# ONTARIO RISK SHARING POOL

## MAY 2018 OPERATIONAL REPORT

# ACTUARIAL HIGHLIGHTS

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# ACTUARIAL HIGHLIGHTS

# RSP ONTARIO

# OPERATIONAL REPORT

# MAY 2018

## TABLE OF CONTENTS

# 1 Summary

## 1.1 Valuation Schedule (Fiscal Year 2018)

The May 2018 Operational Report incorporates the results of an updated valuation (as at March 31, 2018) – the impact of the implementation of the valuation is discussed in section 1.2. The table immediately below summarizes the implemented valuations and future scheduled valuations for fiscal year 2018.

| ONTARIO RISK SHARING POOL<br>FISCAL YEAR 2018 – SCHEDULE OF VALUATIONS | | | |
|---|---|---|---|
| **Valuation Date** | **Discount Rate (per annum)** | **Operational Report** | **Description of Changes** |
| Sep. 30, 2017<br>(completed) | 1.75%<br>mfad: 25 bp | Oct. 2017 | updated valuation (roll forward): accident year 2017 loss ratio increased 1.4 points to 121.3%; discount rate increased by 52 basis points; no change to selected margins for adverse deviations |
| Dec. 31, 2017<br>(completed) | 1.73%<br>mfad 25 bp | Mar. 2018 | updated valuation: accident year 2018 loss ratio increased 3.4 points to 125.9%; discount rate decreased by 2 basis points; no change to selected margins for adverse deviations |
| Mar. 31, 2018<br>(completed) | 1.89%<br>mfad 25 bp | May 2018 | update valuation (roll forward): accident year 2018 loss ratio decreased 0.2 points to 125.7%; discount rate increased by 16 basis points; no change to selected margins for adverse deviations |
| Jun. 30, 2018 | | Aug. 2018 | update valuation: |
| Sep. 30, 2018 | | Oct. 2018 | update valuation (roll forward): |

Under the proposed schedule for fiscal year 2018, the "off-half" valuation quarters ending March 31, 2018 and September 30, 2018 would not reflect a full valuation update of assumptions, but would rather "roll-forward" key assumptions from the previous valuation.

## 1.2 New Valuation

A valuation of the Ontario Risk Sharing Pool ("RSP") as at March 31, 2018 has been completed since last month's Operational Report and the results of that valuation have been incorporated into this month's Report. The valuation was completed by the Facility Association's internal actuarial group in conjunction with, and approved by, the Appointed Actuary, under the hybrid model for actuarial services. Additional detail will be provided in an "Actuarial Highlights – Quarterly Valuation" report which we anticipate will be posted to the FA website in July.

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

*Summary of Impact ($000s) of Implementing Result of Valuation as at March 31, 2018*[1]

**Ontario** — unfav / (fav) for the month and ytd

| | IMPACT in $000s from changes in: | | | | | |
|---|---|---|---|---|---|---|
| | ults & payout patterns | | | dsct rate | margins | |
| | Nominal [1] | apv adj. [2] | sub-tot [3] | apv adj. [4] | apv adj. [5] | TOTAL [6] |
| PAYs | 5,689 | (1,993) | 3,696 | (4,104) | - | (408) |
| CAY | (296) | (173) | (469) | (792) | - | (1,261) |
| Prem Def | (1,457) | (564) | (2,021) | (950) | - | (2,971) |
| TOTAL | 3,936 | (2,730) | 1,206 | (5,846) | - | (4,640) |

As indicated in the table above, the incorporation of the new valuation had an estimated ***$4.6 million favourable impact*** on the month's net result from operations, subtracting an estimated 3.1 points (see table immediately below) from the **year-to-date Combined Operating Ratio** to end at **152.2%**.

*Summary of Impact (% YTD EP) of Implementing Result of Valuation as at March 31, 2018*

**Ontario** — ytd EP 147,424 (actual)

| | IMPACT unfav / (fav) as % ytd EP from changes in: | | | | | |
|---|---|---|---|---|---|---|
| | ults & payout patterns | | | dsct rate | margins | |
| | Nominal [1] | apv adj. [2] | sub-tot [3] | apv adj. [4] | apv adj. [5] | TOTAL [6] |
| PAYs | 3.9% | (1.4%) | 2.5% | (2.8%) | - | (0.3%) |
| CAY | (0.2%) | (0.1%) | (0.3%) | (0.5%) | - | (0.9%) |
| Prem Def | (1.0%) | (0.4%) | (1.4%) | (0.6%) | - | (2.0%) |
| TOTAL | 2.7% | (1.9%) | 0.8% | (4.0%) | - | (3.1%) |

The impact of the nominal changes is shown in column [1] of the two preceding summary tables. The change in the selected nominal ultimates was unfavourable by $3.9 million overall. This reflects the impact attributable to the changes in the selected ultimate loss ratios (i.e. for each accident year, it is the product of life-to-date earned premium for the accident year and the change in the selected ultimate loss ratio).

The prior accident years overall showed a $5.7 million unfavourable nominal variance, which is attributed to unfavourable claims development. This overall unfavourable prior accident years impact is 0.7% of the prior accident years' nominal unpaid balance of $806.3 million determined at the end of last month (April 2018).

The current accident year and premium deficiency impacts are a result of the change in the selected loss ratio for accident year **2018** (down 0.2 points from 125.9% to **125.7%**) and **2019** (down

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

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

4.0 points from 131.5% to **127.5%**).

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

Column [2] recognizes that changing the nominal selections also changed the unpaid estimates (including changes to the relative mix by government line, which had an impact on the weighted-average MfADs). It also reflects the fact that we updated the projected emergence of claims payments, resulting in a change in the projected cash flows. These changes generated a favourable change of $2.7 million in the actuarial present value adjustments, prior to any changes in the selected discount rate and/or MfADs.

Claims payment emergence patterns were updated and cash flows were reviewed against the selected risk-free yield curve, derived from Government of Canada benchmark bond yields monthly series using values for March 2018. Column [4] accounts for the change in the **discount rate** selected (increased 16 basis points to **1.89%**), indicating a favourable impact of $5.8 million. The impact *related only to claims liabilities* (i.e. PAYs plus CAY) was $4.9 million at May 2018 – this compares to the $4.9 million change one would estimate as the impact by interpolation using the interest rate sensitivity table provided in last month's Actuarial Highlights.

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

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

### 1.3 Appointed Actuary and Hybrid Actuarial Services Model

Liam McFarlane of Ernst & Young LLP is Facility Association's Appointed Actuary (effective as of June 1, 2013).

Facility Association operates under a "hybrid" model in relation to the management and provision of actuarial services. Under this model, actuarial services are performed by both Facility Association's internal staff and its external actuarial consulting firm. The hybrid model approach maximizes the efficiency of resource allocation while providing access to additional expertise and capacity as needed.

### 1.4 Consideration of Recent Legal Decisions and Changes in Legislation / Regulation[2]

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

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

[2] How bills become laws in Ontario is described in detail in the publication: http://www.ontla.on.ca/lao/en/media/laointernet/pdf/bills-and-lawmaking-background-documents/how-bills-become-law-en.pdf.

regulation constitutes a regular part of the valuation process. Descriptions of some of the more recent changes are provided below.

**Ontario Bill 15** (Fighting Fraud and Reducing Automobile Insurance Rates Act, 2014) was introduced into the Legislature by the Minister of Finance on July 15, 2014 and **received Royal Assent on November 20, 2014**. Bill 15 includes various amendments and provisions such as moving the Ontario Automobile Dispute Resolution System (DRS) for statutory accident benefits from the Financial Services Commission of Ontario to the Ministry of the Attorney General (Licence Appeal Tribunal), regulation of the Tow and Storage Industry (amendments to the Consumer Protection Act and Repair and Storage Liens Act), regulations related to licensing of insurance agents and adjusters, changes the applicable interest rate applied to overdue payments in the Statutory Accident Benefits Schedule (SABS), and changes to the prejudgment interest rate on general damages for non-pecuniary loss from the rate as set out in the Courts of Justice Act to rates linked to market conditions. With the current valuation (March 31, 2018), reform adjustments (originally introduced with the June 30, 2015 valuation) specifically related to changes in the non-pecuniary prejudgment interest provision calculation impacting the bodily injury coverage and the applicable interest rate applied to overdue payments in the SABS impacting the accident benefits coverage, were included with the updated industry trend analysis (completed using industry data as at June 30, 2017) and nominal valuation selections, impacting the selection of ultimates. Additional discussion in relation to the application of changes to the prejudgement interest rate on general damages for non-pecuniary loss can be found in section 1.5.

**Ontario Bill 91** (Building Ontario Up Act (Budget Measures), 2015) was introduced into the Legislature by the Minister of Finance on April 23, 2015 and **received Royal Assent on June 4, 2015**. Bill 91 announced a number of amendments to regulations made under the Insurance Act, including: updating the Catastrophic Impairment Definition and changes to the standard benefit level under the Statutory Accident Benefits Schedule (SABS); restrictions on insurance premium increases and lowering of the maximum interest rate charged on monthly auto insurance premium payments; and adjustments to the monetary threshold beyond which the tort deductible does not apply to reflect inflation (adjustments to reflect inflation in the associated tort deductible were undertaken via an update to regulation 461/96). On August 26, 2015, the Ontario government filed Ontario regulations 250/15 and 251/15 implementing reforms set out in Bill 91. With the current valuation (March 31, 2018), reform adjustments (originally introduced with the September 30, 2015 valuation) specifically related to changes in the tort threshold and deductibles impacting the bodily injury coverage and changes to the SABS impacting the bodily injury and accident benefits coverages, were included with the updated industry trend analysis (completed using industry data as at June 30, 2017) and nominal valuation estimates, impacting the selection of ultimates. Additional discussion in relation to the application of changes in the tort threshold and deductibles can be found in section 1.5.

