



NEW BRUNSWICK RISK SHARING POOL

AUGUST 2018 OPERATIONAL REPORT

ACTUARIAL HIGHLIGHTS

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ACTUARIAL HIGHLIGHTS
RSP NEW BRUNSWICK
OPERATIONAL REPORT
AUGUST 2018

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1 Summary

1.1 Valuation Schedule (Fiscal Year 2018)

The August 2018 Operational Report incorporates the results of an updated valuation (as at June 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 increased 1.1 points to 73.5%; discount rate increased 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 increased 1.1 point to 73.2%; discount rate increased 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 decreased 0.1 point to 73.1%; discount rate increased 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 increased 1.1 points to 74.2%; discount rate decreased by 6 basis points; selected margins for adverse deviations were updated
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 New Brunswick Risk Sharing Pool (“RSP”) as at June 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 the fall.

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

Summary of Impact (\$000s) of Implementing Result of Valuation as at June 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	1,320	67	1,387	24	(31)	1,380
CAY	94	(5)	89	9	-	98
Prem Def	49	(9)	40	12	-	52
TOTAL	1,463	53	1,516	45	(31)	1,530

As indicated in the table above, the incorporation of the new valuation had an estimated **\$1.5 million unfavourable impact** on the month's net result from operations, adding an estimated 18.1 points (see table immediately below) to the **year-to-date Combined Operating Ratio** to end at **121.5%**.

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

NB	ytd EP 8,444 (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	15.6%	0.8%	16.4%	0.3%	(0.4%)	16.3%
CAY	1.1%	(0.1%)	1.1%	0.1%	-	1.2%
Prem Def	0.6%	(0.1%)	0.5%	0.1%	-	0.6%
TOTAL	17.3%	0.6%	18.0%	0.5%	(0.4%)	18.1%

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 \$1.5 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 \$1.3 million unfavourable nominal variance, which is attributed to unfavourable large loss activity (AccBen) and a member claims transaction correction. The overall unfavourable prior accident years change is 9.3% of the prior accident years' nominal unpaid balance of \$14.2 million determined at the end of last month (July 2018). As a smaller pool, it is subject to higher levels of process variance, driving volatility in the ultimate selection.

The current accident year and premium deficiency impacts are a result of the changes in the selected loss ratios for accident year **2018** (up 1.1 points from 73.1% to **74.2%**) while **2019** remained

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.

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 \$53 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 June 2018. Column [4] accounts for the change in the **discount rate** selected (decreased 6 basis point to **1.87%**), indicating an unfavourable impact of \$45 thousand. The impact *related only to claims liabilities* (i.e. PAYs plus CAY) was \$33 thousand at August 2018 – this compares to the \$33 thousand 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**. However, as per usual practice with the June 30 valuation, the selected **claims development MfADs** were updated for some accident years and coverages, resulting in an estimated overall favourable impact of \$31 thousand.

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.

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, but we continue to review and consider the implications of the judgment.

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 and trend analysis data references.

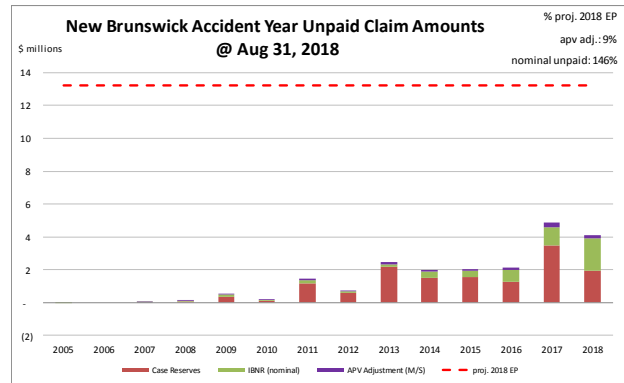
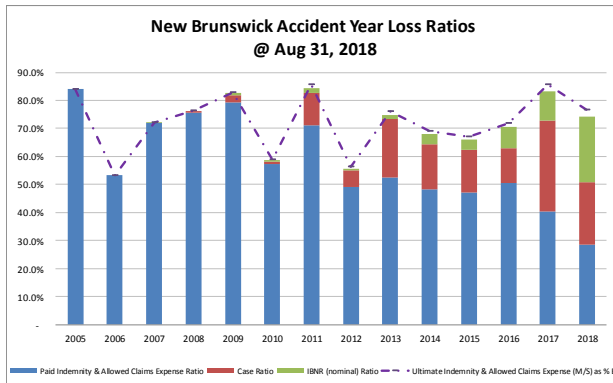
In the fiscal 2016-17 provincial budget released February 2, 2016, the New Brunswick Finance Minister announced a 2 percentage point increase in the provincial component of the harmonized sales tax (“HST”) **effective July 1st, 2016** increasing the combined HST rate in the province from 13% to 15%.

