



NEW BRUNSWICK RISK SHARING POOL

OCTOBER 2018 OPERATIONAL REPORT

ACTUARIAL HIGHLIGHTS

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ACTUARIAL HIGHLIGHTS
RSP NEW BRUNSWICK
OPERATIONAL REPORT
OCTOBER 2018

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1 Summary

1.1 Valuation Schedule (Fiscal Year 2018)

The October 2018 Operational Report incorporates the results of an updated valuation (as at September 30, 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.

NEW BRUNSWICK RISK SHARING POOL FISCAL YEAR 2018 – SCHEDULE OF VALUATIONS			
Valuation Date	Discount Rate (per annum)	Operational Report	Description of Changes
Sep. 30, 2017 (completed)	1.74% mfad: 25 bp	Oct. 2017	updated valuation (roll forward): accident year 2017 loss ratio <u>increased</u> 1.1 points to 73.5%; discount rate <u>increased</u> by 57 basis points; no change to selected margins for adverse deviations
Dec. 31, 2017 (completed)	1.75% mfad: 25 bp	Mar. 2018	update valuation: accident year 2018 loss ratio <u>increased</u> 1.1 point to 73.2%; discount rate <u>increased</u> by 1 basis point; no change to selected margins for adverse deviations
Mar. 31, 2018 (completed)	1.93% mfad: 25 bp	May 2018	update valuation (roll forward): accident year 2018 loss ratio <u>decreased</u> 0.1 point to 73.1%; discount rate <u>increased</u> by 18 basis points; no change to selected margins for adverse deviations
Jun. 30, 2018 (completed)	1.87% mfad 25 bp	Aug. 2018	updated valuation: accident year 2018 loss ratio <u>increased</u> 1.1 points to 74.2%; discount rate <u>decreased</u> by 6 basis points; selected margins for adverse deviations were updated
Sep. 30, 2018 (completed)	2.29% mfad 25 bp	Oct. 2018	updated valuation: accident year 2018 loss ratio <u>increased</u> 0.5 points to 74.7%; discount rate <u>increased</u> by 42 basis points; no change to selected margins for adverse deviations

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 New Brunswick Risk Sharing Pool (“RSP”) as at September 30, 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 later in December.

The valuation implementation impact is summarized in the tables below.

Summary of Impact (\$000s) of Implementing Result of Valuation as at September 30, 2018¹

NB	unfav / (fav) for the month and ytd					
	IMPACT in \$000s from changes in:					
	ults & payout patterns			dsct rate	margins	
	Nominal	apv adj.	sub-tot	apv adj.	apv adj.	TOTAL
[1]	[2]	[3]	[4]	[5]	[6]	
PAYs	(272)	2	(270)	(165)	-	(435)
CAY	55	6	61	(71)	-	(10)
Prem Def	12	26	38	(64)	-	(26)
TOTAL	(205)	34	(171)	(300)	-	(471)

As indicated in the table above, the incorporation of the new valuation had an estimated **\$0.5 million favourable impact** on the month's net result from operations, subtracting an estimated 4.3 points (see table immediately below) to the **year-to-date Combined Operating Ratio** to end at **115.1%**.

Summary of Impact (% YTD EP) of Implementing Result of Valuation as at September 30, 2018

NB	ytd EP 10,858 (actual)					
	IMPACT unfav / (fav) as % ytd EP from changes in:					
	ults & payout patterns			dsct rate	margins	
	Nominal	apv adj.	sub-tot	apv adj.	apv adj.	TOTAL
[1]	[2]	[3]	[4]	[5]	[6]	
PAYs	(2.5%)	-	(2.5%)	(1.5%)	-	(4.0%)
CAY	0.5%	0.1%	0.6%	(0.7%)	-	(0.1%)
Prem Def	0.1%	0.2%	0.3%	(0.6%)	-	(0.2%)
TOTAL	(1.9%)	0.3%	(1.6%)	(2.8%)	-	(4.3%)

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 favourable by \$0.2 million overall. This reflects the impact attributable to the changes in the selected ultimate loss ratios (i.e. for each accident year, it is the product of life-to-date earned premium for the accident year and the change in the selected ultimate loss ratio).

The prior accident years overall showed a \$0.3 million favourable nominal variance, which is attributed to process variance. The overall favourable prior accident years change is 1.8% of the prior accident years' nominal unpaid balance of \$15.3 million determined at the end of last month (September 2018). As a smaller pool, it is subject to higher levels of process variance, driving volatility in the ultimate selection.

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

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

The current accident year and premium deficiency impacts are a result of the changes in the selected loss ratios for accident year **2018** (up 0.5 points from 74.2% to **74.7%**) while **2019** remained unchanged at **74.6%**.

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 has an impact on the weighted-average MfADs). It also reflects the fact that we updated the projected emergence of claims payments, resulting in a change in the projected cash flows. These changes generated an unfavourable change of \$34 thousand in the actuarial present value adjustments, prior to any changes in the selected discount rate and/or MfADs.

Updated projected cash flows were reviewed against the selected risk-free yield curve, derived from Government of Canada benchmark bond yields monthly series using values for September 2018. Column [4] accounts for the change in the **discount rate** selected (increased 42 basis point to **2.29%**), indicating a favourable impact of \$0.3 million. The impact *related only to claims liabilities* (i.e. PAYs plus CAY) was \$0.2 million at October 2018 – this compares to the \$0.2 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 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

There have been no changes in these descriptions since last month’s Highlights, other than that we do not believe the Saadati judgment will have a further impact on our valuation results.

