



# **NEW BRUNSWICK RISK SHARING POOL**

## **JANUARY 2019 OPERATIONAL REPORT**

### **ACTUARIAL HIGHLIGHTS**

Related Bulletin: [F19-015 New Brunswick RSP January 2019 Operational Report](#)

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**ACTUARIAL HIGHLIGHTS****RSP NEW BRUNSWICK****OPERATIONAL REPORT****JANUARY 2019**

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## 1 Summary

### 1.1 Valuation Schedule (Fiscal Year 2019)

The January 2019 Operational Report leverages actuarial assumptions consistent with last month (that is, it does not reflect the results of an updated valuation). The table immediately below summarizes the implemented valuations and future scheduled valuations for fiscal year 2019.

NEW BRUNSWICK RISK SHARING POOL FISCAL YEAR 2019 – SCHEDULE OF VALUATIONS			
Valuation Date	Discount Rate (per annum)	Operational Report	Description of Changes
Sep. 30, 2018 (completed)	2.29% 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
Dec. 31, 2018		Mar. 2019	update valuation
Mar. 31, 2019		May 2019	update valuation (roll forward)
Jun. 30, 2019		Aug. 2019	update valuation
Sep. 30, 2019		Oct. 2019	update valuation (roll forward)

Under the proposed schedule for fiscal year 2019, the “off-half” valuation quarters ending March 31, 2019 and September 30, 2019 would not reflect a full valuation update of assumptions, but would rather “roll-forward” key assumptions from the previous valuation.

### 1.2 Appointed Actuary and Hybrid Actuarial Services Model

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

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

### 1.3 Consideration of Recent Legal Decisions and Changes in Legislation / Regulation

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 June 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.

#### **1.4 Harmonized Sales Tax**

There have been no changes in these descriptions since last month’s Highlights.

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 1, 2016** increasing the combined HST rate in the province from 13% to 15%.

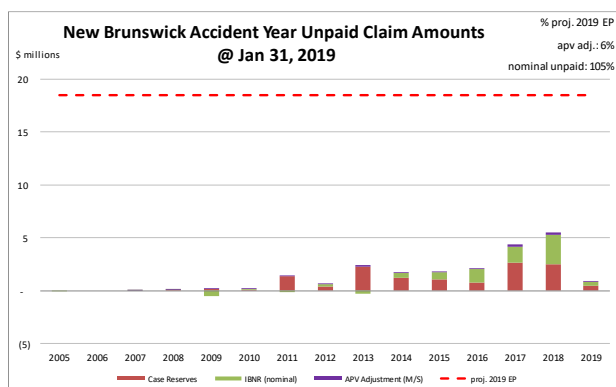
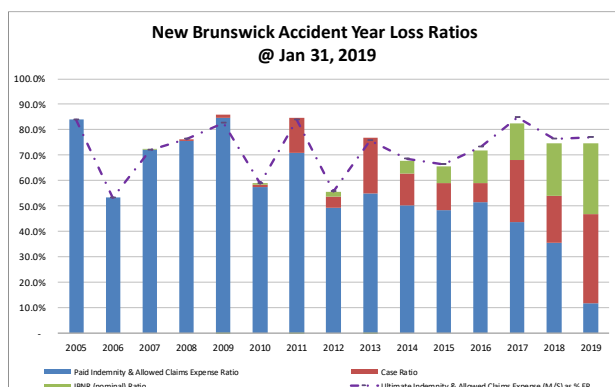
An adjustment for the HST rate increase was included in the updated loss cost trend structures selected using NB PPV Industry 2017-2 data, impacting the selected a priori loss ratios, however, no specific adjustments have been made to the valuation assumptions from the **most recent** valuation (September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

#### **1.5 Current Provision Summary**

The charts at the top of the next page show the current levels of claim liabilities<sup>1</sup> 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 2019 full year earned premium (the red hash-mark line) to provide some perspective.

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



"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 (\$1.1 million – see table immediately below) represents 6% of the earned premium projected for the full year 2019 (see the upper right corner of the right chart above). If our current estimates of the nominal unpaid amounts prove to match actual claims payments, the actuarial present value adjustments will be released into the net operating result over future periods.