The **Supreme Court of Canada** rendered its judgment on **Saadati v Moorhead** (**2017** SCC 28, **rendered on Jun 2, 2017**). Saadati was involved in a collision in July of 2005 in British Columbia and sued the at-fault driver for damages. According to the Supreme Court decision, "*The trial judge found that the ... accident caused S[aadati] psychological injuries, including personality change and cognitive difficulties. ...and awarded S[aadati] $100,000 for non-pecuniary damages*." The trial decision was appealed to the BC Court of Appeal where the trial's $100,000 non-pecuniary award was dismissed. The Supreme Court upheld the $100,000 non-pecuniary award, determining:

- "*A finding of legally compensable mental injury need not rest, in whole or in part, on the claimant proving a recognized psychiatric injury.*"
- "*...a trier of fact adjudicating a claim of mental injury is not concerned with diagnosis, but with symptoms and their effects.*"
- "*Expert evidence can assist in determining whether or not a mental injury has been shown, but where psychiatric diagnosis is unavailable, it remains open to a trier of fact to find on other evidence adduced by the claimant that he or she has proven on a balance of probabilities the occurrence of mental injury*."

At the current time, no adjustments have been made to our valuation estimates or views based on the judgment as rendered, but we continue to review and consider the implications of the judgment.

### 1.5 Ontario RSP Bodily Injury Case Reserve summary

This section has been updated since last month's Highlights to reflect the updated valuation and the recent **Supreme Court of Canada** decision with regards to **El-Khodr v. Lackie** (2017 ONCA 716).

With the <u>current</u> (March 31, 2018) valuation, the impact of recent Ontario Court of Appeal decisions in relation to the application of changes to the prejudgement interest rate on general damages for non-pecuniary loss was reviewed and a nominal valuation adjustment was included impacting accident years 2014 and prior, further discussion will be provided in the "Actuarial Highlights – Quarterly Valuation" report which is to be posted to the FA website in July.

As indicated in the previous section, reform adjustments, specifically related to changes in the non-pecuniary prejudgment interest provisions in **Ontario Bill 15** and the changes in the tort threshold and deductibles in **Ontario Bill 91** impacting the third party liability - bodily injury coverage for accident year 2015 and subsequent, was included with the updated Ontario Private Passenger Vehicle industry trend analysis (completed using industry data as at June 30, 2017).

In the **Ontario Court of Appeal** decisions in **El-Khodr v. Lackie** (September 19, 2017; 2017 ONCA 716) and **Cobb v. Long Estate** (September 19, 2017; 2017 ONCA 717), the court of appeal ruled that the change to prejudgment interest for non-pecuniary[3] losses from a set level of 5% to the level that applies to pecuniary losses were implemented to achieve particular policy objectives and therefore should have retrospective application (i.e. to be applied to all settlements on or after January 1, 2015). The Ontario Court of Appeal ruling in **El-Khodr v. Lackie** was appealed to the **Supreme Court of Canada**; on June 7, 2018, the Supreme Court of Canada dismissed the application for leave to appeal from the judgment of the Court of Appeal for Ontario.

During the **<u>current</u> valuation** (March 31, 2018)**, the reform adjustment in relation to the application of changes to the prejudgement interest rate on general damages for non-pecuniary loss**, initially introduced with the September 30, 2017 valuation, was decreased from 1.5% to 1.0%. The reform adjustment applied retroactively (using negative IBNR) against bodily injury nominal

[3]**Pecuniary** awards are defined on the Ontario Attorney General's website as "Damages that can be measured in money (i.e., special damages)" with special damages further defined as "Damages intended to compensate a plaintiff for a quantifiable monetary loss. Examples of such losses include: lost earnings, medical bills, and repair costs." In contrast, **non-pecuniary** awards defined as "Damages that cannot be measured in money, but nevertheless are compensated for with money (i.e., general damages)" with general damages further defined as "Damages for non-monetary losses suffered by a plaintiff. These damages are not capable of exact quantification. Examples of such losses suffered include pain, suffering, and disfigurement."

unpaid claims amounts (outstanding case reserve and selected IBNR) impacting accidents years 2014 and prior, will be reduced at each successive valuation, assuming the impact of this product reform change will be fully reflected in outstanding case reserves by the September 30, 2018 valuation (that is, as this adjustment is unwound, it is anticipated that member settlement and case adjustment activity will occur simultaneously, neutralizing the adjustment unwind).

In addition to the above, in the **Ontario Court of Appeal** decisions in **El-Khodr v. Lackie** (September 19, 2017; 2017 ONCA 716) and **Cobb v. Long Estate** (September 19, 2017; 2017 ONCA 717), the court of appeal ruled that the changes to the tort deductible and monetary threshold were implemented to achieve particular policy objectives and therefore should have retrospective application (i.e. to be applied to all settlements on or after January 1, 2015). The Facility Association view, consistent with these decisions, is that the changes to the bodily injury tort threshold and deductibles are on a settlement date basis. With the **current valuation** (March 31, 2018), no additional reform adjustment was included as we have assumed the retroactive impact of this product reform change has been fully reflected in outstanding case reserves.

Recognizing that individual members may interpret these results differently, we have included a table at the top of the next page displaying the levels of Ontario RSP Third Party Liability – Bodily Injury Case Reserves (as at December 31, 2017[4]) by accident year as well as projected average duration, from accident date to projected settlement date, from the December 31, 2017 valuation paid emergence projection model. No attempt has been made to distinguish case reserves held for pecuniary versus non-pecuniary losses, nor in estimating the amount of prejudgment interest, if any, is included in the case reserve estimates.

[4]As we anticipate the full impact of the reforms will be accounted for in case reserves by December 31, 2018 and therefore with the 2018 Q4 valuation, we anticipated being able to remove this section when that valuation is implemented with the March 2019 Operational Report.

ON RSP (Amounts in $000s; as at Dec. 31, 2017)

| AY | Curr BI Case | avg yrs to Dec 2017 | projected avg # yrs to settlement | projected avg duration |
|---|---|---|---|---|
| [1] | [2] | [5] | [6] | [7] |
| 1993 | - | 24.5 | - | - |
| 1994 | - | 23.5 | - | - |
| 1995 | - | 22.5 | - | - |
| 1996 | 168 | 21.5 | 1.5 | 23.0 |
| 1997 | - | 20.5 | - | - |
| 1998 | - | 19.5 | - | - |
| 1999 | - | 18.5 | - | - |
| 2000 | - | 17.5 | - | - |
| 2001 | - | 16.5 | - | - |
| 2002 | - | 15.5 | - | - |
| 2003 | 8 | 14.5 | 5.0 | 19.5 |
| 2004 | - | 13.5 | - | - |
| 2005 | 16 | 12.5 | 6.3 | 18.8 |
| 2006 | 25 | 11.5 | 6.6 | 18.1 |
| 2007 | 734 | 10.5 | 7.2 | 17.7 |
| 2008 | 1,770 | 9.5 | 3.7 | 13.2 |
| 2009 | 4,207 | 8.5 | 2.0 | 10.5 |
| 2010 | 8,454 | 7.5 | 1.9 | 9.4 |
| 2011 | 8,745 | 6.5 | 2.0 | 8.5 |
| 2012 | 16,577 | 5.5 | 2.1 | 7.6 |
| 2013 | 27,154 | 4.5 | 2.1 | 6.6 |
| 2014 | 43,100 | 3.5 | 2.2 | 5.7 |
| 2015 | 47,100 | 2.5 | 2.5 | 5.0 |
| 2016 | 46,452 | 1.5 | 3.0 | 4.5 |
| 2017 | 36,601 | 0.5 | 3.8 | 4.3 |
| **TOTAL** | **241,111** | **3.1** | **2.6** | **5.8** |

In the table above, the column referenced as [7] ("projected avg duration") is an estimate of the number of years from claim occurrence[5] to claim settlement, via summing the average number of years from claim occurrence to December 31, 2017 (column [5]) and from December 31, 2017 to settlement (column [6]).

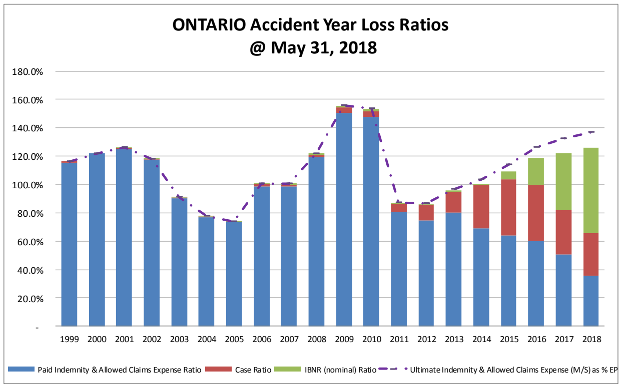
## 1.6 Current Provision Summary

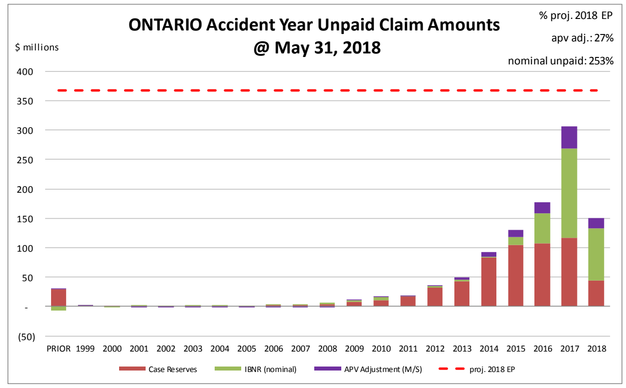
The charts at the top of the next page show the current levels of claim liabilities[6] booked by accident

[5]Prejudgment interest in Ontario applies to the period from the date the claim is reported, not from the time of occurrence. We have provided the latter to allow actuarial judgment to be applied in estimating the lag between occurrence and reporting.