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.

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, and at this point we do not believe this judgment will have a further impact on our valuation results.

1.5 Harmonized Sales Tax

There have been no changes in these descriptions since last month’s Highlights, other than updated references to the most recent valuation.

In the fiscal 2016-17 provincial budget released February 2, 2016, the New Brunswick Finance Minister announced a 2 percentage point increase in the provincial component of the harmonized sales tax (“HST”) **effective July 1st, 2016** increasing the combined HST rate in the province from 13% to 15%.

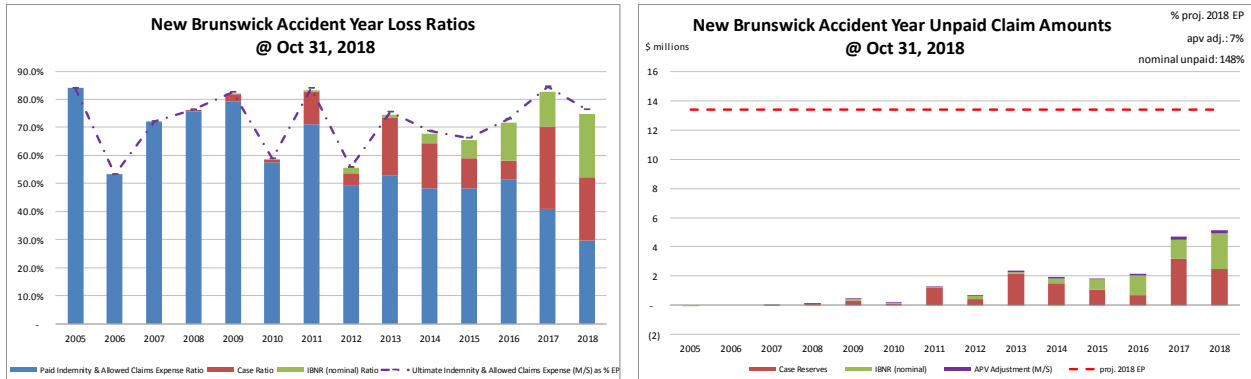
An adjustment for the HST rate increase was included in the updated loss cost trend structures selected using NB PPV Industry 2017-2 data, impacting the selected a priori loss ratios, however, no specific adjustments have been made to the valuation assumptions from the most recent valuation (September 30, 2018).

1.6 Current Provision Summary

The charts at the top of the next page show the current levels of claim liabilities² booked by accident year. 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

²Claim 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.

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 balance (\$1.0 million – see table immediately below) represents 7% 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	13,182	63.5%
ibnr	6,606	31.8%
M/S apv adjust.	965	4.6%
M/S total	20,753	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 is in case reserves for this pool. Approximately 57% of the IBNR balance relates to accident years 2017 and 2018 (see Exhibit B). Approximately 76% of the M/S claim liabilities

are related to accident years 2014-2018 inclusive (i.e. the most recent 5 accident years), and less than 1% 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	8,637	124.4%
prem def/(dpac)	(1,967)	(28.3%)
M/S apv adjust.	271	3.9%
M/S total	6,941	100.0%

policy liabilities (\$000s)

	amt	%
claim	19,788	71.5%
premium	6,670	24.1%
M/S apv adjust.	1,236	4.5%
M/S total	27,694	100.0%

2 Activity During the Month of October 2018

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 Report³.

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

New Brunswick RSP Actual vs Projected Summary: Recorded Transaction Amounts (\$ thousands)

Table 01 Accident Year	Earned Premium		Paid Indemnity & Allowed Claims Expense		Case increase / (decrease)		Recorded increase / (decrease)	
	Actual	Actual less Projected	Actual	Actual less Projected	Actual	Actual less Projected	Actual	Actual less Projected
Prior	-	-	61	(27)	(72)	(89)	(12)	(117)
2016	(1)	(1)	24	5	3	(104)	27	(99)
2017	(1)	(1)	41	(5)	(223)	(298)	(182)	(303)
2018	1,251	18	451	63	202	(183)	653	(120)
TOTAL	1,250	17	577	36	(90)	(674)	486	(638)

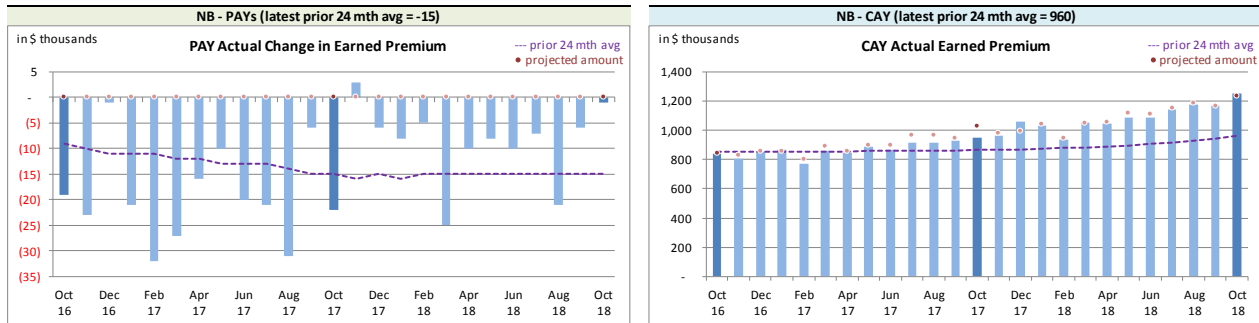
(Recorded transaction amounts exclude IBNR & other actuarial provisions)

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), and this is particularly true where volumes are low as found in this RSP. 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**⁴ 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.

