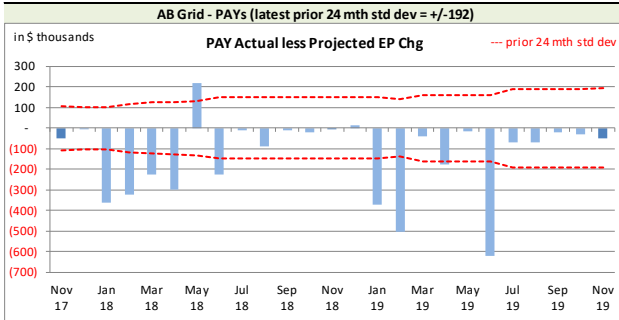




| On Latest $ thousands | | |
|---|---|---|
| **Earned Premium** | PAYs | CAY |
| Mthly Avg EP Chg (prior 24 mths) | (138) | 14,051 |
| std dev | 192 | 1,023 |
| A-P <> std dev | 10 | - |
| % <> std dev | 40.0% | 0.0% |
| norm <> std dev | 31.7% | 31.7% |
| performance vs 24-mth avg: | worse | better |

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 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.

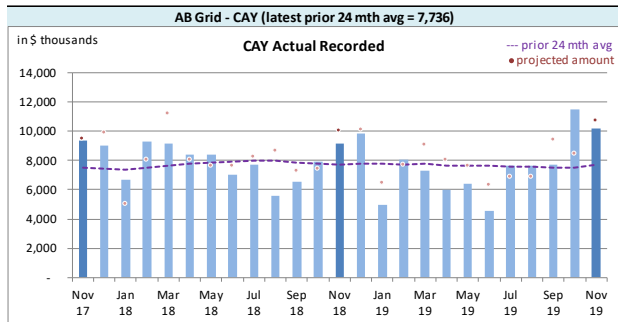*Alberta Grid RSP Actual* **Recorded** *by Calendar Month*





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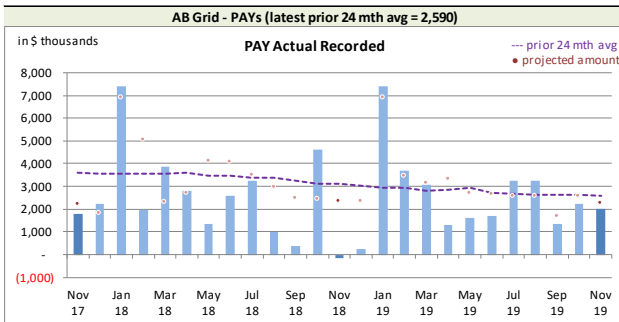
[6]The PAYs' variances will show bias as the projection upload forces all earned premium projections to be attributed to the CAY.

[7]We measure bias based on a 95% confidence range for a binominal distribution with trials based on the range being considered (25 in this case) and 50% probability of success. The rolling 25-month CAY variances at November 2019 has only 5 months where the actuals were higher than projected, and as the 95% confidence range is 8 to 17, bias continues to be indicated.

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

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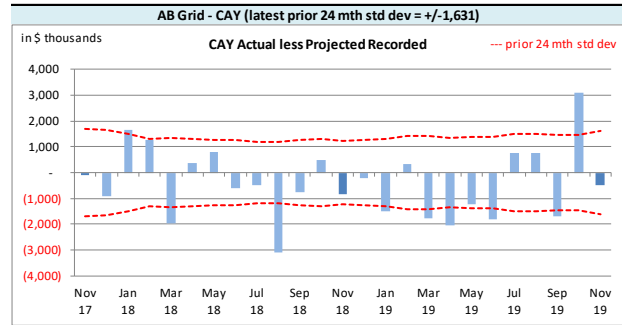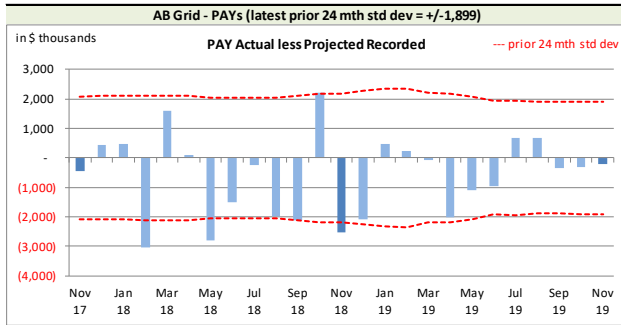


| On Latest $ thousands | | |
|---|---|---|
| **Recorded** | PAYs | CAY |
| Mthly Avg Recorded (prior 24 mths) | 2,590 | 7,736 |
| std dev | 1,899 | 1,631 |
| A-P <> std dev | 5 | 9 |
| % <> std dev | 20.0% | 36.0% |
| norm <> std dev | 31.7% | 31.7% |
| performance vs 24-mth avg: | better | no better |

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 rolling 25-month basis (9 of 25 variances were positive).