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 (June 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 amount of 2018 full year earned premium (the red hash-mark line) to provide some perspective.

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.



"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 (\$1.2 million – see table immediately below) represents 9% 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	14,190	69.3%
ibnr	5,137	25.1%
M/S apv adjust.	1,160	5.7%
M/S total	20,487	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 60% of the IBNR balance relates to accident years 2017 and 2018 (see Exhibit B). Approximately 74% of the M/S claim liabilities

are related to accident years 2014-2018 inclusive (i.e. the most recent 5 accident years), and approximately 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	7,701	124.1%
prem def/(dpac)	(1,774)	(28.6%)
M/S apv adjust.	276	4.4%
M/S total	6,203	100.0%

policy liabilities (\$000s)

	amt	%
claim	19,327	72.4%
premium	5,927	22.2%
M/S apv adjust.	1,436	5.4%
M/S total	26,690	100.0%

2 Activity During the Month of August 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	-	-	36	(76)	(85)	10	(48)	(65)
2016	(4)	(4)	55	(6)	(42)	(27)	12	(34)
2017	(16)	(16)	39	(48)	8	35	47	(13)
2018	1,175	(13)	297	(170)	169	(195)	466	(365)
TOTAL	1,154	(33)	427	(300)	50	(176)	477	(477)

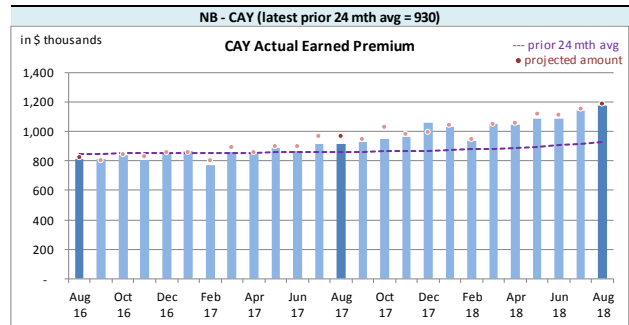
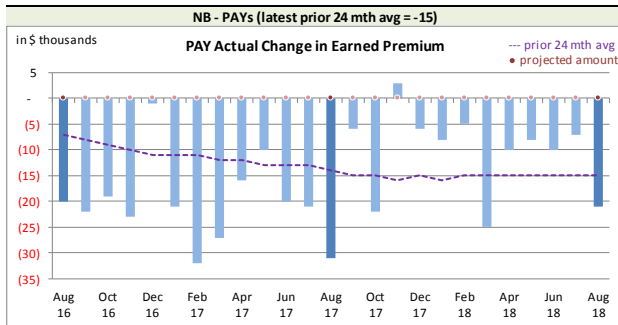
(Recorded transaction amounts exclude IBNR & other actuarial provisions)

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 tables 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



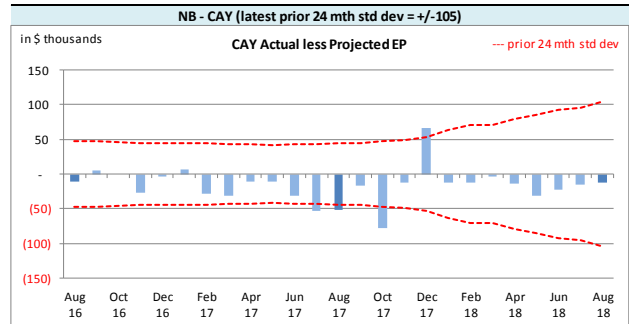
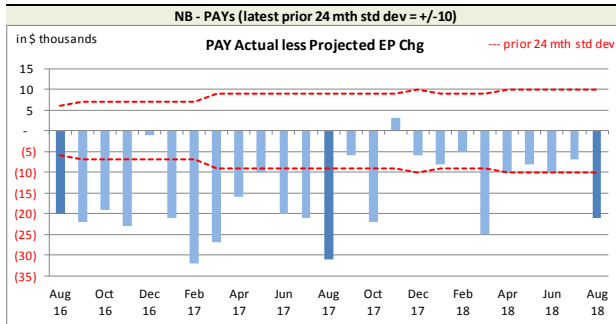
Earned premium changes during a given calendar month in relation to prior accident years tend to be at modest levels, although relatively high levels seem to occur in January each year. The heightened prior accident years’ activity over 2017 and in March 2018 was related to ineligible risks being removed 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)	930
std dev	10	105
A-P <> std dev	15	4
% <> std dev	60.0%	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' 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.