New Brunswick RSP Actual Earned Premium by Calendar Month



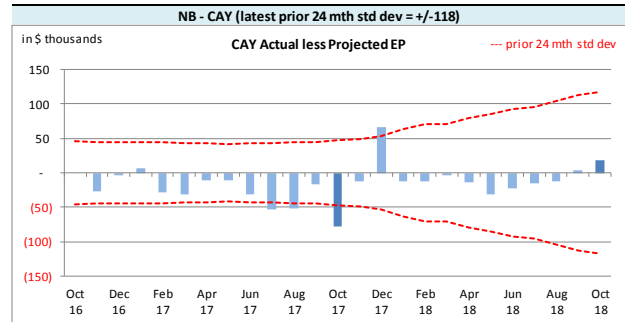
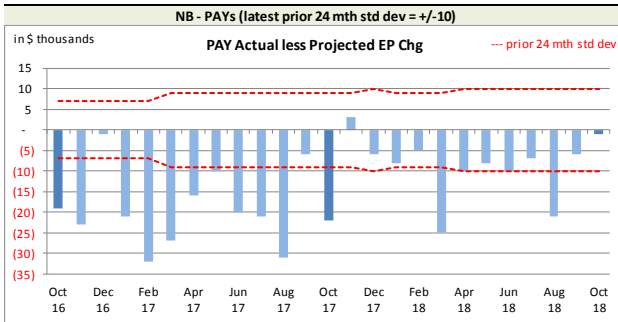
Earned premium changes during a given calendar month in relation to prior accident years tend to be at modest levels, although relatively high levels seem to occur in January each year. The heightened prior accident years’ activity over 2017 and in March 2018 was related to ineligible risks being removed from the RSP based on findings of the FA internal audit team with respect to FA audits.

The associated variance 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**

⁴Premium 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.

change in relation to prior accident years.

New Brunswick 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)	(15)	960
std dev	10	118
A-P <> std dev	13	4
% <> std dev	52.0%	16.0%
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) bias⁵, with actuals generally lower than our projections, although the magnitude is not high relative to

monthly premium. In addition to the PAYs’ bias, the CAY has also shown bias⁶, with actuals being generally lower than projected, and we have modified our projections processes in response. Over time, we may consider other projection approaches to narrow monthly variance levels further, but it is not currently deemed a priority. Projection variances have also been exacerbated by written premium variances, where our projections, based on information provided by larger RSP users, have been proven to be too high. Notwithstanding the projection misses, readers will also note the widening of the CAY standard deviation band, reflecting the recent and sustained volume increases and the impact as those increases are earned.

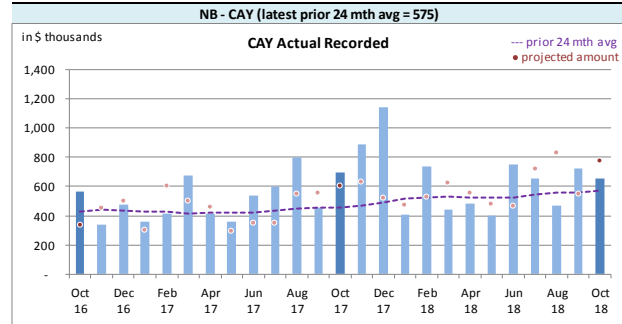
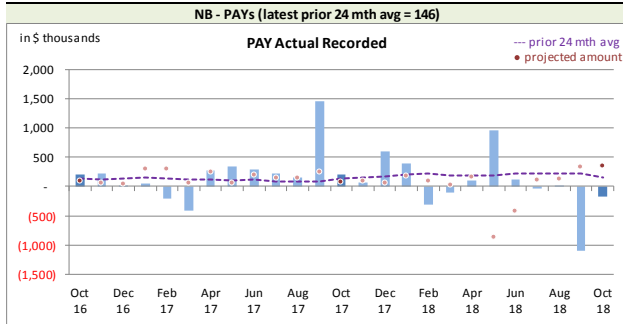
2.1.b AvsP: Recorded Indemnity & Allowed Claims Expense

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

⁵The PAYs’ variances will show bias as the projection upload forces all earned premium projections to be attributed to the CAY.

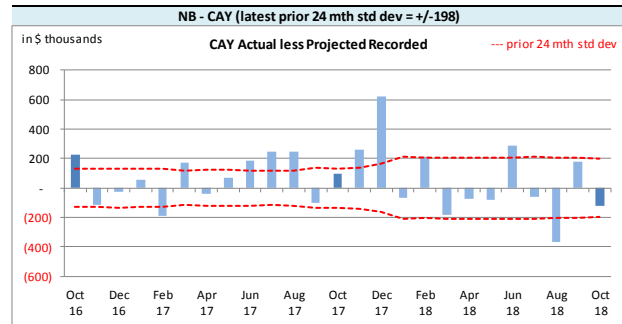
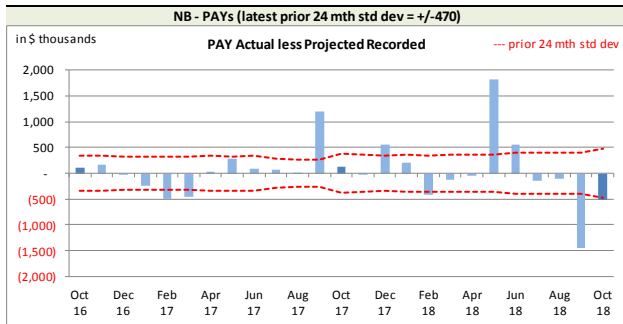
⁶We measure bias based on a 95% confidence range for a binominal distribution with trials based on the range being considered (24 in this case) and 50% probability of success. The 24-month variances at October 2018 has only 4 months where the actual was higher than projected, and as the 95% confidence range is 7 to 17, bias continues to be indicated.