[6]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.

year[7]. 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 2018 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 provision for claims liabilities ($99.7 million – see table immediately below) represents 27% of the earned premium projected for the full year 2018 (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 | 611,127 | 59.3% |
| ibnr | 320,054 | 31.0% |
| M/S apv adjust. | 99,704 | 9.7% |
| M/S total | 1,030,885 | 100.0% |

The table to the left breaks down the Member Statement (M/S) claim liabilities total into component parts, indicating case reserves represent the largest portion. Approximately 75% of the IBNR balance relates to accident years 2017 and 2018 (see Exhibit B). Approximately 83% of the M/S total claim liabilities are related to accident years 2014-2018 inclusive (i.e. the most recent 5 accident years), and approximately 4% is related to accident years 2008 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 | 169,902 | 72.3% |
| prem def/(dpac) | 44,602 | 19.0% |
| M/S apv adjust. | 20,348 | 8.7% |
| M/S total | 234,852 | 100.0% |

policy liabilities ($000s)

| | amt | % |
|---|---|---|
| claim | 931,181 | 73.6% |
| premium | 214,504 | 16.9% |
| M/S apv adjust. | 120,052 | 9.5% |
| M/S total | 1,265,737 | 100.0% |

[7] The loss ratio chart has been limited to show the most recent 20 accident years; the unpaid provision chart has been limited to show the most recent 20 accident years, and show all accident years older than 20 years collectively as "PRIOR".

# 2 Activity During the Month of May 2018

## 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[8].

*Ontario 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) | 7,428 | (952) | (5,627) | 4,215 | 1,801 | 3,263 |
| 2016 | (3) | (3) | 1,941 | (1,250) | 1,189 | 2,779 | 3,130 | 1,529 |
| 2017 | (60) | (60) | 4,681 | (722) | 1,991 | 2,754 | 6,672 | 2,032 |
| 2018 | 30,454 | (576) | 14,053 | 194 | 10,105 | 143 | 24,158 | 337 |
| TOTAL | 30,389 | (641) | 28,103 | (2,730) | 7,658 | 9,891 | 35,761 | 7,161 |

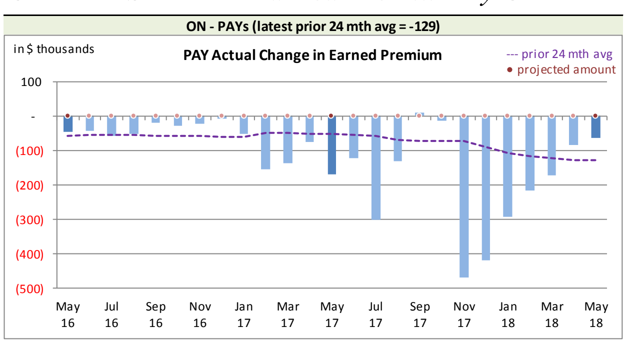
(Recorded transaction amounts exclude IBNR & other actuarial provisions)

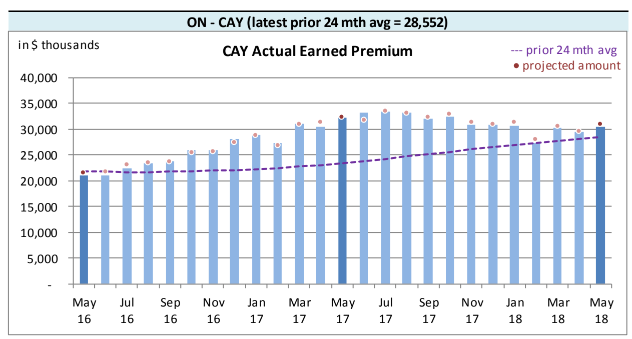
Claims transaction activity is generally volatile and changes from one month to the next are anticipated due to this natural "process variance" (i.e. random variation). Each month, the projection variances are reviewed for signs of projection bias and to identify potential ways to reduce the level of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

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

The charts immediately below show actual **earned premium**[9] 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.

*Ontario 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 (note the different scales in the charts above), although relatively high levels generally occur at the beginning of each year.

The relatively high level of PAYs negative earned premium for share months November and

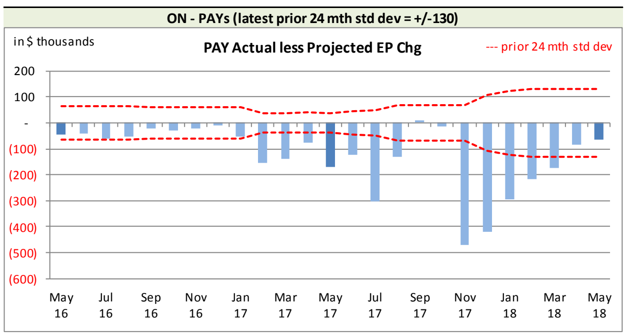
[8]There may be rounding differences in values in this document compared with the associated Bulletin and/or Operational Report.

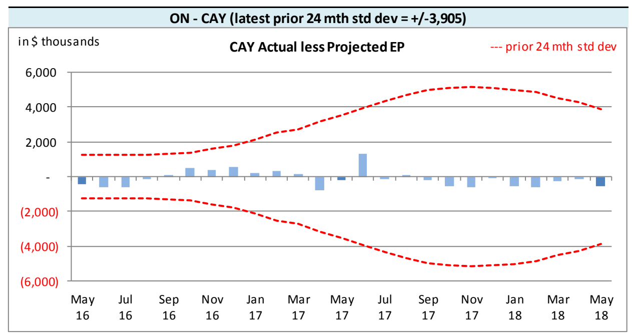
[9]Premium is earned on a daily basis based on the transaction term measured in days. As a result, months with 31 days earned relatively more than those with 30 days, and February earns the least.

December 2017 was related to a member company's removal of ineligible risks as a result of a regular audit by FA internal audit. The high level of PAY negative earned premium for January through May 2018 is attributed to activity across several member companies and continues to be investigated by FA management.

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.

*Ontario 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) | (129) | 28,552 |
| std dev | 130 | 3,905 |
| A-P <> std dev | 12 | - |
| % <> std dev | 48.0% | 0.0% |
| norm <> std dev | 31.7% | 31.7% |

We project **earned premium** changes from known unearned premium and projected written premium levels, but upload the total projections as current accident year (CAY). This process has generated prior accident years' (PAYs) bias[10], with actuals generally lower than projected, although the magnitude is not high relative to monthly premium. In addition to the PAYs' bias, the CAY had also shown bias up until August 2016[11], with actuals being generally lower than projected[12], and we modified our projections processes in response (24-month trailing is no longer indicating bias). Over time, we may consider other projection approaches to narrow monthly variance levels further, but it is not currently deemed a priority. Readers will also note the significant widening then tapering of the CAY standard deviation band, reflecting recent volume changes and the impact as those changes are earned.

### 2.1.b AvsP: Recorded Indemnity & Allowed Claims Expense

The charts at the top of the next page 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

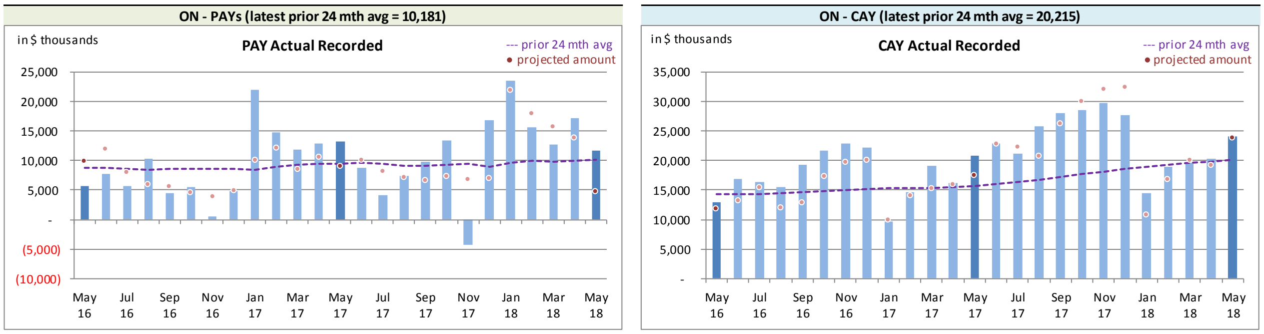
[10]The PAYs' variances will show bias as the projection upload forces all earned premium projections to be attributed to the CAY.

[11]In fact, January 2014 was the only month where the actual earned premium was higher than projected for the period January 2014 to August 2016 inclusive, clearly indicating bias, as a 95% confidence range for a binominal distribution with 32 trials and 50% probability of success is 10 to 22, and 1 is clearly outside of that range.

[12]Due to the relatively rapid increase in earned premium during the latter part of 2016 and through 2017, the 24-month earned premium standard deviation has widened considerably, making it difficult to "see" projection variances in the CAY earned premium variance-from-projected chart.