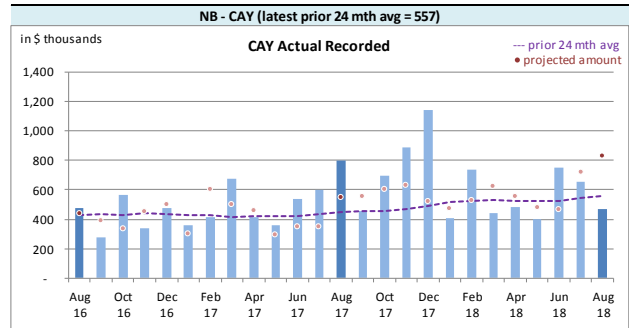
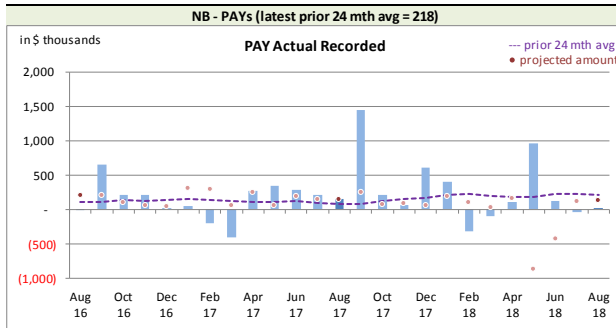
2.1.b AvsP: Recorded Indemnity & Allowed Claims Expense

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.

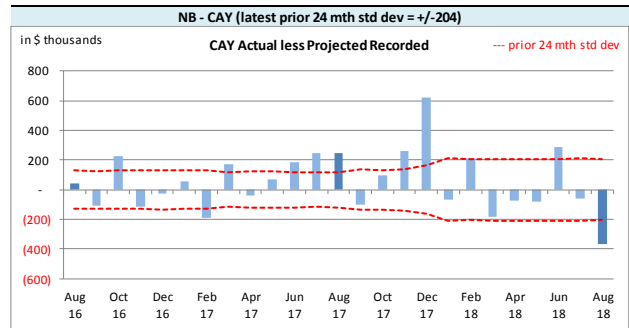
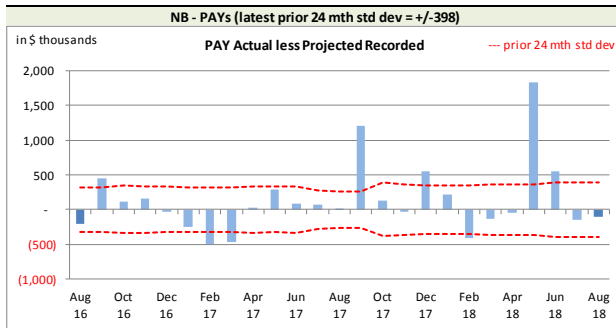
⁶We measure bias based on a 95% confidence range for a binominal distribution with trials based on the range being considered (24 in this case) and 50% probability of success. The 24-month variances at August 2018 has only 3 months where the actual was higher than projected, and as the 95% confidence 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	PAYs	CAY
Mthly Avg Recorded (prior 24 mths)	218	218	557
std dev	398	398	204
A-P <> std dev	8	8	11
% <> std dev	32.0%	32.0%	44.0%
norm <> std dev	31.7%	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, 32% 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.

As first noted in the May 2018 Actuarial Highlights, the PAY projected **recorded** activity was adjusted for the months of May and June 2018 to account for a member correction in recorded case reserve overstatement. The May and June 2018 PAY **recorded** variances were outside of one standard deviation driven by adjustments made to the recorded projection, as FA expected corrections in recorded case reserve overstatement to happen during these months, as previously advised by the member (see following sections for more details). As the corrections did not go through as expected, the PAY **recorded** activity was higher than the projected by more than one standard deviation. The member is still engaged in a process to correct the reported levels.

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 at the bottom of the previous page), 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.

The CAY **recorded** variance was outside of one standard deviation. The activity was reviewed and confirmed, with the variance attributed to process variance and a poor projection.

As noted in the last seven 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. Management investigated and estimated the overall overstatement for the New Brunswick RSP as at the latest valuation (June 30, 2018) as indicated in the table immediately below.