The current accident year (CAY) **recorded** variances fell outside of one standard deviation 36% 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 (9 of 25 variances were positive).

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

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

*Alberta Grid RSP Levels that influence[8] **Recorded** activity by Calendar Month*
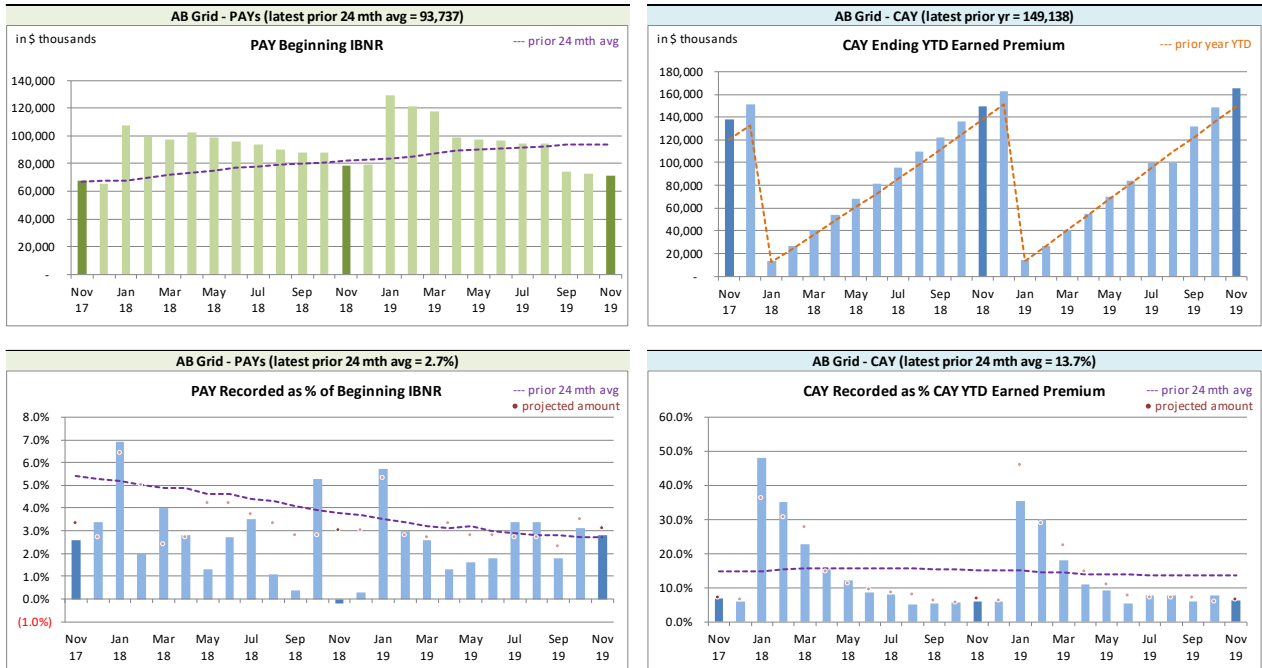


We track PAY beginning IBNR as **recorded** activity comes out of IBNR. Changes in the PAY beginning IBNR (see upper left chart above) occur for several possible reasons:

- to offset actual **recorded** activity (through loss ratio matching);

- the annual switchover as a CAY becomes a PAY (occurs in January); and

- when a new valuation is implemented, where the valuation resulted in changes to the selection of PAYs' ultimates (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.

---

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

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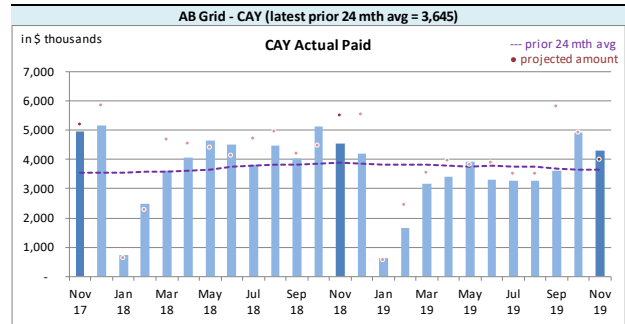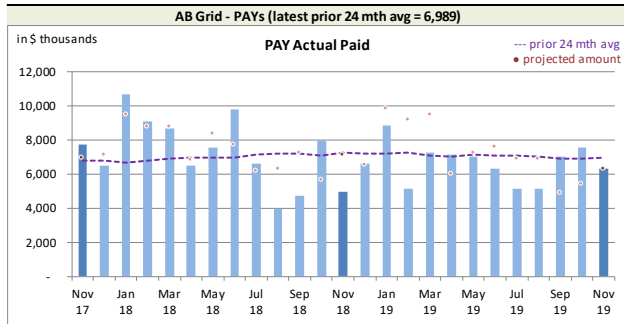


**Paid** activity variances from the previous month's projections are shown in the charts below, including the prior 24-month standard deviation levels to show how the variances from projection compare with historical standard deviations.