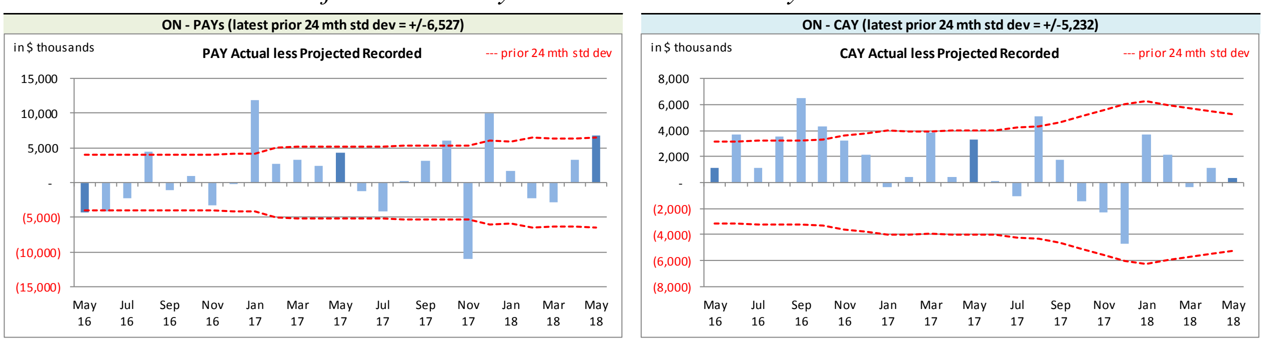
each month's actual compares with the average amount of the preceding 24 calendar months.

*Ontario 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 to show how the variances from projection compare with historical standard deviations.

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




| On Latest $ thousands | | |
|---|---|---|
| **Recorded** | PAYs | CAY |
| Mthly Avg Recorded (prior 24 mths) | 10,181 | 20,215 |
| std dev | 6,527 | 5,232 |
| A-P <> std dev | 8 | 5 |
| % <> std dev | 32.0% | 20.0% |
| norm <> std dev | 31.7% | 31.7% |

With respect to **recorded** indemnity & allowed claims expense, 32% of the prior accident years' (PAYs) variances (left chart above) were outside of one standard deviation over the period, suggesting the projection process has performed no better than simply projecting the prior 24-month average amount. No bias has been indicated at a 95% confidence level on a lagging 24-month basis.

The PAY **recorded** variance was outside of one standard deviation driven by an adjustment made to the recorded projection for the month of May, as FA expected a correction in recorded case reserve overstatement, as previously advised by a member (see following sections for more details). As the correction did not go through during the month, the PAY **recorded** activity was higher than the projected by more than one standard deviation. Based on discussions with the member, the case reserves correction is now expected to go through next month, and as such our recorded projections for June have been adjusted.

The current accident year (CAY) **recorded** variances (right chart above) fell outside of one standard deviation 20% of the time over the entire period, suggesting that the projection process has performed better than simply projecting the prior 24-month average amount. There does appear to be evidence of some bias at the 95% confidence level as 18[13] times in the past 24 months, actuals were higher than our projections for the CAY **recorded** amount. Among the 18 months in the past 24 where actuals were higher than our projections, 5 variances were outside the one standard deviation band.

In fact, the averages of monthly ratios for **recorded** and **paid** to year-to-date earned premium have been on the rise generally since 2012, as is evident 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 May) provides the average of the 5 monthly ratios (i.e. Jan-May) for that row's calendar year.

Per the left table below (showing average monthly ratios for each calendar year), the 2017 average **recorded** ratio at 14.7% was the second highest ratio since 2010 (2016 was the highest), and the 2017 **paid** ratio at 7.6% tied with 2016 as the highest level since 2010. That is, both ratios remained at "elevated" levels compared with the ratios for the 3 calendar years immediately following the 2010 reforms.

As can be seen in the right table below (average of 5 months to May of each year), the 2018 average ratio for **recorded** is at its highest level since 2010 while the **paid** ratio is at its highest level in the last 10 years. While we acknowledge that these ratios are more volatile earlier in the year due to smaller year-to-date earned premium levels, there does appear to be correlation between the ytd levels at May each year and the correseponding ratios at December, suggesting the levels for 2018 at May are predictive of where the 2018 ratios will be at year-end, relative to previous years.

CAY avg of mthly ratios for yr

| as at | Rec'd | yr-on-yr chg | Paid | yr-on-yr chg |
|---|---|---|---|---|
| Dec 2009 | 18.5% | | 7.0% | |
| Dec 2010 | 23.2% | 4.7% | 8.0% | 1.0% |
| Dec 2011 | 11.5% | (11.7%) | 5.0% | (3.0%) |
| Dec 2012 | 11.4% | (0.1%) | 4.6% | (0.4%) |
| Dec 2013 | 12.0% | 0.6% | 5.1% | 0.5% |
| Dec 2014 | 13.7% | 1.7% | 5.9% | 0.8% |
| Dec 2015 | 14.4% | 0.7% | 6.4% | 0.5% |
| Dec 2016 | 15.8% | 1.4% | 7.6% | 1.2% |
| Dec 2017 | 14.7% | (1.1%) | 7.6% | 0.0% |

CAY avg of mthly ratios for yr

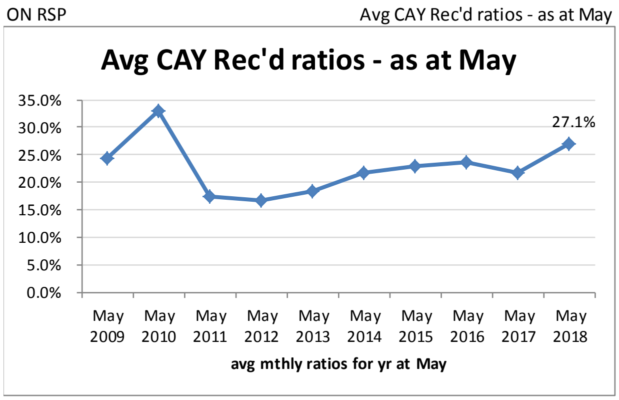
| as at | Rec'd | yr-on-yr chg | Paid | yr-on-yr chg |
|---|---|---|---|---|
| May 2009 | 24.4% | | 8.1% | |
| May 2010 | 32.9% | 8.5% | 9.5% | 1.4% |
| May 2011 | 17.5% | (15.4%) | 6.9% | (2.6%) |
| May 2012 | 16.7% | (0.8%) | 6.5% | (0.4%) |
| May 2013 | 18.3% | 1.6% | 7.0% | 0.5% |
| May 2014 | 21.8% | 3.5% | 8.7% | 1.7% |
| May 2015 | 22.9% | 1.1% | 9.5% | 0.8% |
| May 2016 | 23.6% | 0.7% | 10.6% | 1.1% |
| May 2017 | 21.7% | (1.9%) | 10.3% | (0.3%) |
| May 2018 | 27.1% | 5.4% | 12.9% | 2.6% |

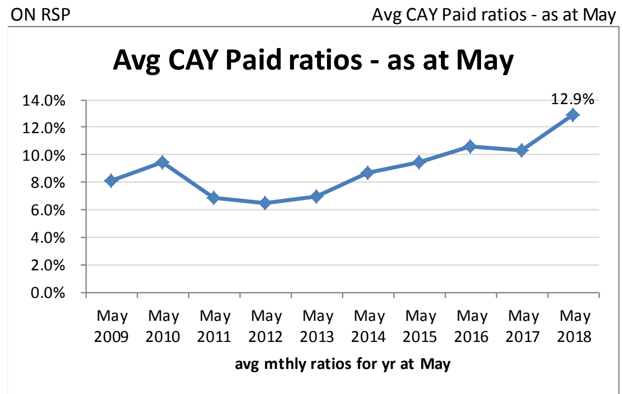
While we acknowledge that these average ratios are more volatile earlier in the year due to smaller year-to-date earned premium levels, there has been strong (over 90%) correlation between the ytd monthly average ratios at May each year and the corresponding monthly average ratios at December, suggesting the monthly average ratios for 2018 at May (that is, the average of the 5 monthly ratios Jan 2018 to May 2018) are predictive of where the 2018 monthly average ratios will be at year-end (that is, the 12 monthly ratios Jan 2018 – Dec 2018). Using simple regression, we forecast the average of the 12 monthly ratios for calendar year 2018 (i.e. the average of the monthly ratios for Jan 2018 – Dec 2018) will be 18.8% (95% prediction interval of 16.4% to 21.1%) for recorded and 9.6%

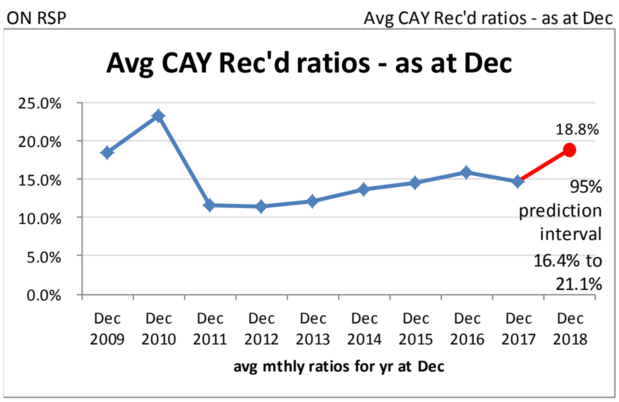
[13] For the binomial distribution with 24 trials and an assumed 50% success probability, the 95% confidence range is 7 to 17.

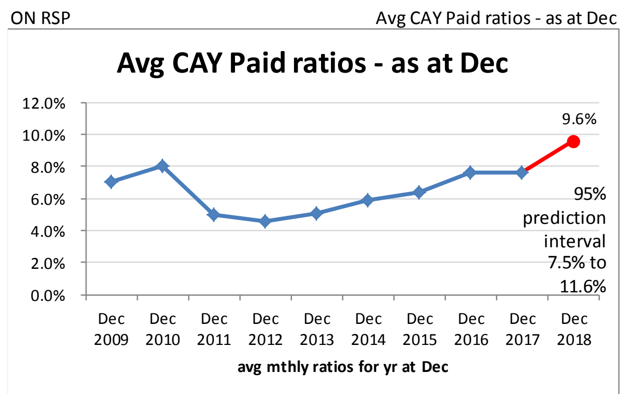
(95% prediction interval of 7.5% to 11.6%) for paid. The results are presented in charts immediately below.