Estimated case reserve overstatement as at Jun 30, 2018

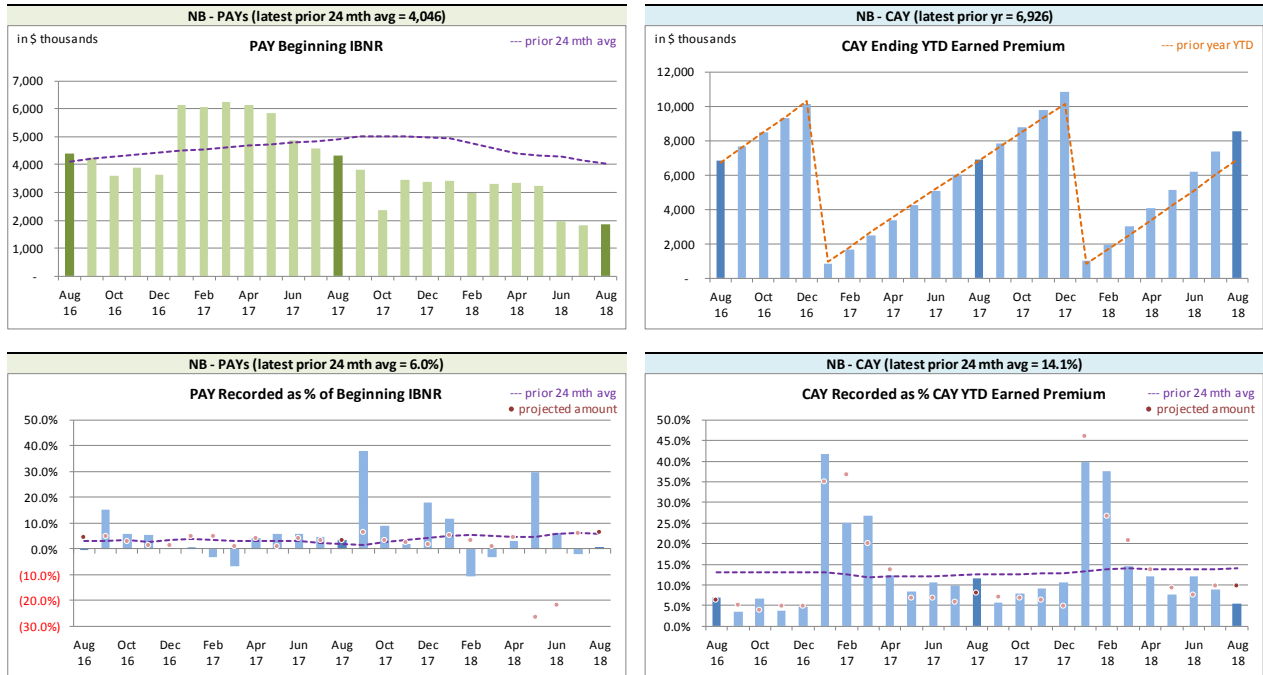
overstatement / (understatement)	
Accident Year	Total Case Reserve Overstatement (\$'000s)
2011	(121)
2012	24
2013	23
2014	9
2015	454
2016	506
2017	103
Total	998

With the latest valuation (June 30, 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). The member is still engaged in a process to correct the reported levels but we currently do not have a timeline on when this issue will be resolved.

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 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:

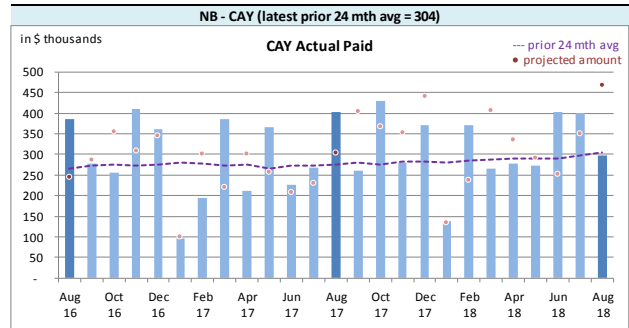
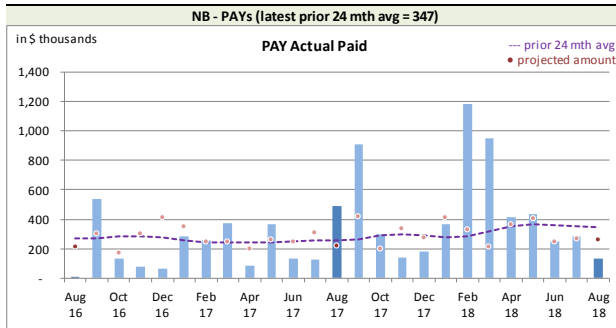
- to offset actual **recorded** activity (through loss ratio matching);
- the annual switchover as a current accident year becomes a prior accident year (occurs in January); and
- when a new valuation is implemented, where the valuation resulted in changes to the selection of prior accident years’ ultimate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