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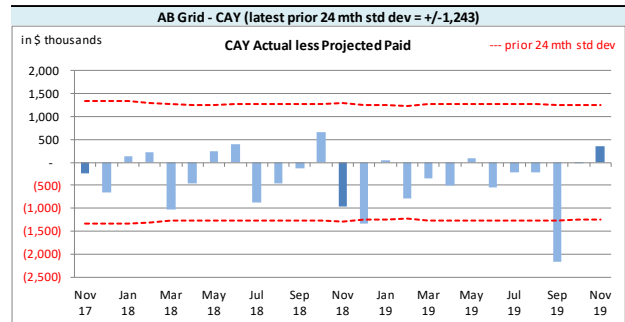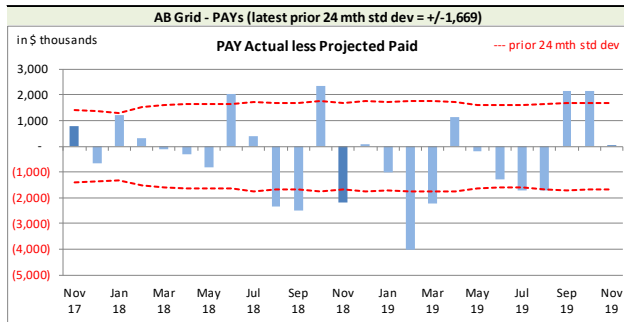


| On Latest $ thousands | | |
|---|---|---|
| **Paid** | PAYs | CAY |
| Mthly Avg Paid (prior 24 mths) | 6,989 | 3,645 |
| std dev | 1,669 | 1,243 |
| A-P <> std dev | 11 | 2 |
| % <> std dev | 44.0% | 8.0% |
| norm <> std dev | 31.7% | 31.7% |
| performance vs 24-mth avg: | worse | better |

With respect to **paid** indemnity & allowed claims expense, 44% 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 worse 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. Bias has not been indicated at a 95% confidence level on a rolling 25-month basis (11 of 25 variances are positive).

The current accident year (CAY) **paid** variances fell outside one standard deviation 8% 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 rolling 25-month basis (8 of 25 variances are positive).

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

*Alberta Grid RSP Levels that influence[9] **Paid** activity by Calendar Month*
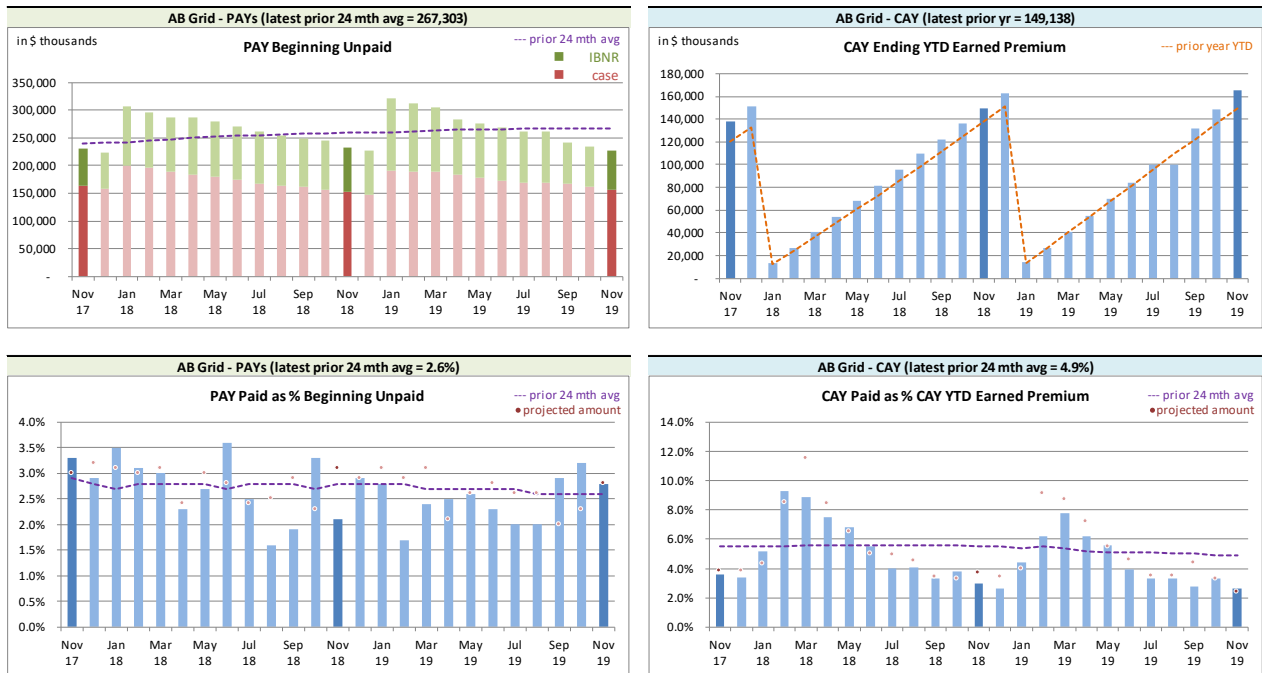