#### claim liabilities (\$000s)

	amt	%
case	12,988	63.2%
ibnr	6,467	31.5%
M/S apv adjust.	1,082	5.3%
M/S total	20,537	100.0%

The table to the left breaks down the Member Statement (M/S) claim liabilities total into component parts, showing that the majority of the claim liabilities for this RSP is in case reserves. Approximately 49% of the IBNR balance relates to accident years 2018 and 2019 (see Exhibit B). Approximately 72% of the M/S

claim liabilities are related to accident years 2015–2019 inclusive (i.e. the most recent 5 accident years), and less than 0%<sup>2</sup> is related to accident years 2009 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	7,791	124.5%
prem def/(dpac)	(1,776)	(28.4%)
M/S apv adjust.	245	3.9%
M/S total	6,260	100.0%

#### policy liabilities (\$000s)

	amt	%
claim	19,455	72.6%
premium	6,015	22.4%
M/S apv adjust.	1,327	5.0%
M/S total	26,797	100.0%

## 2 Activity During the Month of January 2019

### 2.1 Recorded Premium and Claims Activity

The table at the top of the next page summarizes the extent to which premiums and claims amounts recorded during the month differ from projections reflected in the prior month's Operational Report<sup>3</sup>.

<sup>2</sup>M/S claims liabilities for accident years 2009 and prior account for less than 0% of total claims liabilities at the present time as a result of the IBNR calculation and recorded claims activity since the prior valuation. While unusual, this suggests the potential for unfavourable experience occurring since the prior valuation.

<sup>3</sup>There 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	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	-	-	372	257	(553)	(374)	(181)	(117)
2017	(0)	(0)	106	63	(132)	(104)	(26)	(41)
2018	(18)	(18)	389	49	(335)	(280)	54	(231)
2019	1,287	(27)	149	(32)	451	83	600	51
TOTAL	1,268	(46)	1,016	337	(568)	(674)	447	(338)

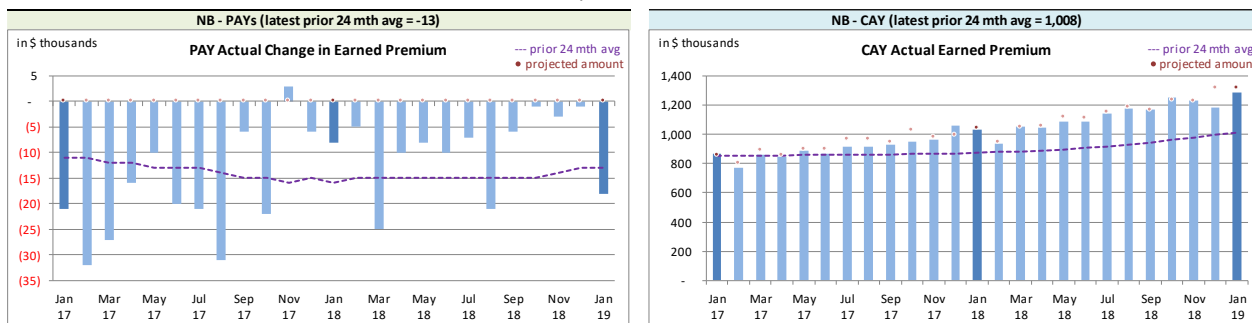
(Recorded transaction amounts exclude IBNR & other actuarial provisions)

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**<sup>4</sup> activity in each of the most recent 25 calendar months, along with a “prior 24-month average” to show how each month’s actual compares with the average amount of the preceding 24 calendar months.