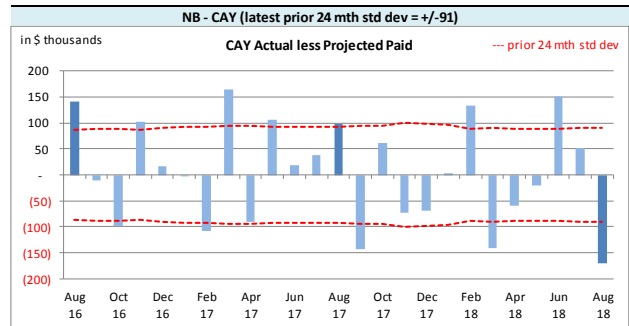
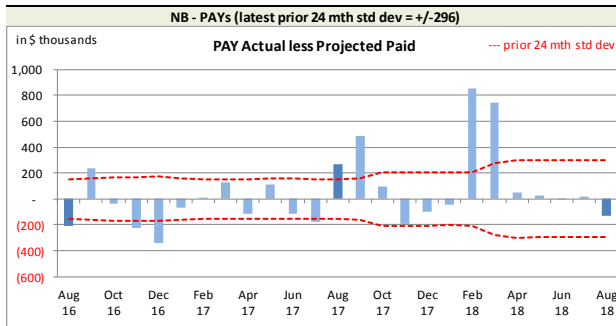
⁷Our recorded activity projections for the prior accident years are based on selected ratios of recorded activity to beginning unpaid balances, whereas the current accident year projections are based on selected ratios of year-to-date IBNR to year-to-date selected ultimate (i.e. selected LR x earned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

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	
Mthly Avg Paid (prior 24 mths)	347	304
std dev	296	91
A-P <> std dev	9	12
% <> std dev	36.0%	48.0%
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.

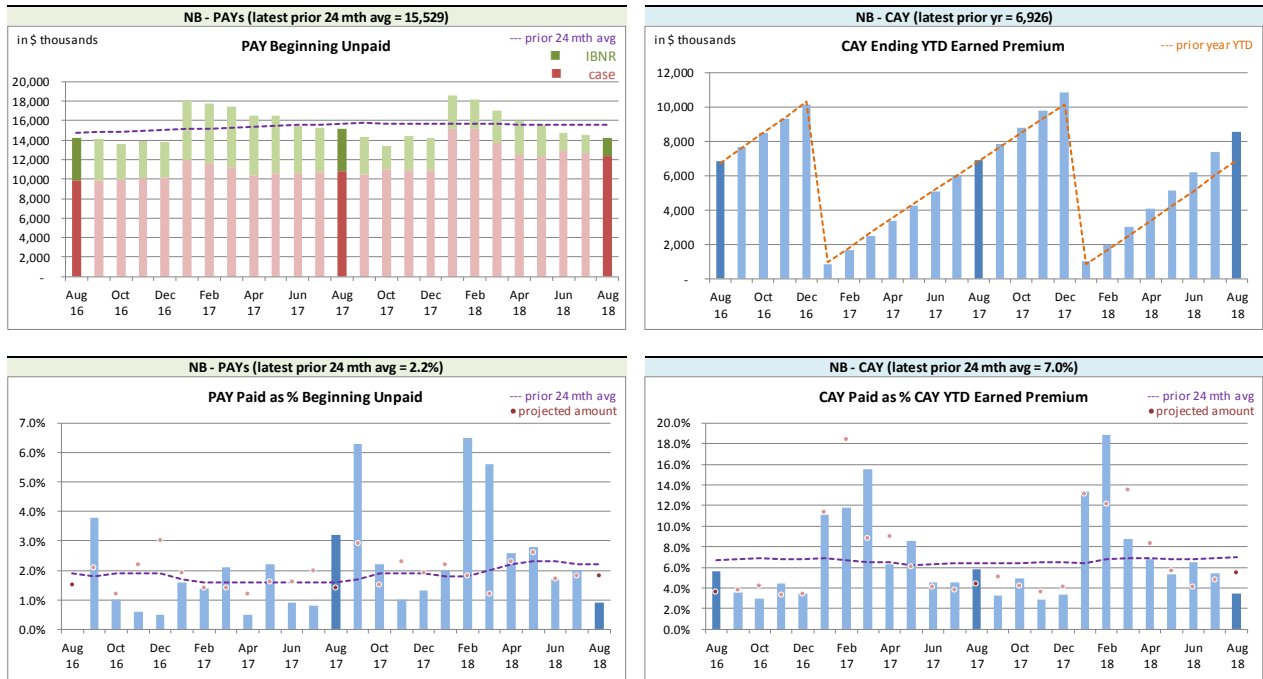
That said, 36% of the prior accident years’ (PAYS) variances over the last 25 calendar months have fallen outside of one standard deviation of the actual **paid** amounts (see table on left), suggesting the projection process has performed no better than simply projecting the prior 24-month average amount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