We track the PAY beginning unpaid balance (case and IBNR) as **paid** activity comes out of the unpaid balance. Changes in the PAY beginning unpaid balance (see upper left chart above) occur for several possible reasons:

- to offset actual **paid** activity (may reduce case or IBNR or both);

- the annual switchover as a CAY becomes a PAY (occurs in January); and

- when a new valuation is implemented, where the valuation resulted in changes to the selection of PAYs' ultimates (will show up as a beginning unpaid balance change one month after the valuation is implemented, i.e. the change will generally show in April, June, September, and November).

## 2.2   Actuarial Provisions

An ultimate loss ratio matching method (described in section 3) is used to determine the month's IBNR[10], and factors are applied to the nominal unpaid claims liability (case plus IBNR) to determine the discount amount (shown as a negative value to indicate its impact of reducing the liability) and the Provisions for Adverse Deviations. The loss ratios and the factors used to determine the projections and actuals were based on the applicable valuation.

The table at the top of the next page summarizes variances in provisions included in this month's

---

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

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

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 | | | actuarial present value adjustments | | | | | |
|---|---|---|---|---|---|---|---|---|
| | IBNR | | Discount Amount | | Provisions for Adverse Deviations | | IBNR + actuarial present value adjustments | |
| Accident Year | Actual | Actual less Projected | Actual | Actual less Projected | Actual | Actual less Projected | Actual | Actual less Projected |
| Prior | 17,562 | (296) | (3,077) | 12 | 10,190 | (42) | 24,675 | (326) |
| 2017 | 18,296 | 223 | (1,808) | - | 6,006 | 1 | 22,494 | 224 |
| 2018 | 33,494 | 239 | (3,085) | (15) | 9,308 | 42 | 39,717 | 266 |
| 2019 | 55,596 | 281 | (4,434) | 24 | 12,568 | (67) | 63,730 | 238 |
| TOTAL | 124,948 | 447 | (12,404) | 21 | 38,072 | (66) | 150,616 | 402 |

The IBNR provision is $0.4 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.

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

(i)   the change projected last month;

(ii)   the additional change due to variances in earned premium (because we apply a loss ratio to earned premium in determining ultimate level) and/or recorded claims (as IBNR is calculated as ultimate less recorded) differences; and

(iii)   the additional change due to valuation implementation impacts (as applicable)

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

The table below summarizes the variances in the provisions for premium deficiency liability / (deferred policy acquisition cost asset) included in this month's Operational Report and the one-month projections from last month's Report. This RSP is in a deferred policy acquisition cost asset position (shown as a negative amount) prior to and after actuarial present value adjustments. Actuarial present value adjustments decrease the asset value as the adjustments increase the expected future policy obligations (costs) associated with the unearned premium. The variances noted are mainly driven by the unearned premium variance.

*Alberta Grid RSP Actual vs Projected Summary: Premium Deficiency / (DPAC) Amounts ($ thousands)*

| Table 03 | Premium Deficiency / (Deferred Policy Acquisition Costs) | | actuarial present value adjustments | | Premium Deficiency / (DPAC) including actuarial present value adjustments | |
|---|---|---|---|---|---|---|
| | Actual | Actual less Projected | Actual | Actual less Projected | Actual | Actual less Projected |
| balance: | (12,675) | (23) | 7,295 | 2 | (5,380) | (21) |
| balance as % unearned premium: | (10.9%) | - | 6.3% | - | (4.6%) | - |
| actual unearned premium: | 116,043 | | | | | |
| less projected: | 20 | | | | | |

## 3    Ultimate Loss Ratio Matching Method

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

(a)    Earned premium to-date
(b)    Ultimate loss[11] ratio per latest valuation
(c)    Estimated ultimate incurred = (a) x (b)
(d)    Recorded indemnity & allowed claims expense to-date
(e)    IBNR = (c) – (d)

## 4    Calendar Year-to-Date Results

The table below summarizes the calendar year-to-date results for indemnity & allowed claims expenses[12], including IBNR.