*Ontario RSP average of monthly CAY claims activity ratios to EP*




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

These monthly-average ratios may be signalling an actual increase in relative claim amounts generally, signaling a change in the pattern of **recorded** / **paid** activity, or signaling belated impacts of rate decreases (reducing **earned premium** level per loss cost level). The CAY **recorded** activity will be monitored to determine if this is an ongoing trend.

As noted in the last four month's Actuarial Highlights, FA management was notified on January 31, 2018 by a member of a potential recorded case reserve overstatement. Furthermore, during the latest valuation (March 31, 2018), FA management was advised of an additional and separate recorded case reserve understatement primarily due to incorrect reporting after FA's October 31, 2017 fiscal year end. Management investigated and estimated the overall overstatement for the Ontario RSP as at March 31, 2018 as indicated in the table at the top of the next page.

*Estimated case reserve overstatement as at Mar 31, 2018*

overstatement / (understatement)

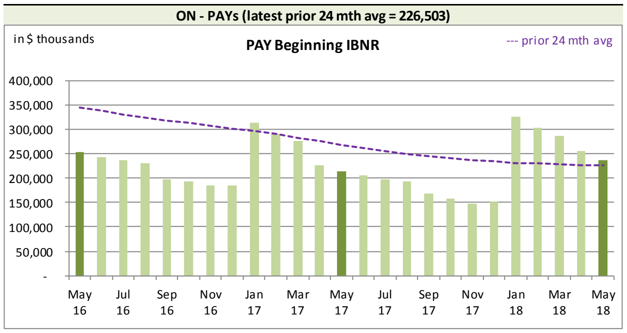
| Accident Year | Total Case Reserve Adjustment ($'000s) |
|---|---|
| 2006 | 227 |
| 2007 | 201 |
| 2008 | 264 |
| 2009 | 1,030 |
| 2010 | 115 |
| 2011 | (115) |
| 2012 | 651 |
| 2013 | (265) |
| 2014 | 602 |
| 2015 | 1,162 |
| 2016 | 1,648 |
| 2017 | 2,989 |
| **Total** | **8,509** |

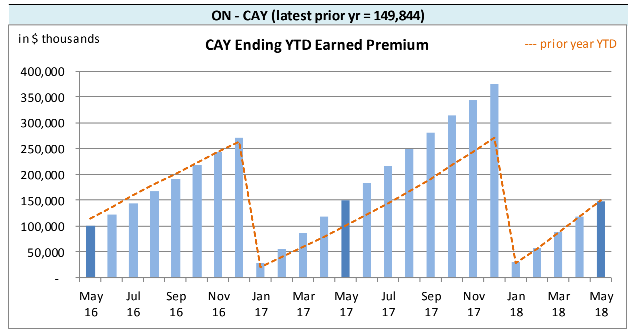
With the latest valuation (March 31, 2018), prior accident years' ultimates selections have taken into account the member's overstatement (both the original amount as notified, and the subsequent amount, with the combination of the two being summarized in the table above). FA management is working with the member on a process to correct the reported levels, and we currently anticipate that this may be partially completed in time for the 2018 Q2 valuation.

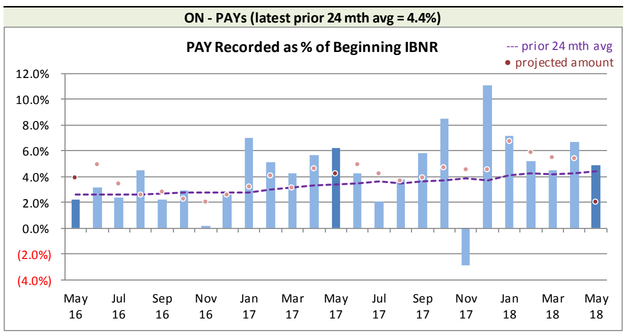
The method for establishing IBNR adjusts automatically for changes in **earned premium** and **recorded** claims activity level (see sections 2.2 and 3).

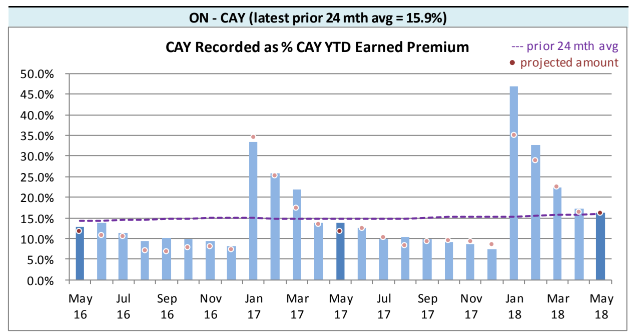
We have included, for reference, additional charts at the top of the next page related to levels influencing **recorded** activity. Note in particular the reduction in the level of PAY beginning IBNR over the months, as a response to valuations and showing up as a beginning IBNR change one month after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

*Ontario RSP Levels that influence*[14] ***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:

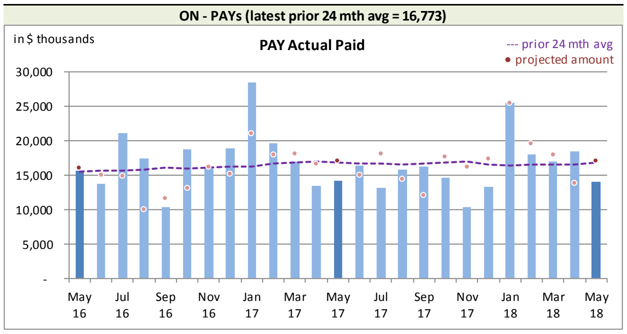
- to offset actual **recorded** activity (through loss ratio matching);
- the annual switchover as a current accident year becomes a prior accident year (occurs in January); and
- when a new valuation is implemented, where the valuation resulted in changes to the selection of prior accident years' ultimate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

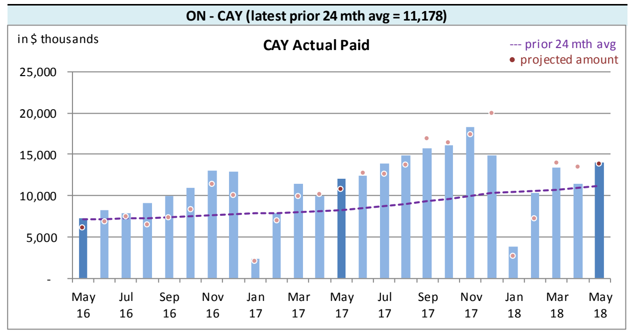
### 2.1.c AvsP: Paid Indemnity & Allowed Claims Expense

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.

[14]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.

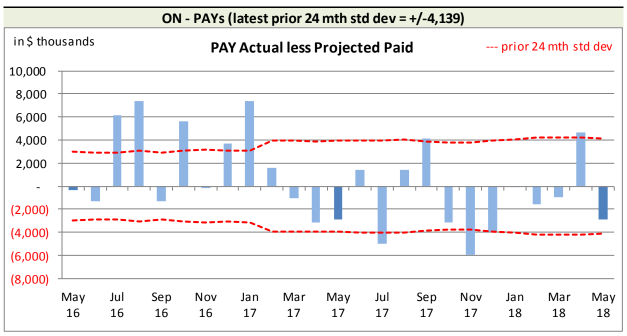
*Ontario RSP Actual **Paid** activity by Calendar Month*

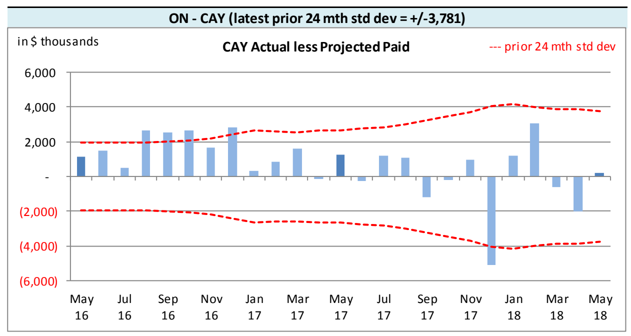



**Paid** activity variances from the previous month's projections are shown in the charts immediately below, including the "prior 24-month standard deviation" levels to show how the variances from projection compare with historical standard deviations.

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




| On Latest $ thousands | | |
|---|---|---|
| **Paid** | PAYs | CAY |
| Mthly Avg Paid (prior 24 mths) | 16,773 | 11,178 |
| std dev | 4,139 | 3,781 |
| A-P <> std dev | 9 | 5 |
| % <> std dev | 36.0% | 20.0% |
| norm <> std dev | 31.7% | 31.7% |

With respect to **paid** indemnity & allowed claims expense, 36% of the prior accident years' (PAYs) variances (left chart above) over the last 25 calendar months have fallen outside of one standard deviation, suggesting the projection process has performed no better than projecting simply based on the preceding 24-month average. No bias has been indicated at a 95% confidence level on a lagging 24-month basis.

The current accident year (CAY) **paid** variances over the last 25 calendar months have fallen outside of one standard deviation 20% of the time, suggesting the projection process has performed better than projecting simply based on the preceding 24-month average (see right table above). Bias has been indicated at a 95% confidence level on a lagging 24-month basis[15], as 18 times in the past 25 months, actuals were higher than our projections for the CAY **paid** amount. Among the 18 months in the past 25 where actuals were higher than our projections, 4 variances were outside the one standard deviation band.