The current accident year (CAY) **paid** variances (right chart above) fell outside of one standard deviation 44% of the time over the last 25 calendar months, suggesting that 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 CAY **paid** variance was outside of one standard deviation this month. The activity was reviewed and confirmed, with the variance attributed to process variance and a poor projection.

We have included, for reference, additional charts at the top of the next page 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
- 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

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.

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

determine the current month’s provisions and projections were based on the applicable valuation. The table at the top of the next page summarizes variances in provisions included in the August 2018 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	IBNR		actuarial present value adjustments				IBNR + actuarial present value adjustments	
	Actual	Actual less Projected	Discount Amount		Provisions for Adverse Deviations		Actual	Actual less Projected
			Actual	Actual less Projected	Actual	Actual less Projected		
Prior	1,291	1,063	(323)	(28)	889	83	1,857	1,118
2016	744	31	(107)	(2)	233	(1)	870	28
2017	1,115	322	(285)	(22)	550	39	1,380	339
2018	1,987	449	(246)	(16)	449	29	2,190	462
TOTAL	5,137	1,865	(961)	(68)	2,121	150	6,297	1,947

The IBNR provision is \$1.9 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:

- (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 August 2018 Operational Report and the one-month projections from last month’s Report. This RSP is in a deferred policy acquisition cost asset position (shown as a negative amount) prior to and after actuarial present value adjustments. Actuarial present value adjustments decrease the asset value as the adjustments increase the expected future policy obligations (costs) associated with the unearned premium. The variances noted are mainly driven by the unearned premium variance 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:	(1,774)	(4)	276	11	(1,498)	7
balance as % unearned premium:	(23.0%)	0.7%	3.6%	-	(19.4%)	0.7%
actual unearned premium:	7,701					
less projected:	226					

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 75.0% rather than 74.2% (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	896	10.6%	(233)	(2.8%)	663	7.9%	1,355	17.4%
CAY	6,334	75.0%	203	2.4%	6,537	77.4%	986	1.2%
TOTAL	7,231	85.6%	(30)	(0.4%)	7,201	85.3%	2,341	18.6%

(“% 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 Jul. 2018	Actual Aug. 2018	Projected Sep. 2018	Projected Oct. 2018	Projected Dec. 2018
	2005		(2)	(2)	(2)	(2)	(2)
	2006		-	-	-	-	-
	2007		9	9	8	8	8
	2008		36	10	10	10	10
	2009		(23)	166	150	148	145
	2010		96	59	53	52	52
	2011		323	289	265	262	255
	2012		106	120	110	110	106
discount rate	2013		(267)	277	261	258	253
1.87%	2014		417	469	411	399	371
	2015		70	460	424	392	379
interest rate margin	2016		891	870	793	725	708
25 basis pts	2017		1,107	1,380	1,256	1,155	1,087
	2018		1,670	2,190	2,532	2,681	2,880
	TOTAL		4,433	6,297	6,271	6,198	6,252
	Change			1,864	(26)	(73)	

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 Jul. 2018	Actual Aug. 2018	Projected Sep. 2018	Projected Oct. 2018	Projected Dec. 2018
	84.0%	2005	(2)	(2)	(2)	(2)	(2)
	53.2%	2006	-	-	-	-	-
	72.1%	2007	8	8	7	7	7
	76.3%	2008	28	4	4	4	4
	82.7%	2009	(47)	132	116	114	112
	58.7%	2010	84	48	42	41	41
	84.5%	2011	226	193	170	167	163
	55.8%	2012	63	73	64	63	61
	74.7%	2013	(380)	129	114	112	110
	67.9%	2014	303	352	303	291	268
	66.0%	2015	(38)	354	319	287	281
	70.5%	2016	759	744	670	603	591
	83.1%	2017	853	1,115	1,003	903	841
	74.2%	2018	1,501	1,987	2,304	2,424	2,573
		TOTAL	3,358	5,137	5,114	5,014	5,050
		Change		1,779	(23)	(100)	