In calculating the amounts as percentages of earned premium, the calendar year-to-date earned premium has been used, which includes earned premium associated with the current accident year but also earned premium adjustments related to prior accident years.  Specifically, the current accident year (CAY) ratio in the table is 85.4% rather than 84.4% (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 | (29,126) | (17.9%) | 153 | 0.1% | (28,973) | (17.8%) | (529) | 1.6% |
| CAY | 139,143 | 85.4% | 8,134 | 5.0% | 147,277 | 90.4% | 14,686 | (0.1%) |
| TOTAL | 110,016 | 67.5% | 8,287 | 5.1% | 118,303 | 72.6% | 14,157 | 1.5% |

("% 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

---

[11]"Loss" here refers to indemnity and allowed claims expenses, but does not include the claims expense allowance included in member company overall expense allowances ("Expense Allowance" in the Operational Report).

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

Operational Report.

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

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

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

## 6 EXHIBITS

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

EXHIBIT A    IBNR for Member Sharing – includes Actuarial Present Value Adjustments

EXHIBIT B    IBNR

EXHIBIT C    Premium Liabilities

EXHIBIT D    Projected Year-end Policy Liabilities

EXHIBIT E    Discount Rate & Margins for Adverse Deviations

EXHIBIT F    Interest Rate Sensitivity

EXHIBIT G    Components of IBNR Change During Month

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 Oct. 2019 | Actual Nov. 2019 | Projected Dec. 2019 | Projected Jan. 2020 | Projected Dec. 2020 |
|---|---|---|---|---|---|---|
| | 2004 | (71) | (71) | (71) | (69) | (48) |
| | 2005 | 15 | 15 | 12 | 14 | 10 |
| | 2006 | (100) | (99) | (99) | (96) | (66) |
| | 2007 | (137) | (30) | (35) | (31) | (22) |
| | 2008 | (53) | (46) | (46) | (45) | (30) |
| | 2009 | 160 | 160 | 157 | 154 | 105 |
| | 2010 | 310 | 294 | 279 | 273 | 188 |
| | 2011 | 486 | 484 | 458 | 455 | 312 |
| | 2012 | 402 | 275 | 253 | 242 | 165 |
| | 2013 | 1,474 | 1,260 | 1,218 | 1,208 | 833 |
| discount rate | 2014 | 3,386 | 2,993 | 2,918 | 2,898 | 2,004 |
| 1.44% | 2015 | 8,250 | 8,114 | 7,729 | 7,633 | 5,274 |
| | 2016 | 11,996 | 11,326 | 11,165 | 10,751 | 6,893 |
| interest rate margin | 2017 | 22,724 | 22,494 | 22,002 | 21,584 | 15,204 |
| 25 basis pts | 2018 | 40,605 | 39,717 | 38,254 | 37,478 | 28,563 |
| | 2019 | 59,242 | 63,730 | 69,021 | 63,003 | 49,708 |
| | 2020 | - | - | - | 9,704 | 81,526 |
| | TOTAL | 148,689 | 150,616 | 153,215 | 155,156 | 190,619 |
| | Change | | 1,927 | 2,599 | 1,941 | |

*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 Oct. 2019 | Actual Nov. 2019 | Projected Dec. 2019 | Projected Jan. 2020 | | Projected Dec. 2020 |
| 51.6% | 2004 | (79) | (79) | (78) | (76) | | (53) |
| 60.5% | 2005 | (24) | (24) | (24) | (24) | | (16) |
| 66.3% | 2006 | (110) | (109) | (108) | (106) | | (73) |
| 70.9% | 2007 | (247) | (140) | (139) | (136) | | (94) |
| 67.1% | 2008 | (78) | (71) | (70) | (69) | | (48) |
| 60.6% | 2009 | 128 | 128 | 127 | 124 | | 85 |
| 61.5% | 2010 | 99 | 84 | 83 | 81 | | 56 |
| 66.3% | 2011 | 91 | 90 | 89 | 87 | | 60 |
| 72.8% | 2012 | (49) | (112) | (111) | (109) | | (76) |
| 74.6% | 2013 | 847 | 660 | 653 | 640 | | 443 |
| 81.2% | 2014 | 2,482 | 2,098 | 2,077 | 2,035 | | 1,411 |
| 92.0% | 2015 | 6,128 | 6,112 | 5,806 | 5,690 | | 3,941 |
| 94.6% | 2016 | 9,514 | 8,925 | 8,836 | 8,394 | | 5,137 |
| 86.4% | 2017 | 18,442 | 18,296 | 17,930 | 17,392 | | 11,916 |
| 86.2% | 2018 | 34,283 | 33,494 | 32,154 | 31,189 | | 23,477 |
| 84.4% | 2019 | 51,866 | 55,596 | 60,035 | 54,632 | | 43,276 |
| 89.5% | 2020 | - | - | - | 8,493 | | 70,417 |
| | TOTAL | 123,293 | 124,948 | 127,260 | 128,237 | | 159,859 |
| | Change | | 1,655 | 2,312 | 977 | | |