New Brunswick 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.

New Brunswick RSP Actual vs Projected Summary: Recorded Variances by Calendar Month



On Latest \$ thousands		
	Recorded	
Mthly Avg Recorded (prior 24 mths)	146	575
std dev	470	198
A-P <> std dev	9	11
% <> std dev	36.0%	44.0%
norm <> std dev	31.7%	31.7%

With respect to **recorded** indemnity & allowed claims expense activity, caution must be exercised in reviewing the variances as this is a small pool and single claim transactions that are normal course for the business may look “unusual” and generate relatively “significant” variances that in nominal value terms are not that

significant. That said, 36% of the prior accident years’ (PAYs) **recorded** variances over the last 25 calendar months have fallen outside of one standard deviation of the actual **recorded** amounts (see table above), suggesting the projection process has performed no better than simply projecting the prior 24-month average amount (assuming it follows a normal distribution). Bias has not been indicated at a 95% confidence level on a lagging 24-month basis.

The PAY **recorded** activity was lower than the projected by more than one standard deviation. The activity was reviewed and confirmed, with the variance attributed to process variance.

The current accident year (CAY) **recorded** variances fell outside of one standard deviation 44% of the time over the last 25 calendar months (see table above), suggesting the projection process has performed worse 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.

As noted in the last nine monthly Actuarial Highlights, FA management was notified on January 31,

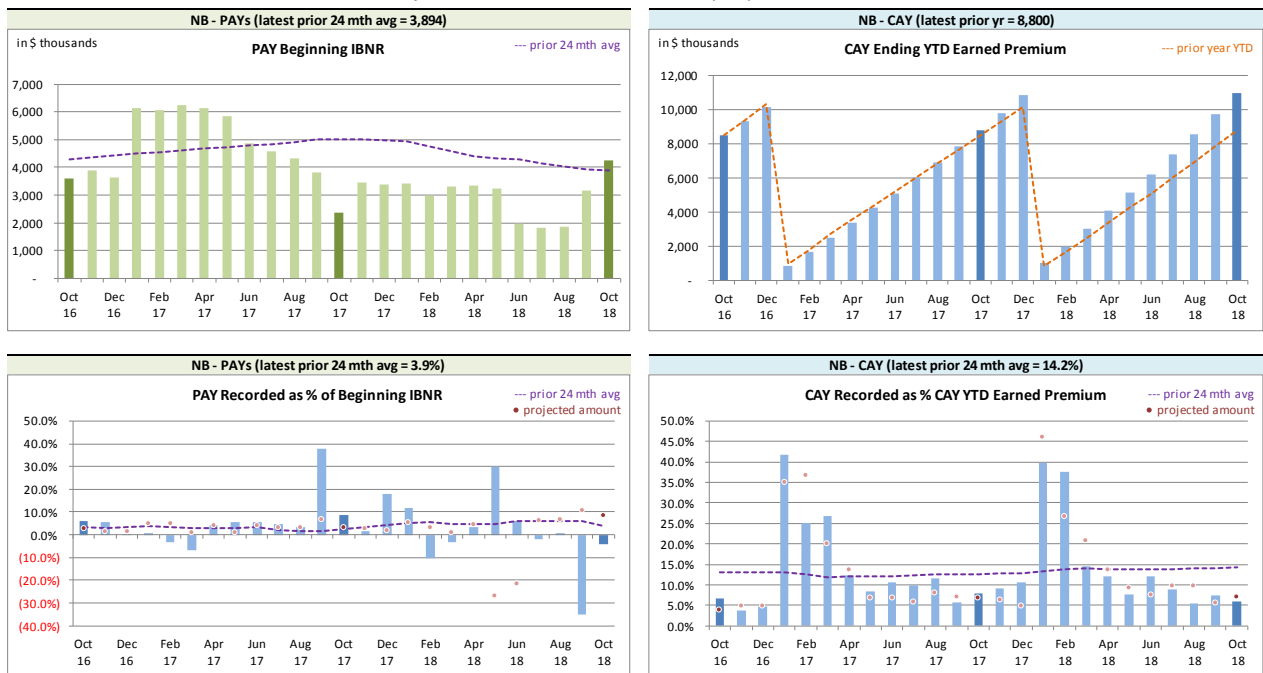
2018 by a member of a potential recorded case reserve overstatement. Furthermore, during the March 31, 2018 valuation, FA management was advised of an additional and separate recorded case reserve understatement primarily due to incorrect reporting after FA’s October 31, 2017 fiscal year end. During the month of September 2018, the member submitted correcting case reserve transactions for which provisions have been held since last year (and discussed further on in this section). The corrections were reasonably aligned with FA management’s previously held provisions (which have now been released as a result).

With the latest valuation (September 30, 2018), as the corrections submitted in the month of September 2018 were largely in line with FA management’s expectations, the associated provisions previously held by FA management have been removed as a result.