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

EXHIBIT C

Premium Liabilities

TABLE EXHIBIT C

	Amounts in \$000s				
	Actual Jul. 2018	Actual Aug. 2018	Projected Sep. 2018	Projected Oct. 2018	Projected Dec. 2018
Premium Liabilities					
(1) unearned premium (UP)	7,027	7,701	7,888	7,911	7,591
FOR MEMBER SHARING					
(2) expected future costs ratio {% of (1)}	79.7%	80.6%	80.6%	80.6%	80.8%
(3) expected future costs {(1) x (2)}	5,602	6,203	6,354	6,378	6,130
(4) premium deficiency / (deferred policy acquisition cost)	(1,425)	(1,498)	(1,534)	(1,533)	(1,461)
Excluding Actuarial Present Value Adjustments					
(5) expected future costs ratio {% of (1)}	76.2%	77.0%	77.0%	77.0%	77.2%
(6) expected future costs {(1) x (5)}	5,354	5,927	6,072	6,095	5,857
(7) premium deficiency / (deferred policy acquisition cost)	(1,673)	(1,774)	(1,816)	(1,816)	(1,734)

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	1	7	8	-	-	1	-	1	1	9	
2008	74	4	78	(2)	-	8	-	8	6	84	
2009	339	112	451	(12)	1	45	(1)	44	33	484	
2010	104	41	145	(4)	1	14	-	14	11	156	
2011	1,138	163	1,301	(38)	4	130	(4)	126	92	1,393	
2012	581	61	642	(20)	3	64	(2)	62	45	687	
2013	2,114	110	2,224	(82)	11	222	(8)	214	143	2,367	
2014	1,390	268	1,658	(65)	8	166	(6)	160	103	1,761	
2015	1,482	281	1,763	(78)	11	173	(8)	165	98	1,861	
2016	1,282	591	1,873	(101)	13	217	(12)	205	117	1,990	
2017	3,440	841	4,281	(265)	34	509	(32)	477	246	4,527	
PAYs (sub-total):	11,945	2,477	14,422	(667)	86	1,549	(73)	1,476	895	15,317	
CAY (2018)	3,364	2,573	5,937	(374)	47	677	(43)	634	307	6,244	
claims liabilities:	15,309	5,050	20,359	(1,041)	133	2,226	(116)	2,110	1,202	21,561	
	Unearned Premium	Premium Deficiency / (DPAC)	Total Provision	discount	investment PfAD	nominal development PfAD	development PfAD discount	development PfAD	Total apvs	TOTAL*	
premium liabilities:	7,591	(1,734)	5,857	(283)	34	549	(27)	522	273	6,130	
*Total may not be sum of parts, as apvs apply to future costs within UPR											
policy liabilities:			26,216	(1,324)	167	2,775	(143)	2,632	1,475	27,691	

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 (Jun. 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%	8.8%	10.0%
2015	10.0%	10.0%	5.5%	9.8%
2016	12.4%	10.0%	5.8%	11.6%
2017	12.5%	10.0%	6.3%	11.9%
2018	12.2%	10.0%	5.6%	11.4%
2019	12.0%	10.0%	5.1%	9.7%
prem liab	12.0%	10.0%	5.1%	9.7%

discount rate: 1.87%
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 (1.87%), the prior valuation assumption (1.93%) 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.

AY	Actuarial Present Value of Provisions at Various Discount Rates - Dec. 31, 2018 projected Unpaid							
	0.87%	1.37%	1.87%	2.37%	2.87%	3.37%	1.93%	1.74%
2005	-	-	-	-	-	-	-	-
2006	-	-	-	-	-	-	-	-
2007	5	4	4	4	4	4	4	4
2008	70	70	69	69	68	68	69	70
2009	385	382	379	377	374	371	379	380
2010	131	130	129	128	127	126	129	129
2011	1,008	1,000	993	985	977	970	992	995
2012	635	629	624	619	614	609	623	625
2013	2,168	2,146	2,125	2,104	2,084	2,064	2,123	2,131
2014	1,760	1,742	1,724	1,706	1,689	1,672	1,722	1,728
2015	2,396	2,367	2,339	2,312	2,285	2,259	2,336	2,347
2016	2,521	2,484	2,448	2,412	2,378	2,344	2,443	2,457
2017	4,929	4,845	4,764	4,684	4,608	4,534	4,754	4,785
2018	6,024	5,920	5,819	5,722	5,627	5,536	5,808	5,846
Total	22,032	21,719	21,417	21,122	20,835	20,557	21,382	21,497
	curr - 100 bp	curr - 50 bp	curr val assumption	curr + 50bp	curr + 100bp	curr + 150bp	prior val assumption	prior fyr end assumption