*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 Oct. 2019 | Actual Nov. 2019 | Projected Dec. 2019 | Projected Jan. 2020 | Projected Dec. 2020 |
| (1) unearned premium (UP) | 114,793 | 116,043 | 113,724 | 110,689 | 121,074 |
| FOR MEMBER SHARING | | | | | |
| (2) expected future costs ratio {% of (1)} | 94.7% | 95.4% | 96.2% | 96.2% | 97.8% |
| (3) expected future costs {(1) x (2)} | 108,673 | 110,663 | 109,366 | 106,433 | 118,355 |
| (4) premium deficiency / (deferred policy acquisition cost) | (6,120) | (5,380) | (4,358) | (4,256) | (2,719) |
| Excluding Actuarial Present Value Adjustments | | | | | |
| (5) expected future costs ratio {% of (1)} | 88.4% | 89.1% | 89.8% | 89.8% | 91.3% |
| (6) expected future costs {(1) x (5)} | 101,509 | 103,368 | 102,158 | 99,414 | 110,552 |
| (7) premium deficiency / (deferred policy acquisition cost) | (13,284) | (12,675) | (11,566) | (11,275) | (10,522) |

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 | 4 | (78) | (74) | - | - | 7 | - | 7 | 7 | (67) |
| 2005 | 415 | (24) | 391 | (4) | 1 | 39 | - | 39 | 36 | 427 |
| 2006 | 220 | (108) | 112 | (2) | - | 11 | - | 11 | 9 | 121 |
| 2007 | 1,427 | (139) | 1,288 | (27) | 5 | 129 | (3) | 126 | 104 | 1,392 |
| 2008 | 380 | (70) | 310 | (7) | 1 | 31 | (1) | 30 | 24 | 334 |
| 2009 | 257 | 127 | 384 | (9) | 2 | 38 | (1) | 37 | 30 | 414 |
| 2010 | 2,451 | 83 | 2,534 | (61) | 10 | 253 | (6) | 247 | 196 | 2,730 |
| 2011 | 4,752 | 89 | 4,841 | (126) | 24 | 484 | (13) | 471 | 369 | 5,210 |
| 2012 | 4,800 | (111) | 4,689 | (113) | 19 | 469 | (11) | 458 | 364 | 5,053 |
| 2013 | 6,826 | 653 | 7,479 | (194) | 30 | 748 | (19) | 729 | 565 | 8,044 |
| 2014 | 9,611 | 2,077 | 11,688 | (351) | 58 | 1,169 | (35) | 1,134 | 841 | 12,529 |
| 2015 | 21,732 | 5,806 | 27,538 | (881) | 138 | 2,754 | (88) | 2,666 | 1,923 | 29,461 |
| 2016 | 25,613 | 8,836 | 34,449 | (1,171) | 172 | 3,445 | (117) | 3,328 | 2,329 | 36,778 |
| 2017 | 28,216 | 17,930 | 46,146 | (1,754) | 277 | 5,768 | (219) | 5,549 | 4,072 | 50,218 |
| 2018 | 39,820 | 32,154 | 71,974 | (3,023) | 504 | 8,997 | (378) | 8,619 | 6,100 | 78,074 |
| PAYs (sub-total): | 146,524 | 67,225 | 213,749 | (7,723) | 1,241 | 24,342 | (891) | 23,451 | 16,969 | 230,718 |
| CAY (2019) | 53,877 | 60,035 | 113,912 | (4,898) | 911 | 13,556 | (583) | 12,973 | 8,986 | 122,898 |
| claims liabilities: | 200,401 | 127,260 | 327,661 | (12,621) | 2,152 | 37,898 | (1,474) | 36,424 | 25,955 | 353,616 |

| | Unearned Premium | Premium Deficiency / (DPAC) | Total Provision | discount | investment PfAD | nominal development PfAD | development PfAD discount | development PfAD | Total apvs | TOTAL* |
|---|---|---|---|---|---|---|---|---|---|---|
| premium liabilities: | 113,724 | (11,566) | 102,158 | (3,970) | 712 | 10,891 | (425) | 10,466 | 7,208 | 109,366 |

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

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| policy liabilities: | | | 429,819 | (16,591) | 2,864 | 48,789 | (1,899) | 46,890 | 33,163 | 462,982 |