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 immediately below related to levels influencing **recorded** activity. Note in particular the increase in the level of PAYs beginning IBNR over the months. Part of this will be 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).

New Brunswick RSP Levels that influence⁷ 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:

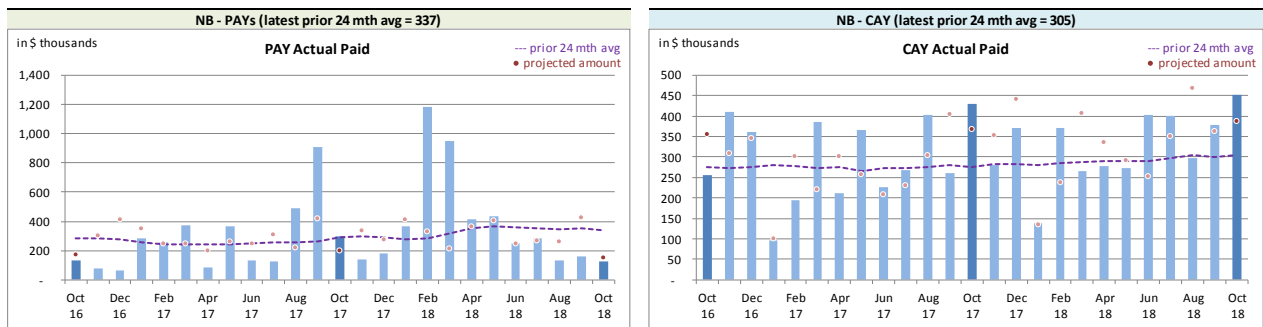
⁷Our recorded activity projections for the prior accident years are based on selected ratios of recorded activity to beginning unpaid balances, whereas the current accident year projections are based on selected ratios of year-to-date IBNR to year-to-date selected ultimate (i.e. selected LR x earned 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.

- 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

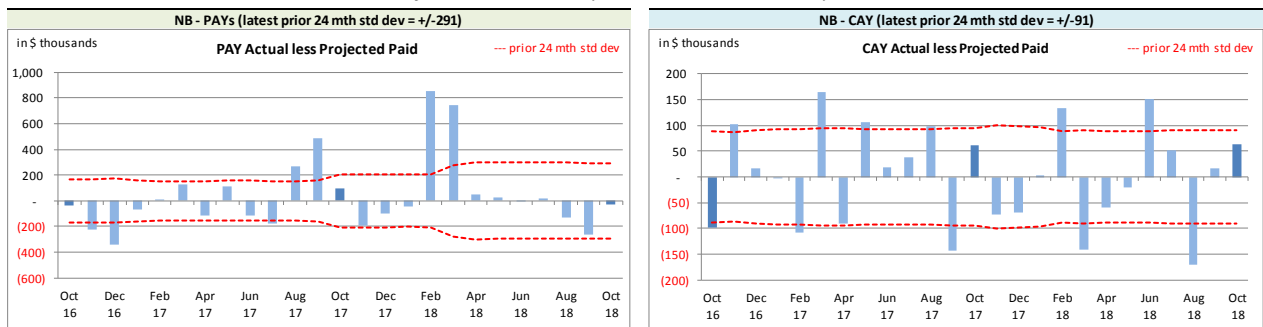
The charts immediately below show actual **paid** activity in each of the most recent 25 calendar months, along with a “prior 24-month average” to show how each month’s actual compares with the average amount of the preceding 24 calendar months.

New Brunswick 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.

New Brunswick RSP Actual vs Projected Summary: Paid Variances by Calendar Month



On Latest \$ thousands		
Paid	PAYS	CAY
Mthly Avg Paid (prior 24 mths)	337	305
std dev	291	91
A-P <> std dev	7	11
% <> std dev	28.0%	44.0%
norm <> std dev	31.7%	31.7%

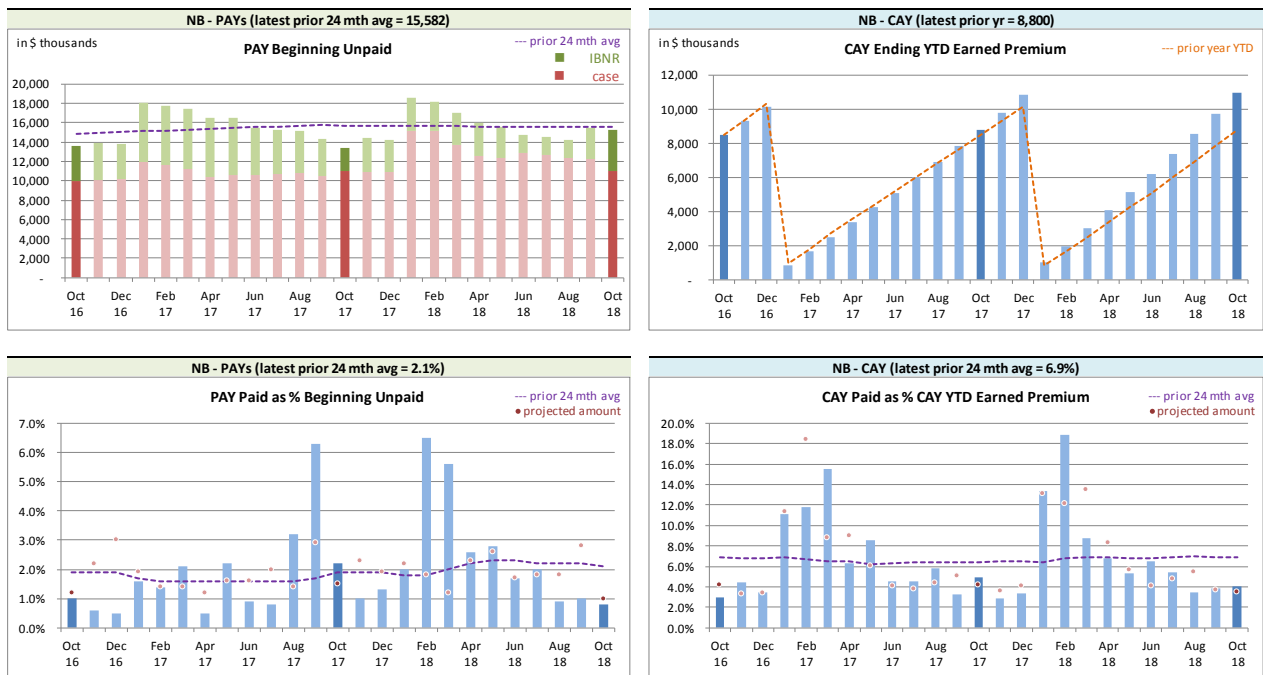
With respect to **paid** indemnity & allowed claims expense, caution must be exercised in reviewing the variances as this is a small pool, and single claim transactions that are normal course for the business may look “unusual” and generate relatively “significant” variances that in nominal value terms are not that significant. That said,