AY	Dollar Impact Relative to Valuation Assumption							
	0.87%	1.37%	1.87%	2.37%	2.87%	3.37%	1.93%	1.74%
2005	-	-	-	-	-	-	-	-
2006	-	-	-	-	-	-	-	-
2007	-	-	-	-	-	-	-	-
2008	-	-	-	-	-	-	-	-
2009	-	-	-	-	-	-	-	-
2010	-	-	-	-	-	-	-	-
2011	-	-	-	-	-	-	-	-
2012	-	-	-	-	-	-	-	-
2013	-	-	-	-	-	-	-	-
2014	-	-	-	-	-	-	-	-
2015	-	-	-	-	-	-	-	-
2016	-	-	-	-	-	-	-	-
2017	-	-	-	-	-	-	-	-
2018	-	-	-	-	-	-	-	-
Total	615	302	-	(295)	(582)	(860)	(35)	80
	curr - 100 bp	curr - 50 bp	curr val assumption	curr + 50bp	curr + 100bp	curr + 150bp	prior val assumption	prior fyr end assumption

AY	Percentage Impact Relative to Valuation Assumption							
	0.87%	1.37%	1.87%	2.37%	2.87%	3.37%	1.93%	1.74%
2005	-	-	-	-	-	-	-	-
2006	-	-	-	-	-	-	-	-
2007	25.0%	-	-	-	-	-	-	-
2008	1.4%	1.4%	-	-	(1.4%)	(1.4%)	-	1.4%
2009	1.6%	0.8%	-	(0.5%)	(1.3%)	(2.1%)	-	0.3%
2010	1.6%	0.8%	-	(0.8%)	(1.6%)	(2.3%)	-	-
2011	1.5%	0.7%	-	(0.8%)	(1.6%)	(2.3%)	(0.1%)	0.2%
2012	1.8%	0.8%	-	(0.8%)	(1.6%)	(2.4%)	(0.2%)	0.2%
2013	2.0%	1.0%	-	(1.0%)	(1.9%)	(2.9%)	(0.1%)	0.3%
2014	2.1%	1.0%	-	(1.0%)	(2.0%)	(3.0%)	(0.1%)	0.2%
2015	2.4%	1.2%	-	(1.2%)	(2.3%)	(3.4%)	(0.1%)	0.3%
2016	3.0%	1.5%	-	(1.5%)	(2.9%)	(4.2%)	(0.2%)	0.4%
2017	3.5%	1.7%	-	(1.7%)	(3.3%)	(4.8%)	(0.2%)	0.4%
2018	3.5%	1.7%	-	(1.7%)	(3.3%)	(4.9%)	(0.2%)	0.5%
Total	2.9%	1.4%	-	(1.4%)	(2.7%)	(4.0%)	(0.2%)	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		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	36	(2)	2	(26)	(26)	(72.2%)	10	
2009	(23)	2	44	143	189	(821.7%)	166	
2010	96	(3)	3	(37)	(37)	(38.5%)	59	
2011	323	(10)	35	(59)	(34)	(10.5%)	289	
2012	106	(3)	3	14	14	13.2%	120	
2013	(267)	13	(15)	546	544	(203.7%)	277	
2014	417	(21)	12	61	52	12.5%	469	
2015	70	(2)	(13)	405	390	557.1%	460	
2016	891	(49)	32	(4)	(21)	(2.4%)	870	
2017	1,107	(66)	2	337	273	24.7%	1,380	
2018	1,670	58	364	98	520	31.1%	2,190	
Grand Total	4,433	(83)	469	1,478	1,864	42.0%	6,297	

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	28	(1)	1	(24)	(24)	(85.7%)	4
2009	(47)	2	43	134	179	(380.9%)	132
2010	84	(3)	3	(36)	(36)	(42.9%)	48
2011	226	(9)	36	(60)	(33)	(14.6%)	193
2012	63	(3)	3	10	10	15.9%	73
2013	(380)	15	(16)	510	509	(133.9%)	129
2014	303	(18)	10	57	49	16.2%	352
2015	(38)	-	(15)	407	392	(1,031.6%)	354
2016	759	(46)	31	-	(15)	(2.0%)	744
2017	853	(60)	-	322	262	30.7%	1,115
2018	1,501	37	355	94	486	32.4%	1,987
Grand Total	3,358	(86)	451	1,414	1,779	53.0%	5,137