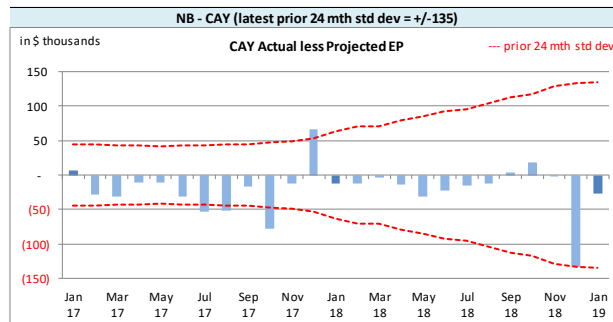
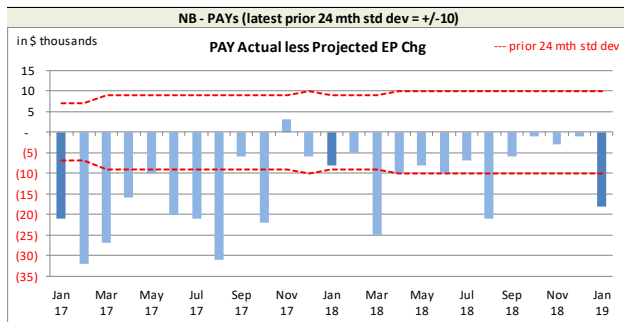
*New Brunswick RSP Actual **Earned Premium** by Calendar Month*



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

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

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

*New Brunswick RSP Actual vs. Projected Summary: **Earned Premium** Variances by Calendar Month*


On Latest \$ thousands		
<b>Earned Premium</b>	PAYs	CAY
Mthly Avg EP Chg (prior 24 mths)	(13)	1,008
std dev	10	135
A-P <> std dev	12	4
% <> std dev	48.0%	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) bias<sup>5</sup>, 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 bias<sup>6</sup>, 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.

The heightened December 2018 current accident years' (see right chart above) activity was investigated and FA management was advised that by a member that they had uncovered ineligible risks which had been erroneously transferred previously to the RSP and therefore removed. 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.

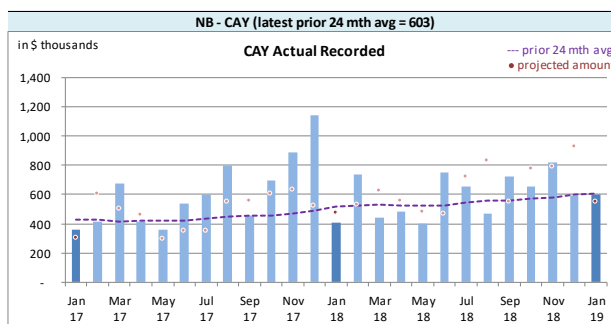
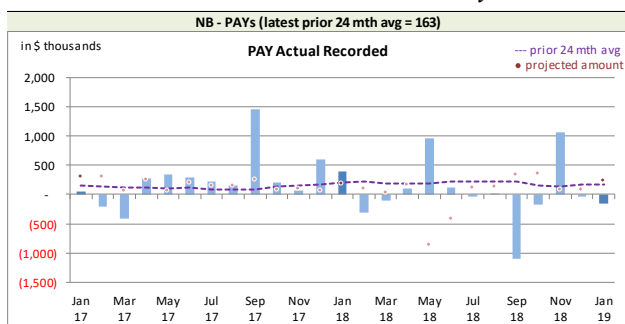
### 2.1.b AvsP: Recorded Indemnity & Allowed Claims Expense

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.

<sup>5</sup>The PAYs' variances will show bias as the projection upload forces all earned premium projections to be attributed to the CAY.

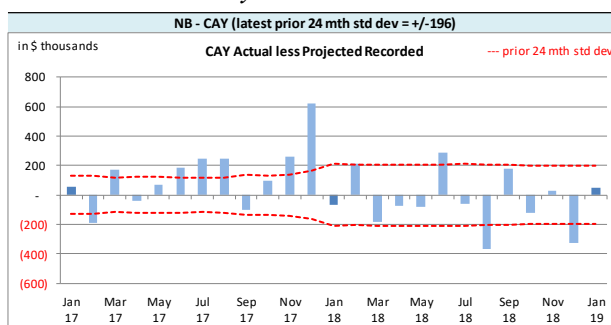
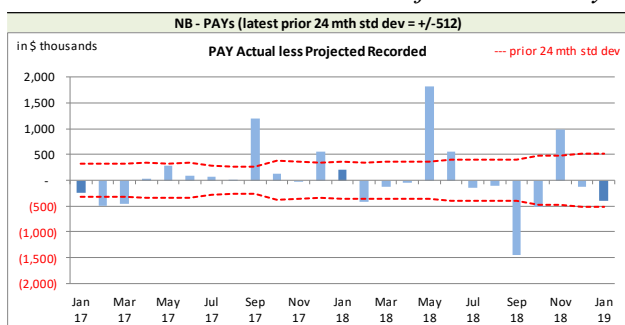
<sup>6</sup>We measure bias based on a 95% confidence range for a binominal distribution with trials based on the range being considered (24 in this case) and 50% probability of success. The 24-month variances at January 2019 has only 4 months where the actual was higher than projected, and as the 95% 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		
	<b>Recorded</b>	
Mthly Avg Recorded (prior 24 mths)	163	603
std dev	512	196
A-P <> std dev	10	11
% <> std dev	40.0%	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, 40% 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 worse 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.