28% 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 the left at the bottom of the previous page), suggesting the projection process has performed no better than simply projecting the prior 24-month average amount (assuming it follows a normal distribution). Bias has not been indicated at a 95% confidence level on a lagging 24-month basis.

The current accident year (CAY) **paid** variances (see table on the left at the bottom of the previous page) fell outside of one standard deviation 44% of the time over the last 25 calendar months, suggesting that the projection process has performed worse 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.

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

New Brunswick RSP Levels that influence⁸ 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

⁸Our 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.

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

2.2 Actuarial Provisions

An “ultimate loss ratio matching method” (described in section 3) was used to determine the month’s IBNR⁹, and factors were 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 current month’s provisions and projections were based on the applicable valuation. The table immediately below summarizes variances in provisions included in this month’s Operational Report and the associated one-month projections from last month’s Report.

New Brunswick RSP Actual vs Projected Summary: IBNR and APV Amounts (\$ thousands)

Table 02

Accident Year	actuarial present value adjustments							
	IBNR		Discount Amount		Provisions for Adverse Deviations		IBNR + actuarial present value adjustments	
	Actual	Actual less Projected	Actual	Actual less Projected	Actual	Actual less Projected	Actual	Actual less Projected
Prior	1,453	(231)	(369)	(52)	835	(37)	1,919	(320)
2016	1,359	227	(135)	(32)	245	22	1,469	217
2017	1,333	249	(337)	(56)	538	(5)	1,534	188
2018	2,461	188	(375)	(65)	563	(3)	2,649	120
TOTAL	6,606	433	(1,216)	(205)	2,181	(23)	7,571	205

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, and due to the valuation implementation.

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

- the change projected last month;
- 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
- the additional change due to valuation implementation impacts (as applicable)

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

The table at the top of the next page summarizes the variances in the provisions for premium deficiency liability / (deferred policy acquisition

cost asset) included in this month’s Operational Report and the one-month projections from last month’s Report. This RSP is in a deferred policy acquisition cost asset position (shown as a

⁹For ease of discussion, “IBNR” is used in place of “provisions for incurred but not recorded (IBNR) and development”.

negative amount) prior to and after actuarial present value adjustments. Actuarial present value adjustments decrease the asset value as the adjustments increase the expected future policy obligations (costs) associated with the unearned premium. The variances noted are mainly driven by the unearned premium variance and due to the valuation implementation.

New Brunswick 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:	(1,967)	(84)	271	(23)	(1,696)	(107)
balance as % unearned premium:	(22.8%)	0.2%	3.1%	(0.4%)	(19.6%)	(0.2%)
actual unearned premium:	8,637					
less projected:	434					

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 loss¹⁰ 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 expenses¹¹, including IBNR.

In calculating the amounts as percentages of earned premium, the calendar year-to-date earned premium has been used, which includes not only the 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 75.4% rather than 74.7% (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 New Brunswick RSP Summary of Operations due to rounding.)

¹⁰“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).

¹¹Allowed 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.

New Brunswick 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	620	5.7%	(413)	(3.8%)	207	1.9%	(444)	(4.9%)
CAY	8,186	75.4%	188	1.7%	8,374	77.1%	944	(0.2%)
TOTAL	8,806	81.1%	(225)	(2.1%)	8,581	79.0%	499	(5.1%)

(“% 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 detailed in section 6, Exhibit B, refer to the estimates derived on the basis of various actuarial methodologies applied to the experience of the New Brunswick 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 Sep. 2018	Actual Oct. 2018	Projected Nov. 2018	Projected Dec. 2018	Projected Dec. 2019
	2005	(2)	(2)	(2)	(2)	(2)
	2006	-	-	-	-	-
	2007	9	9	9	9	4
	2008	10	9	10	10	7
	2009	166	91	90	88	41
	2010	67	65	64	63	25
	2011	276	128	126	126	72
	2012	169	216	211	209	84
discount rate	2013	299	243	240	237	142
2.29%	2014	476	401	388	374	164
	2015	880	759	750	740	462
interest rate margin	2016	1,380	1,469	1,454	1,438	1,050
25 basis pts	2017	1,470	1,534	1,494	1,439	1,131
	2018	2,358	2,649	2,802	2,955	1,880
	2019	-	-	-	-	2,890
	TOTAL	7,558	7,571	7,636	7,686	7,950
	Change		13	65	50	