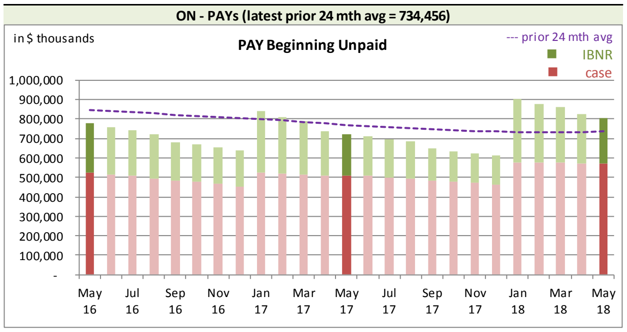
The bottom right chart on the next page shows that the rolling 24-month ratio of CAY **paid** to ytd

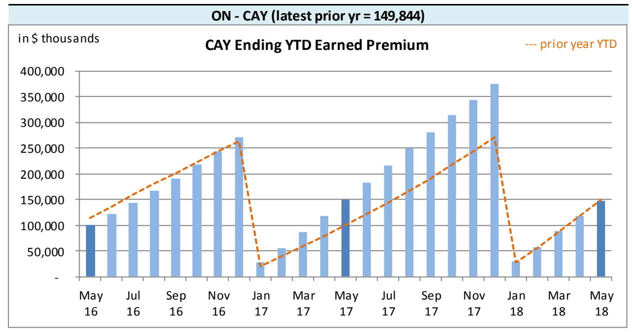
[15]For the binomial distribution with 24 trials and an assumed 50% success probability, the 95% confidence range is 7 to 17.

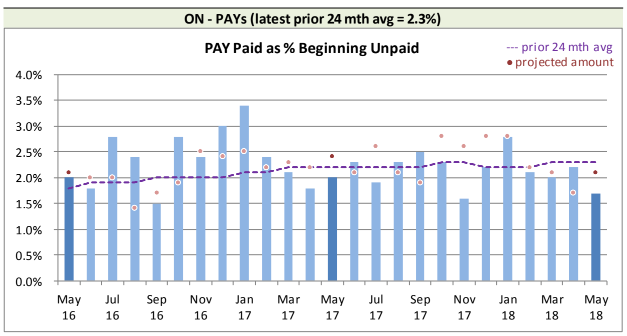
**earned premium** has been increasing, which adds to the difficulty in projecting **paid** activity. We have made adjustments to our assumption selections in an attempt to account for these issues, but recognize, as discussed in the previous section, that the results may be signalling a change in paid patterns, a change in claims levels in general, or the impact of rate changes.

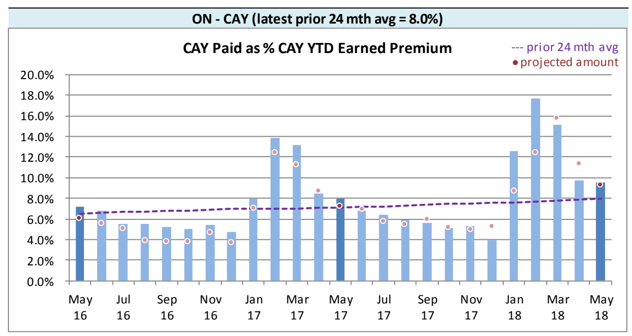
We have included, for reference, additional charts immediately below related to levels influencing **paid** activity.

*Ontario RSP Levels that influence[16] 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).

[16]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.

## 2.2 Actuarial Provisions

An "ultimate loss ratio matching method" (described in section 3) is used to determine the month's IBNR[17], 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 immediately below summarizes variances in provisions included in the May 2018 Operational Report and the associated one-month projections from last month's Report.

*Ontario 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 | 28,666 | (2,030) | (21,614) | (3,864) | 48,117 | 12 | 55,169 | (5,882) |
| 2016 | 51,306 | (455) | (7,776) | (739) | 27,060 | 131 | 70,590 | (1,063) |
| 2017 | 151,309 | 1,269 | (14,783) | (1,545) | 51,921 | 266 | 188,447 | (10) |
| 2018 | 88,773 | (1,359) | (7,866) | (601) | 24,645 | (486) | 105,552 | (2,446) |
| TOTAL | 320,054 | (2,575) | (52,039) | (6,749) | 151,743 | (77) | 419,758 | (9,401) |

The IBNR provision is $2.6 million lower than projected from last month, counterbalancing the recorded claims activity and adjusting for the earned premium variance impacts indicated in section 2.1, and due to the valuation implementation.

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

(i) the change projected last month;

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

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

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

The table at the top of the next page summarizes the variances in the provisions for premium deficiency liability / (deferred policy acquisition cost asset) included in the May 2018 Operational Report and the one-month projections from last month's Report. This RSP is in a premium deficiency position (shown as a positive amount) prior to and after actuarial present value adjustments. Actuarial present value adjustments increase the liability value as the adjustments increase the expected future policy obligations (costs) associated with the unearned premium. The variances noted are mainly driven by the unearned premium variance and due to valuation implementation.

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

*Ontario 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: | 44,602 | (2,385) | 20,348 | (1,935) | 64,950 | (4,320) |
| balance as % unearned premium: | 26.3% | (0.8%) | 12.0% | (1.0%) | 38.2% | (1.8%) |
| actual unearned premium: | 169,902 | | | | | |
| less projected: | (3,216) | | | | | |

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

## 4 Calendar Year-to-Date Results

The table at the top of the next page summarizes the calendar year-to-date results for indemnity & allowed claims expenses[19], 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 126.4% rather than 125.7% (the valuation ultimate ratio for accident year 2018), 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 Ontario RSP Summary of Operations due to rounding.)

[18] "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).

[19] 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.

*Ontario 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 | (14,079) | (9.5%) | (11,743) | (8.0%) | (25,822) | (17.5%) | (2,035) | 2.8% |
| CAY | 186,362 | 126.4% | 16,779 | 11.4% | 203,141 | 137.8% | 40,305 | (1.3%) |
| TOTAL | 172,283 | 116.9% | 5,036 | 3.4% | 177,319 | 120.3% | 38,270 | 1.5% |

("% EP" based on 2018 calendar year-to-date earned premium; ratios may not total due to rounding)

In general, prior accident years (PAYs) changes from last month are due to the release of the actuarial present value adjustments with claims payments, except when valuations are implemented. The loss ratio change year-to-date in Table 04 reflects not only changes in the prior accident year levels, but also the increase in the calendar year-to-date earned premium with an additional month's earned premium and the valuation implementation.

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

## 5 Current Operational Report – Additional Exhibits

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

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

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

The ultimate loss ratios presented in section 6, Exhibit B, refer to the estimates derived on the basis of various actuarial methodologies applied to the experience of the Ontario Risk Sharing Pool for the purposes of the most recent quarterly valuation. As discussed in section 3, IBNR 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 1.89%

interest rate margin 25 basis pts

| Amounts in $000s | | | | | |
|---|---|---|---|---|---|
| Accident Year | Actual Apr 2018 | Actual May 2018 | Projected Jun 2018 | Projected Jul 2018 | Projected Dec 2018 |
| prior | (4,625) | (5,908) | (5,789) | (5,487) | (4,872) |
| 1999 | 61 | 29 | 28 | 27 | 24 |
| 2000 | (4) | (4) | (4) | (4) | (4) |
| 2001 | 104 | 63 | 62 | 59 | 52 |
| 2002 | 538 | 174 | 169 | 161 | 143 |
| 2003 | 355 | 301 | 296 | 281 | 249 |
| 2004 | 582 | 341 | 334 | 316 | 282 |
| 2005 | 501 | 470 | 461 | 437 | 387 |
| 2006 | 1,468 | 836 | 819 | 777 | 688 |
| 2007 | 781 | 1,027 | 1,007 | 955 | 846 |
| 2008 | 2,520 | 2,421 | 2,373 | 2,253 | 1,997 |
| 2009 | 3,193 | 3,305 | 4,276 | 4,063 | 3,595 |
| 2010 | 6,521 | 6,162 | 6,039 | 5,741 | 5,072 |
| 2011 | 2,275 | 1,444 | 1,414 | 1,350 | 1,185 |
| 2012 | 3,365 | 3,230 | 3,878 | 3,695 | 3,253 |
| 2013 | 9,114 | 6,205 | 6,081 | 5,808 | 5,087 |
| 2014 | 9,244 | 9,501 | 9,140 | 8,824 | 7,148 |
| 2015 | 24,310 | 25,572 | 25,726 | 24,937 | 17,853 |
| 2016 | 73,660 | 70,590 | 68,666 | 66,296 | 48,701 |
| 2017 | 193,881 | 188,447 | 184,677 | 179,864 | 155,480 |
| 2018 | 89,405 | 105,552 | 120,193 | 139,714 | 210,050 |
| TOTAL | 417,249 | 419,758 | 429,846 | 440,067 | 457,216 |
| Change | | 2,509 | 10,088 | 10,221 | |