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.

| Accident Year | Selected Claims Development MfADs (Sep. 30, 2019) | | | |
| | 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% | 8.6% | 10.0% |
| 2013 | 10.0% | 10.0% | 9.5% | 10.0% |
| 2014 | 10.0% | 10.0% | 9.9% | 10.0% |
| 2015 | 10.0% | 10.0% | 9.4% | 10.0% |
| 2016 | 10.0% | 10.0% | 9.8% | 10.0% |
| 2017 | 12.5% | 10.0% | 12.5% | 12.5% |
| 2018 | 12.4% | 10.0% | 12.5% | 12.5% |
| 2019 | 12.2% | 10.0% | 8.4% | 11.9% |
| 2020 | 11.8% | 10.0% | 5.1% | 10.7% |
| | | | | |
| prem liab | 11.8% | 10.0% | 5.1% | 10.7% |

discount rate: 1.44%
margin (basis points): 25

FACILITY Association

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 (1.41%) 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% | 1.41% | 2.28% |
| 2004 | - | - | - | - | - | - | - | - |
| 2005 | 467 | 466 | 464 | 462 | 461 | 459 | 464 | 461 |
| 2006 | 225 | 223 | 222 | 221 | 219 | 218 | 222 | 220 |
| 2007 | 1,574 | 1,562 | 1,551 | 1,540 | 1,529 | 1,518 | 1,552 | 1,532 |
| 2008 | 636 | 631 | 626 | 621 | 616 | 612 | 626 | 618 |
| 2009 | 256 | 254 | 251 | 249 | 247 | 245 | 252 | 248 |
| 2010 | 3,012 | 2,987 | 2,962 | 2,937 | 2,913 | 2,889 | 2,963 | 2,920 |
| 2011 | 4,611 | 4,569 | 4,528 | 4,488 | 4,448 | 4,410 | 4,531 | 4,461 |
| 2012 | 5,752 | 5,704 | 5,657 | 5,611 | 5,566 | 5,522 | 5,660 | 5,580 |
| 2013 | 8,558 | 8,479 | 8,401 | 8,326 | 8,252 | 8,179 | 8,405 | 8,275 |
| 2014 | 13,773 | 13,626 | 13,485 | 13,345 | 13,209 | 13,077 | 13,493 | 13,253 |
| 2015 | 30,635 | 30,285 | 29,943 | 29,608 | 29,285 | 28,964 | 29,961 | 29,386 |
| 2016 | 38,627 | 38,157 | 37,703 | 37,254 | 36,821 | 36,400 | 37,726 | 36,959 |
| 2017 | 51,099 | 50,404 | 49,728 | 49,067 | 48,429 | 47,804 | 49,762 | 48,631 |
| 2018 | 81,014 | 79,810 | 78,650 | 77,525 | 76,424 | 75,363 | 78,717 | 76,775 |
| 2019 | 120,415 | 118,584 | 116,811 | 115,092 | 113,438 | 111,823 | 116,912 | 113,957 |
| Total | 360,654 | 355,741 | 350,982 | 346,346 | 341,857 | 337,483 | 351,246 | 343,276 |
| | 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% | 1.41% | 2.28% |
| Total | 9,672 | 4,759 | - | (4,636) | (9,125) | (13,499) | 264 | (7,706) |
| | 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% | 1.41% | 2.28% |
| 2004 | - | - | - | - | - | - | - | - |
| 2005 | 0.6% | 0.4% | - | (0.4%) | (0.6%) | (1.1%) | - | (0.6%) |
| 2006 | 1.4% | 0.5% | - | (0.5%) | (1.4%) | (1.8%) | - | (0.9%) |
| 2007 | 1.5% | 0.7% | - | (0.7%) | (1.4%) | (2.1%) | 0.1% | (1.2%) |
| 2008 | 1.6% | 0.8% | - | (0.8%) | (1.6%) | (2.2%) | - | (1.3%) |
| 2009 | 2.0% | 1.2% | - | (0.8%) | (1.6%) | (2.4%) | 0.4% | (1.2%) |
| 2010 | 1.7% | 0.8% | - | (0.8%) | (1.7%) | (2.5%) | 0.0% | (1.4%) |
| 2011 | 1.8% | 0.9% | - | (0.9%) | (1.8%) | (2.6%) | 0.1% | (1.5%) |
| 2012 | 1.7% | 0.8% | - | (0.8%) | (1.6%) | (2.4%) | 0.1% | (1.4%) |
| 2013 | 1.9% | 0.9% | - | (0.9%) | (1.8%) | (2.6%) | 0.0% | (1.5%) |
| 2014 | 2.1% | 1.0% | - | (1.0%) | (2.0%) | (3.0%) | 0.1% | (1.7%) |
| 2015 | 2.3% | 1.1% | - | (1.1%) | (2.2%) | (3.3%) | 0.1% | (1.9%) |
| 2016 | 2.5% | 1.2% | - | (1.2%) | (2.3%) | (3.5%) | 0.1% | (2.0%) |
| 2017 | 2.8% | 1.4% | - | (1.3%) | (2.6%) | (3.9%) | 0.1% | (2.2%) |
| 2018 | 3.0% | 1.5% | - | (1.4%) | (2.8%) | (4.2%) | 0.1% | (2.4%) |
| 2019 | 3.1% | 1.5% | - | (1.5%) | (2.9%) | (4.3%) | 0.1% | (2.4%) |
| Total | 2.8% | 1.4% | - | (1.3%) | (2.6%) | (3.8%) | 0.1% | (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 - Discou** ted                                                                    **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) | 3 | (3) | - | - | - | (71) |
| 2005 | 15 | (1) | 1 | - | - | - | 15 |
| 2006 | (100) | 3 | (2) | - | 1 | (1.0%) | (99) |
| 2007 | (137) | 6 | 101 | - | 107 | (78.1%) | (30) |
| 2008 | (53) | 3 | 4 | - | 7 | (13.2%) | (46) |
| 2009 | 160 | (6) | 6 | - | - | - | 160 |
| 2010 | 310 | (13) | (3) | - | (16) | (5.2%) | 294 |
| 2011 | 486 | (21) | 19 | - | (2) | (0.4%) | 484 |
| 2012 | 402 | (16) | (111) | - | (127) | (31.6%) | 275 |
| 2013 | 1,474 | (59) | (155) | - | (214) | (14.5%) | 1,260 |
| 2014 | 3,386 | (135) | (258) | - | (393) | (11.6%) | 2,993 |
| 2015 | 8,250 | (330) | 194 | - | (136) | (1.6%) | 8,114 |
| 2016 | 11,996 | (551) | (119) | - | (670) | (5.6%) | 11,326 |
| 2017 | 22,724 | (454) | 224 | - | (230) | (1.0%) | 22,494 |
| 2018 | 40,605 | (1,154) | 266 | - | (888) | (2.2%) | 39,717 |
| 2019 | 59,242 | 4,250 | 238 | - | 4,488 | 7.6% | 63,730 |
| **Grand Total** | **148,689** | **1,525** | **402** | **-** | **1,927** | **1.3%** | **150,616** |