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 Sep. 2018	Actual Oct. 2018	Projected Nov. 2018	Projected Dec. 2018	Projected Dec. 2019
	84.0%	2005	(2)	(2)	(2)	(2)	(2)
	53.2%	2006	-	-	-	-	-
	72.1%	2007	8	8	8	8	3
	76.3%	2008	4	4	4	4	3
	82.2%	2009	132	64	63	62	21
	58.7%	2010	56	56	55	54	18
	83.2%	2011	180	49	48	48	16
	55.4%	2012	122	177	173	171	55
	74.4%	2013	151	118	116	115	39
	67.6%	2014	360	304	292	280	91
	65.5%	2015	778	675	668	661	390
	71.8%	2016	1,258	1,359	1,345	1,332	939
	82.6%	2017	1,205	1,333	1,293	1,241	935
	74.7%	2018	2,130	2,461	2,595	2,727	1,698
	74.6%	2019	-	-	-	-	2,581
		TOTAL	6,382	6,606	6,658	6,701	6,787
		Change		224	52	43	

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

EXHIBIT C

Premium Liabilities

TABLE EXHIBIT C

	Amounts in \$000s				
	Actual Sep. 2018	Actual Oct. 2018	Projected Nov. 2018	Projected Dec. 2018	Projected Dec. 2019
Premium Liabilities					
(1) unearned premium (UP)	8,189	8,637	8,645	8,516	8,489
FOR MEMBER SHARING					
(2) expected future costs ratio {% of (1)}	80.6%	80.4%	80.3%	80.3%	80.9%
(3) expected future costs {(1) x (2)}	6,602	6,941	6,943	6,838	6,864
(4) premium deficiency / (deferred policy acquisition cost)	(1,587)	(1,696)	(1,702)	(1,678)	(1,625)
Excluding Actuarial Present Value Adjustments					
(5) expected future costs ratio {% of (1)}	77.0%	77.2%	77.2%	77.1%	77.7%
(6) expected future costs {(1) x (5)}	6,308	6,670	6,671	6,570	6,596
(7) premium deficiency / (deferred policy acquisition cost)	(1,881)	(1,967)	(1,974)	(1,946)	(1,893)

EXHIBIT D
Projected Year-end Policy Liabilities

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

New Brunswick		Projected Balances as at Dec. 31, 2018 (\$000s)									
ending 2018		nominal values			actuarial present value adjustments (apvs)						TOTAL
Acc Yr	Case	IBNR	Total Unpaid	discount	investment PfAD	nominal development PfAD	development PfAD discount	development PfAD	Total apvs	TOTAL	
2005	-	(2)	(2)	-	-	-	-	-	-	(2)	
2006	-	-	-	-	-	-	-	-	-	-	
2007	-	8	8	-	-	1	-	1	1	9	
2008	76	4	80	(2)	-	8	-	8	6	86	
2009	333	62	395	(13)	1	39	(1)	38	26	421	
2010	91	54	145	(6)	1	15	(1)	14	9	154	
2011	1,148	48	1,196	(43)	5	120	(4)	116	78	1,274	
2012	435	171	606	(23)	2	61	(2)	59	38	644	
2013	2,100	115	2,215	(100)	11	221	(10)	211	122	2,337	
2014	1,475	280	1,755	(82)	9	175	(8)	167	94	1,849	
2015	997	661	1,658	(86)	8	166	(9)	157	79	1,737	
2016	647	1,332	1,979	(131)	14	239	(16)	223	106	2,085	
2017	3,161	1,241	4,402	(330)	35	533	(40)	493	198	4,600	
PAYs (sub-total):	10,463	3,974	14,437	(816)	86	1,578	(91)	1,487	757	15,194	
CAY (2018)	3,233	2,727	5,960	(453)	48	685	(52)	633	228	6,188	
claims liabilities:	13,696	6,701	20,397	(1,269)	134	2,263	(143)	2,120	985	21,382	
	Unearned Premium	Premium Deficiency / (DPAC)	Total Provision	discount	investment PfAD	nominal development PfAD	development PfAD discount	development PfAD	Total apvs	TOTAL*	
premium liabilities:	8,516	(1,946)	6,570	(330)	32	597	(31)	566	268	6,838	
*Total may not be sum of parts, as apvs apply to future costs within UPR											
policy liabilities:			26,967	(1,599)	166	2,860	(174)	2,686	1,253	28,220	

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 (Sep. 30,
2018)