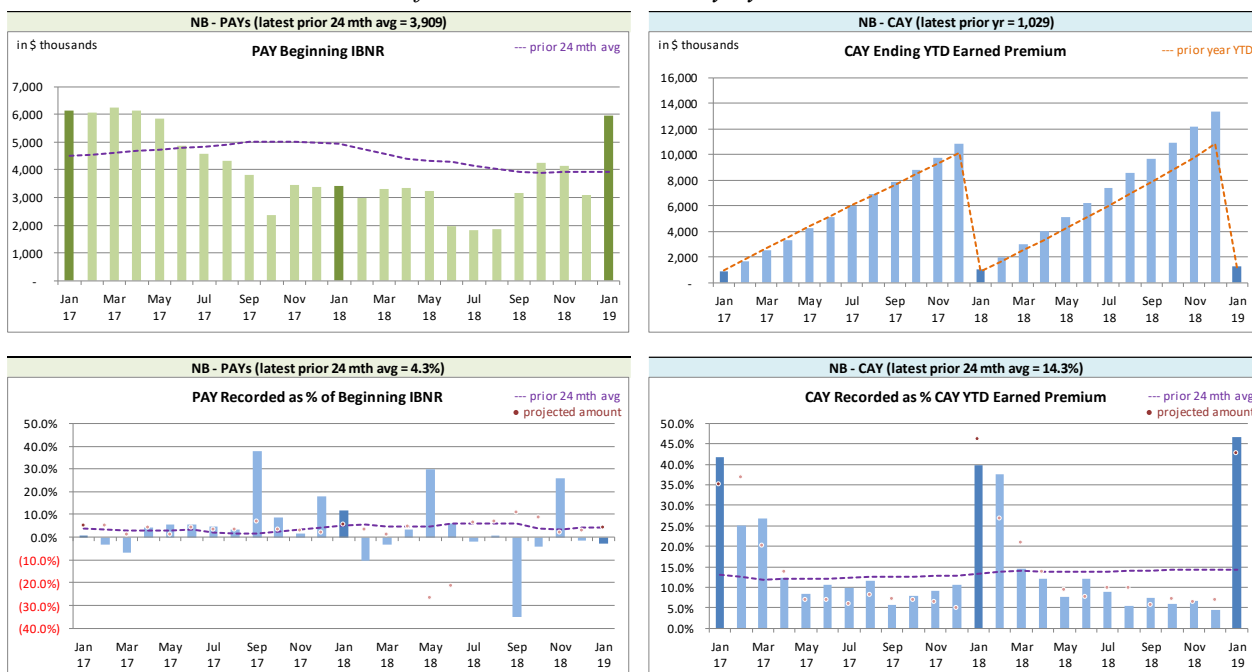
The current accident year (CAY) **recorded** variances fell outside of one standard deviation 44% of the time over the last 25 calendar months (see table above), suggesting the projection process has performed worse than simply projecting the prior 24-month average amount. Bias has not been indicated at a 95% confidence level on a lagging 24-month basis.