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

# EXHIBIT B

## IBNR

TABLE EXHIBIT B

IBNR

| Ultimate Loss Ratio | Accident Year | Actual Apr 2018 | Actual May 2018 | Projected Jun 2018 | Projected Jul 2018 | Projected Dec 2018 |
|---|---|---|---|---|---|---|
| | | Amounts in $000s | | | | |
| - | prior | (6,614) | (6,871) | (6,732) | (6,395) | (5,660) |
| 116.3% | 1999 | 18 | 18 | 18 | 17 | 15 |
| 122.0% | 2000 | (4) | (4) | (4) | (4) | (4) |
| 126.1% | 2001 | 67 | 67 | 66 | 63 | 55 |
| 118.0% | 2002 | 518 | 177 | 173 | 164 | 144 |
| 91.2% | 2003 | 323 | 323 | 317 | 301 | 266 |
| 77.8% | 2004 | 548 | 381 | 373 | 354 | 314 |
| 73.8% | 2005 | 493 | 493 | 483 | 459 | 407 |
| 100.7% | 2006 | 1,462 | 970 | 951 | 903 | 798 |
| 100.5% | 2007 | 794 | 1,190 | 1,166 | 1,108 | 979 |
| 122.0% | 2008 | 2,523 | 2,620 | 2,568 | 2,440 | 2,159 |
| 155.5% | 2009 | 2,944 | 3,245 | 4,219 | 4,008 | 3,547 |
| 153.5% | 2010 | 5,803 | 5,651 | 5,538 | 5,261 | 4,654 |
| 86.9% | 2011 | 1,551 | 885 | 867 | 824 | 728 |
| 86.3% | 2012 | 1,918 | 2,226 | 2,894 | 2,749 | 2,433 |
| 95.8% | 2013 | 5,379 | 3,034 | 2,973 | 2,824 | 2,499 |
| 99.9% | 2014 | 130 | 935 | 832 | 765 | 229 |
| 109.0% | 2015 | 11,381 | 13,326 | 13,726 | 13,177 | 7,222 |
| 119.0% | 2016 | 53,362 | 51,306 | 49,767 | 47,776 | 32,131 |
| 122.2% | 2017 | 154,680 | 151,309 | 148,283 | 143,835 | 122,243 |
| 125.7% | 2018 | 74,886 | 88,773 | 100,526 | 117,124 | 171,541 |
| | TOTAL | 312,162 | 320,054 | 329,004 | 337,753 | 346,700 |
| | Change | | 7,892 | 8,950 | 8,749 | |

*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 Apr 2018 | Actual May 2018 | Projected Jun 2018 | Projected Jul 2018 | Projected Dec 2018 |
| (1) unearned premium (UP) | 164,983 | 169,902 | 182,460 | 190,878 | 215,170 |
| FOR MEMBER SHARING | | | | | |
| (2) expected future costs ratio {% of (1)} | 139.5% | 138.2% | 138.4% | 138.6% | 139.9% |
| (3) expected future costs {(1) x (2)} | 230,224 | 234,852 | 252,546 | 264,585 | 300,933 |
| (4) premium deficiency / (deferred policy acquisition cost) | 65,241 | 64,950 | 70,086 | 73,707 | 85,763 |
| Excluding Actuarial Present Value Adjustments | | | | | |
| (5) expected future costs ratio {% of (1)} | 126.7% | 126.3% | 126.4% | 126.6% | 127.7% |
| (6) expected future costs {(1) x (5)} | 209,060 | 214,504 | 230,666 | 241,661 | 274,858 |
| (7) premium deficiency / (deferred policy acquisition cost) | 44,077 | 44,602 | 48,206 | 50,783 | 59,688 |

# EXHIBIT D

## Projected Year-end Policy Liabilities

The table below presents the projected policy liabilities as at December 31, 2018, broken down by component.

| Ontario | Projected Balances as at Dec. 31, 2018 ($000s) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ending 2018 | 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 |
| prior | 24,635 | (5,660) | 18,975 | (1,149) | 153 | 1,899 | (115) | 1,784 | 788 | 19,763 |
| 1999 | 570 | 15 | 585 | (51) | 6 | 59 | (5) | 54 | 9 | 594 |
| 2000 | 15 | (4) | 11 | (1) | - | 1 | - | 1 | - | 11 |
| 2001 | 702 | 55 | 757 | (81) | 10 | 76 | (8) | 68 | (3) | 754 |
| 2002 | 51 | 144 | 195 | (22) | 3 | 20 | (2) | 18 | (1) | 194 |
| 2003 | 684 | 266 | 950 | (114) | 13 | 95 | (11) | 84 | (17) | 933 |
| 2004 | 942 | 314 | 1,256 | (162) | 20 | 126 | (16) | 110 | (32) | 1,224 |
| 2005 | 156 | 407 | 563 | (77) | 9 | 56 | (8) | 48 | (20) | 543 |
| 2006 | 1,723 | 798 | 2,521 | (368) | 43 | 252 | (37) | 215 | (110) | 2,411 |
| 2007 | 1,992 | 979 | 2,971 | (437) | 51 | 297 | (44) | 253 | (133) | 2,838 |
| 2008 | 3,003 | 2,159 | 5,162 | (692) | 83 | 516 | (69) | 447 | (162) | 5,000 |
| 2009 | 5,323 | 3,547 | 8,870 | (852) | 98 | 887 | (85) | 802 | 48 | 8,918 |
| 2010 | 8,813 | 4,654 | 13,467 | (943) | 108 | 1,347 | (94) | 1,253 | 418 | 13,885 |
| 2011 | 13,988 | 728 | 14,716 | (1,030) | 118 | 1,472 | (103) | 1,369 | 457 | 15,173 |
| 2012 | 26,154 | 2,433 | 28,587 | (2,087) | 257 | 2,859 | (209) | 2,650 | 820 | 29,407 |
| 2013 | 35,013 | 2,499 | 37,512 | (2,101) | 263 | 4,689 | (263) | 4,426 | 2,588 | 40,100 |
| 2014 | 67,644 | 229 | 67,873 | (3,190) | 407 | 10,181 | (479) | 9,702 | 6,919 | 74,792 |
| 2015 | 95,549 | 7,222 | 102,771 | (4,522) | 514 | 15,313 | (674) | 14,639 | 10,631 | 113,402 |
| 2016 | 104,227 | 32,131 | 136,358 | (6,682) | 818 | 23,590 | (1,156) | 22,434 | 16,570 | 152,928 |
| 2017 | 118,314 | 122,243 | 240,557 | (13,231) | 1,684 | 47,390 | (2,606) | 44,784 | 33,237 | 273,794 |
| PAYs (sub-total): | 509,498 | 175,159 | 684,657 | (37,792) | 4,658 | 111,125 | (5,984) | 105,141 | 72,007 | 756,664 |
| CAY (2018) | 134,450 | 171,541 | 305,991 | (18,053) | 2,142 | 57,832 | (3,412) | 54,420 | 38,509 | 344,500 |
| **claims liabilities:** | 643,948 | 346,700 | 990,648 | (55,845) | 6,800 | 168,957 | (9,396) | 159,561 | 110,516 | 1,101,164 |

| | Unearned Premium | Premium Defiency / (DPAC) | Total Provision | discount | investment PfAD | nominal development PfAD | development PfAD discount | development PfAD | Total apvs | TOTAL* |
|---|---|---|---|---|---|---|---|---|---|---|
| **premium liabilities:** | 215,170 | 59,688 | 274,858 | (13,168) | 1,372 | 39,780 | (1,909) | 37,871 | 26,075 | 300,933 |
| **policy liabilities:** | | | **1,265,506** | **(69,013)** | **8,172** | **208,737** | **(11,305)** | **197,432** | **136,591** | **1,402,097** |

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

# EXHIBIT E

## Discount Rate & Margins for Adverse Deviations

The tables below present selected margins for adverse development by coverage (the total is a weighted average, based on the unpaid claims projection for December 31, 2018 from the valuation), followed by the selected discount rate and the associated margin for investment income.

Selected Claims Development MfADs (Mar. 31, 2018)

| Accident Year | Third Party Liability Margins | Accident Benefits Margins | Other Coverages Margins | Total Margins |
|---|---|---|---|---|
| 1995 | 10.0% | 10.0% | 10.0% | 10.0% |
| 1996 | 10.0% | 10.0% | 10.0% | 10.0% |
| 1997 | 10.0% | 10.0% | 10.0% | 10.0% |
| 1998 | 10.0% | 10.0% | 10.0% | 10.0% |
| 1999 | 10.0% | 10.0% | 10.0% | 10.0% |
| 2000 | 10.0% | 10.0% | 10.0% | 10.0% |
| 2001 | 10.0% | 10.0% | 10.0% | 10.0% |
| 2002 | 8.9% | 10.0% | 10.0% | 10.0% |
| 2003 | 10.0% | 10.0% | 10.0% | 10.0% |
| 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% | 9.8% | 10.0% |
| 2012 | 10.0% | 10.0% | 9.0% | 10.0% |
| 2013 | 12.5% | 12.5% | 12.1% | 12.5% |
| 2014 | 15.0% | 15.0% | 13.0% | 15.0% |
| 2015 | 14.9% | 15.0% | 11.1% | 14.9% |
| 2016 | 17.3% | 17.5% | 11.3% | 17.3% |
| 2017 | 19.7% | 20.0% | 10.0% | 19.7% |
| 2018 | 18.7% | 20.0% | 6.3% | 18.9% |
| 2019 | 14.0% | 20.0% | 5.2% | 14.5% |
| prem liab | 14.0% | 20.0% | 5.2% | 14.5% |

| | |
|---|---|
| discount rate: | 1.89% |
| margin (basis points): | 25 |

# EXHIBIT F

## Interest Rate Sensitivity

The tables below present sensitivity to the member statement claims liability as projected to Dec. 31, 2018 from the latest valuation date (projections in exhibits A to D are also to Dec. 31, 2018, but are based on more up-to-date information). We have included the most recent valuation selection (1.89%), the prior valuation assumption (1.73%) and the prior fiscal year end valuation assumption (1.75%) for comparative purposes. A 25 basis point margin for investment return adverse deviation is used in all scenarios presented.