Accident Year	Third Party Liability Margins	Accident Benefits Margins	Other Coverages Margins	Total Margins
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%	10.0%	10.0%
2013	10.0%	10.0%	10.0%	10.0%
2014	10.0%	10.0%	9.5%	10.0%
2015	10.0%	10.0%	10.0%	10.0%
2016	12.5%	10.0%	11.7%	12.1%
2017	12.5%	10.0%	9.2%	12.1%
2018	12.3%	10.0%	7.2%	11.5%
2019	11.7%	10.0%	5.6%	9.4%
prem liab	11.7%	10.0%	5.6%	9.4%

discount rate: 2.29%
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 (2.29%), the prior valuation assumption (1.87%) and the prior fiscal year end valuation assumption (1.74%) 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	1.29%	1.79%	2.29%	2.79%	3.29%	3.79%	1.87%	1.74%
2005	-	-	-	-	-	-	-	-
2006	-	-	-	-	-	-	-	-
2007	2	2	2	2	2	2	2	2
2008	76	75	75	74	74	73	75	76
2009	375	372	370	367	364	362	372	373
2010	136	135	134	133	132	130	135	135
2011	1,119	1,110	1,102	1,093	1,085	1,077	1,109	1,111
2012	627	622	617	611	606	602	621	622
2013	2,260	2,237	2,215	2,194	2,173	2,152	2,234	2,240
2014	1,774	1,756	1,738	1,721	1,703	1,687	1,753	1,758
2015	1,811	1,790	1,770	1,750	1,730	1,711	1,787	1,793
2016	2,122	2,091	2,061	2,031	2,003	1,975	2,086	2,094
2017	4,725	4,645	4,568	4,493	4,421	4,350	4,633	4,653
2018	6,031	5,928	5,829	5,733	5,641	5,551	5,912	5,939
Total	21,058	20,763	20,481	20,202	19,934	19,672	20,719	20,796
	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	1.29%	1.79%	2.29%	2.79%	3.29%	3.79%	1.87%	1.74%
Total	577	282	-	(279)	(547)	(809)	238	315
	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	1.29%	1.79%	2.29%	2.79%	3.29%	3.79%	1.87%	1.74%
2005	-	-	-	-	-	-	-	-
2006	-	-	-	-	-	-	-	-
2007	-	-	-	-	-	-	-	-
2008	1.3%	-	-	(1.3%)	(1.3%)	(2.7%)	-	1.3%
2009	1.4%	0.5%	-	(0.8%)	(1.6%)	(2.2%)	0.5%	0.8%
2010	1.5%	0.7%	-	(0.7%)	(1.5%)	(3.0%)	0.7%	0.7%
2011	1.5%	0.7%	-	(0.8%)	(1.5%)	(2.3%)	0.6%	0.8%
2012	1.6%	0.8%	-	(1.0%)	(1.8%)	(2.4%)	0.6%	0.8%
2013	2.0%	1.0%	-	(0.9%)	(1.9%)	(2.8%)	0.9%	1.1%
2014	2.1%	1.0%	-	(1.0%)	(2.0%)	(2.9%)	0.9%	1.2%
2015	2.3%	1.1%	-	(1.1%)	(2.3%)	(3.3%)	1.0%	1.3%
2016	3.0%	1.5%	-	(1.5%)	(2.8%)	(4.2%)	1.2%	1.6%
2017	3.4%	1.7%	-	(1.6%)	(3.2%)	(4.8%)	1.4%	1.9%
2018	3.5%	1.7%	-	(1.6%)	(3.2%)	(4.8%)	1.4%	1.9%
Total	2.8%	1.4%	-	(1.4%)	(2.7%)	(4.0%)	1.2%	1.5%
	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		New Brunswi						M/S IBNR - in \$000s
AccountCode Desc		IBNR - Discou						
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	
2005	(2)	-	-	-	-	-	(2)	
2006	-	-	-	-	-	-	-	
2007	9	-	-	-	-	-	9	
2008	10	-	-	(1)	(1)	(10.0%)	9	
2009	166	(3)	2	(74)	(75)	(45.2%)	91	
2010	67	(1)	1	(2)	(2)	(3.0%)	65	
2011	276	(5)	5	(148)	(148)	(53.6%)	128	
2012	169	(3)	98	(48)	47	27.8%	216	
2013	299	(4)	1	(53)	(56)	(18.7%)	243	
2014	476	(15)	(13)	(47)	(75)	(15.8%)	401	
2015	880	(80)	27	(68)	(121)	(13.8%)	759	
2016	1,380	(128)	98	119	89	6.4%	1,469	
2017	1,470	(124)	301	(113)	64	4.4%	1,534	
2018	2,358	171	130	(10)	291	12.3%	2,649	
Grand Total	7,558	(192)	650	(445)	13	0.2%	7,571	

EXHIBIT G

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

RSP **New Brunswi**
AccountCode Desc **IBNR - Undisc**

IBNR - in \$000s

AccYear	Values				Sum of Total Change	Sum of % Total Change	Sum of Current Month Final Amount
	Sum of Prior Month Actual Amount	Sum of Projected Change	Sum of Change Due to AvsP Variances	Sum of Change Due to Valuation Implementation			
2005	(2)	-	-	-	-	-	(2)
2006	-	-	-	-	-	-	-
2007	8	-	-	-	-	-	8
2008	4	-	-	-	-	-	4
2009	132	(3)	2	(67)	(68)	(51.5%)	64
2010	56	(1)	1	-	-	-	56
2011	180	(4)	4	(131)	(131)	(72.8%)	49
2012	122	(2)	97	(40)	55	45.1%	177
2013	151	(3)	1	(31)	(33)	(21.9%)	118
2014	360	(14)	(14)	(28)	(56)	(15.6%)	304
2015	778	(78)	26	(51)	(103)	(13.2%)	675
2016	1,258	(126)	98	129	101	8.0%	1,359
2017	1,205	(121)	302	(53)	128	10.6%	1,333
2018	2,130	143	133	55	331	15.5%	2,461
Grand Total	6,382	(209)	650	(217)	224	3.5%	6,606