EXHIBIT G

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

| RSP | **Alberta Grid** | | | | | | |
|---|---|---|---|---|---|---|---|
| AccountCode Desc | **IBNR - Undiscounted** | | | | | | **IBNR - in $000s** |

| | **Values** | | | | | | |
|---|---|---|---|---|---|---|---|
| **AccYear** | **Sum of Prior Month Actual Amount** | **Sum of Projected Change** | **Sum of Change Due to AvsP Variances** | **Sum of Change Due to Valuation Implementation** | **Sum of Total Change** | **Sum of % Total Change** | **Sum of Current Month Final Amount** |
| 2004 | (79) | 3 | (3) | - | - | - | (79) |
| 2005 | (24) | 1 | (1) | - | - | - | (24) |
| 2006 | (110) | 4 | (3) | - | 1 | (0.9%) | (109) |
| 2007 | (247) | 10 | 97 | - | 107 | (43.3%) | (140) |
| 2008 | (78) | 3 | 4 | - | 7 | (9.0%) | (71) |
| 2009 | 128 | (5) | 5 | - | - | - | 128 |
| 2010 | 99 | (4) | (11) | - | (15) | (15.2%) | 84 |
| 2011 | 91 | (4) | 3 | - | (1) | (1.1%) | 90 |
| 2012 | (49) | 2 | (65) | - | (63) | 128.6% | (112) |
| 2013 | 847 | (34) | (153) | - | (187) | (22.1%) | 660 |
| 2014 | 2,482 | (99) | (285) | - | (384) | (15.5%) | 2,098 |
| 2015 | 6,128 | (245) | 229 | - | (16) | (0.3%) | 6,112 |
| 2016 | 9,514 | (476) | (113) | - | (589) | (6.2%) | 8,925 |
| 2017 | 18,442 | (369) | 223 | - | (146) | (0.8%) | 18,296 |
| 2018 | 34,283 | (1,028) | 239 | - | (789) | (2.3%) | 33,494 |
| 2019 | 51,866 | 3,449 | 281 | - | 3,730 | 7.2% | 55,596 |
| **Grand Total** | **123,293** | **1,208** | **447** | **-** | **1,655** | **1.3%** | **124,948** |