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 influence<sup>7</sup> Recorded activity by Calendar Month*



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

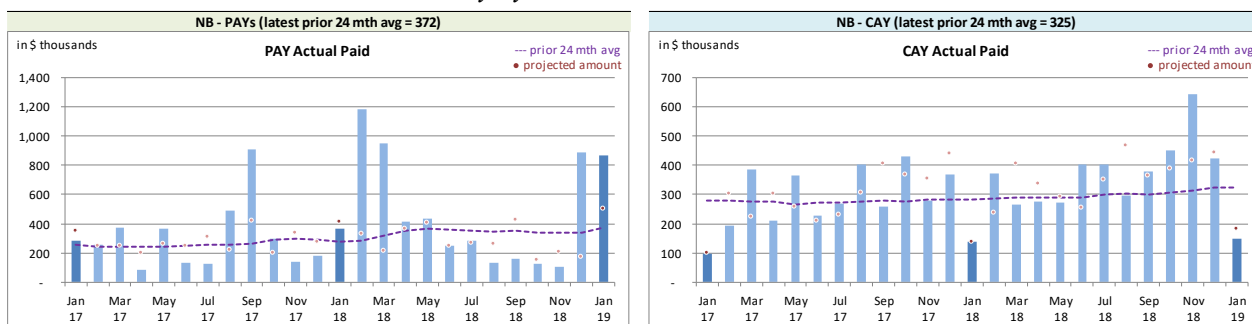
- to offset actual **recorded** activity (through loss ratio matching);
- the annual switchover as a current accident year becomes a prior accident year (occurs in January); and
- when a new valuation is implemented, where the valuation resulted in changes to the selection of prior accident years' ultimate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

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

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

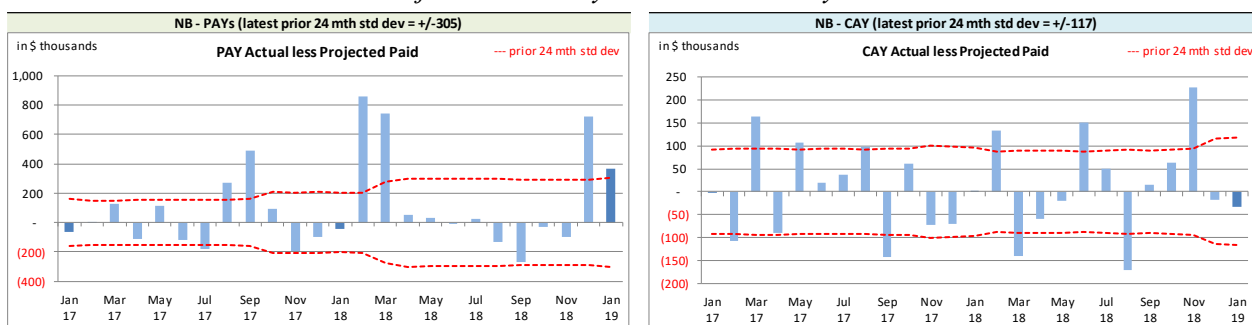
<sup>7</sup>Our recorded activity projections for the prior accident years are based on selected ratios of recorded activity to beginning unpaid balances, whereas the current accident year projections are based on selected ratios of year-to-date IBNR to year-to-date selected ultimate (i.e. selected LR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

*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		
	<b>Paid</b>	
	PAYs	CAY
Mthly Avg Paid (prior 24 mths)	372	325
std dev	305	117
A-P <> std dev	7	10
% <> std dev	28.0%	40.0%
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.