$ Format: $000s

| | Actuarial Present Value of Provisions at Various Discount Rates - Dec. 31, 2018 projected Unpaid | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| AY | 0.89% | 1.39% | 1.89% | 2.39% | 2.89% | 3.39% | 1.73% | 1.75% |
| 2003 & prior | 27,643 | 27,151 | 26,671 | 26,212 | 25,764 | 25,328 | 26,826 | 26,805 |
| 2004 | 1,609 | 1,551 | 1,497 | 1,445 | 1,396 | 1,349 | 1,514 | 1,512 |
| 2005 | 747 | 719 | 692 | 666 | 642 | 620 | 700 | 699 |
| 2006 | 3,213 | 3,082 | 2,958 | 2,842 | 2,732 | 2,629 | 2,997 | 2,992 |
| 2007 | 3,514 | 3,369 | 3,233 | 3,105 | 2,984 | 2,871 | 3,276 | 3,271 |
| 2008 | 4,543 | 4,374 | 4,214 | 4,065 | 3,923 | 3,791 | 4,264 | 4,258 |
| 2009 | 8,853 | 8,620 | 8,401 | 8,197 | 8,004 | 7,824 | 8,470 | 8,462 |
| 2010 | 14,095 | 13,827 | 13,574 | 13,336 | 13,111 | 12,899 | 13,653 | 13,644 |
| 2011 | 16,925 | 16,604 | 16,299 | 16,013 | 15,741 | 15,484 | 16,395 | 16,384 |
| 2012 | 29,991 | 29,397 | 28,833 | 28,302 | 27,796 | 27,318 | 29,013 | 28,990 |
| 2013 | 34,902 | 34,378 | 33,875 | 33,398 | 32,939 | 32,503 | 34,037 | 34,015 |
| 2014 | 69,756 | 68,876 | 68,027 | 67,222 | 66,443 | 65,702 | 68,299 | 68,260 |
| 2015 | 110,057 | 108,752 | 107,487 | 106,268 | 105,098 | 103,968 | 107,883 | 107,839 |
| 2016 | 158,681 | 156,584 | 154,566 | 152,615 | 150,737 | 148,893 | 155,214 | 155,121 |
| 2017 | 280,584 | 276,448 | 272,419 | 268,564 | 264,802 | 261,155 | 273,730 | 273,548 |
| 2018 | 359,864 | 354,185 | 348,654 | 343,358 | 338,193 | 333,246 | 350,431 | 350,187 |
| Total | 1,124,977 | 1,107,917 | 1,091,400 | 1,075,608 | 1,060,305 | 1,045,580 | 1,096,702 | 1,095,987 |
| | 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 | 0.89% | 1.39% | 1.89% | 2.39% | 2.89% | 3.39% | 1.73% | 1.75% |
| Total | 33,577 | 16,517 | - | (15,792) | (31,095) | (45,820) | 5,302 | 4,587 |
| | 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 | 0.89% | 1.39% | 1.89% | 2.39% | 2.89% | 3.39% | 1.73% | 1.75% |
| 2003 & prior | 3.6% | 1.8% | - | (1.7%) | (3.4%) | (5.0%) | 0.6% | 0.5% |
| 2004 | 7.5% | 3.6% | - | (3.5%) | (6.7%) | (9.9%) | 1.1% | 1.0% |
| 2005 | 7.9% | 3.9% | - | (3.8%) | (7.2%) | (10.4%) | 1.2% | 1.0% |
| 2006 | 8.6% | 4.2% | - | (3.9%) | (7.6%) | (11.1%) | 1.3% | 1.1% |
| 2007 | 8.7% | 4.2% | - | (4.0%) | (7.7%) | (11.2%) | 1.3% | 1.2% |
| 2008 | 7.8% | 3.8% | - | (3.5%) | (6.9%) | (10.0%) | 1.2% | 1.0% |
| 2009 | 5.4% | 2.6% | - | (2.4%) | (4.7%) | (6.9%) | 0.8% | 0.7% |
| 2010 | 3.8% | 1.9% | - | (1.8%) | (3.4%) | (5.0%) | 0.6% | 0.5% |
| 2011 | 3.8% | 1.9% | - | (1.8%) | (3.4%) | (5.0%) | 0.6% | 0.5% |
| 2012 | 4.0% | 2.0% | - | (1.8%) | (3.6%) | (5.3%) | 0.6% | 0.5% |
| 2013 | 3.0% | 1.5% | - | (1.4%) | (2.8%) | (4.1%) | 0.5% | 0.4% |
| 2014 | 2.5% | 1.2% | - | (1.2%) | (2.3%) | (3.4%) | 0.4% | 0.3% |
| 2015 | 2.4% | 1.2% | - | (1.1%) | (2.2%) | (3.3%) | 0.4% | 0.3% |
| 2016 | 2.7% | 1.3% | - | (1.3%) | (2.5%) | (3.7%) | 0.4% | 0.4% |
| 2017 | 3.0% | 1.5% | - | (1.4%) | (2.8%) | (4.1%) | 0.5% | 0.4% |
| 2018 | 3.2% | 1.6% | - | (1.5%) | (3.0%) | (4.4%) | 0.5% | 0.4% |
| Total | 3.1% | 1.5% | - | (1.4%) | (2.8%) | (4.2%) | 0.5% | 0.4% |
| | curr - 100 bp | curr - 50 bp | curr val assumption | curr + 50bp | curr + 100bp | curr + 150bp | prior val assumption | prior fyr end assumption |

# EXHIBIT G

Page 1 of 2

## Components of Member Statement IBNR (i.e. "Discounted") Change During Month

| RSP | Ontario |
|---|---|
| AccountCode Desc | IBNR - Discounted |

M/S IBNR - in $000s

| 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 |
|---|---|---|---|---|---|---|---|
| prior | (4,625) | (35) | (231) | (1,017) | (1,283) | 27.7% | (5,908) |
| 1999 | 61 | - | - | (32) | (32) | (52.5%) | 29 |
| 2000 | (4) | - | - | - | - | - | (4) |
| 2001 | 104 | 5 | (4) | (42) | (41) | (39.4%) | 63 |
| 2002 | 538 | 35 | (35) | (364) | (364) | (67.7%) | 174 |
| 2003 | 355 | 22 | (22) | (54) | (54) | (15.2%) | 301 |
| 2004 | 582 | 36 | (37) | (240) | (241) | (41.4%) | 341 |
| 2005 | 501 | 35 | (35) | (31) | (31) | (6.2%) | 470 |
| 2006 | 1,468 | 102 | (102) | (632) | (632) | (43.1%) | 836 |
| 2007 | 781 | 57 | (22) | 211 | 246 | 31.5% | 1,027 |
| 2008 | 2,520 | 177 | (79) | (197) | (99) | (3.9%) | 2,421 |
| 2009 | 3,193 | 201 | (128) | 39 | 112 | 3.5% | 3,305 |
| 2010 | 6,521 | 392 | (550) | (201) | (359) | (5.5%) | 6,162 |
| 2011 | 2,275 | 94 | (1,330) | 405 | (831) | (36.5%) | 1,444 |
| 2012 | 3,365 | 106 | 145 | (386) | (135) | (4.0%) | 3,230 |
| 2013 | 9,114 | 302 | (647) | (2,564) | (2,909) | (31.9%) | 6,205 |
| 2014 | 9,244 | (295) | (164) | 716 | 257 | 2.8% | 9,501 |
| 2015 | 24,310 | (486) | 80 | 1,668 | 1,262 | 5.2% | 25,572 |
| 2016 | 73,660 | (2,007) | (1,375) | 312 | (3,070) | (4.2%) | 70,590 |
| 2017 | 193,881 | (5,424) | (2,011) | 2,001 | (5,434) | (2.8%) | 188,447 |
| 2018 | 89,405 | 18,593 | (1,185) | (1,261) | 16,147 | 18.1% | 105,552 |
| **Grand Total** | **417,249** | **11,910** | **(7,732)** | **(1,669)** | **2,509** | **0.6%** | **419,758** |

# EXHIBIT G



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

| RSP | Ontario |
|---|---|
| AccountCode Desc | IBNR - Undiscounted |

IBNR - in $000s

| 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 |
|---|---|---|---|---|---|---|---|
| prior | (6,614) | 6 | (263) | - | (257) | 3.9% | (6,871) |
| 1999 | 18 | 1 | (1) | - | - | - | 18 |
| 2000 | (4) | - | - | - | - | - | (4) |
| 2001 | 67 | 5 | (5) | - | - | - | 67 |
| 2002 | 518 | 36 | (36) | (341) | (341) | (65.8%) | 177 |
| 2003 | 323 | 23 | (23) | - | - | - | 323 |
| 2004 | 548 | 38 | (39) | (166) | (167) | (30.5%) | 381 |
| 2005 | 493 | 35 | (35) | - | - | - | 493 |
| 2006 | 1,462 | 102 | (102) | (492) | (492) | (33.7%) | 970 |
| 2007 | 794 | 56 | (22) | 362 | 396 | 49.9% | 1,190 |
| 2008 | 2,523 | 177 | (80) | - | 97 | 3.8% | 2,620 |
| 2009 | 2,944 | 206 | (129) | 224 | 301 | 10.2% | 3,245 |
| 2010 | 5,803 | 406 | (558) | - | (152) | (2.6%) | 5,651 |
| 2011 | 1,551 | 109 | (1,335) | 560 | (666) | (42.9%) | 885 |
| 2012 | 1,918 | 134 | 174 | - | 308 | 16.1% | 2,226 |
| 2013 | 5,379 | 377 | (627) | (2,095) | (2,345) | (43.6%) | 3,034 |
| 2014 | 130 | (21) | (257) | 1,083 | 805 | 619.2% | 935 |
| 2015 | 11,381 | (228) | 71 | 2,102 | 1,945 | 17.1% | 13,326 |
| 2016 | 53,362 | (1,601) | (1,533) | 1,078 | (2,056) | (3.9%) | 51,306 |
| 2017 | 154,680 | (4,640) | (2,105) | 3,374 | (3,371) | (2.2%) | 151,309 |
| 2018 | 74,886 | 15,246 | (1,063) | (296) | 13,887 | 18.5% | 88,773 |
| **Grand Total** | **312,162** | **10,467** | **(7,968)** | **5,393** | **7,892** | **2.5%** | **320,054** |