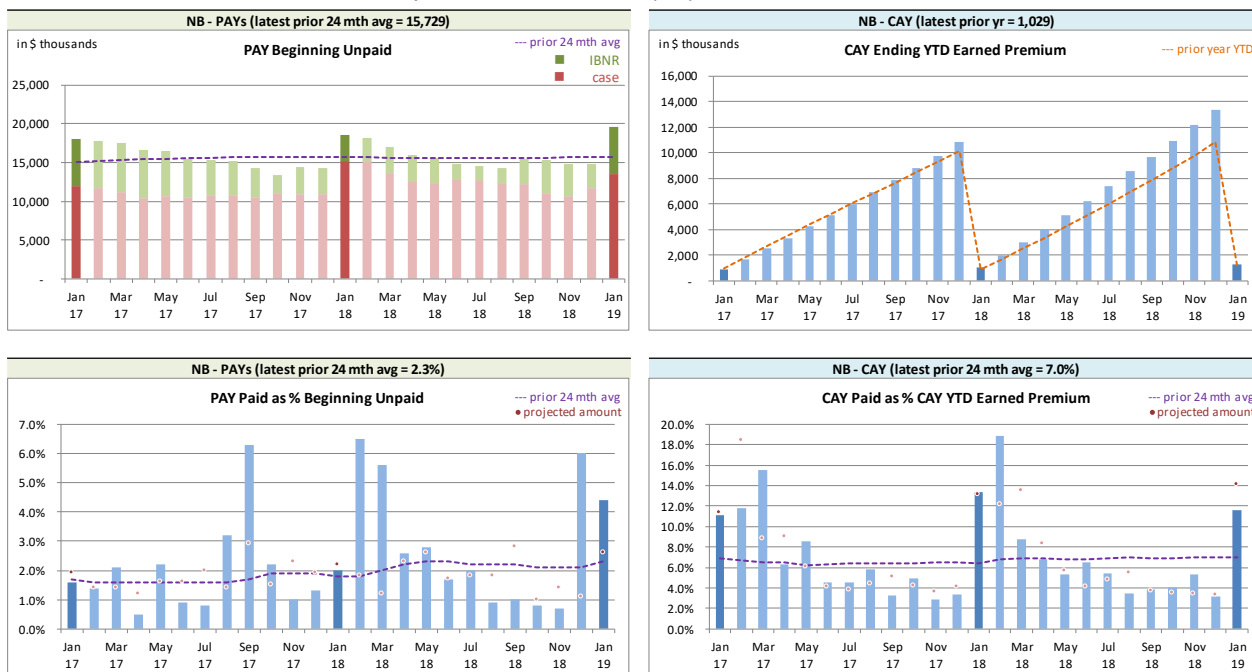
That said, 28% of the prior accident years’ (PAYs) variances over the last 25 calendar months have fallen outside of one standard deviation of the actual **paid** amounts (see table on the left above), suggesting the projection process has performed no better than simply projecting the prior 24-month average amount (assuming a normal distribution). Bias has not been indicated at a 95% confidence level on a lagging 24-month basis.

The PAY **paid** variance (see left chart above) was outside of one standard deviation this month. The activity was reviewed and confirmed, with the variance attributed to process variance.

The current accident year (CAY) **paid** variances fell outside of one standard deviation 40% of the time over the last 25 calendar months (see table above), 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 influence<sup>8</sup> Paid activity by Calendar Month*



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

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

## 2.2 Actuarial Provisions

An “ultimate loss ratio matching method” (described in section 3) was used to determine the month's IBNR<sup>9</sup>, 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

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

<sup>9</sup>For 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 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	1,769	117	(405)	9	1,023	(27)	2,387	99
2017	1,555	41	(276)	4	502	(7)	1,781	38
2018	2,783	217	(395)	5	603	(7)	2,991	215
2019	360	(71)	(62)	(1)	92	1	390	(71)
TOTAL	6,467	304	(1,138)	17	2,220	(40)	7,549	281

The IBNR provision is \$0.3 million higher than projected from last month, counterbalancing the recorded claims activity and adjusting for the earned premium variance impacts indicated in section 2.1.

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

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

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

The table 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 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.

*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:	(1,776)	92	245	(11)	(1,531)	81
balance as % unearned premium:	(22.8%)	-	3.1%	-	(19.7%)	-
actual unearned premium:	7,791					
less projected:	(388)					

### 3 Ultimate Loss Ratio Matching Method

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

- (a) Earned premium to-date
- (b) Ultimate loss<sup>10</sup> ratio per latest valuation
- (c) Estimated ultimate incurred = (a) x (b)
- (d) Recorded indemnity & allowed claims expense to-date
- (e) IBNR = (c) – (d)

### 4 Calendar Year-to-Date Results

The table at the top of the next page summarizes the calendar year-to-date results for indemnity & allowed claims expenses<sup>11</sup>, 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 75.7% rather than 74.6% (the valuation ultimate ratio for accident year 2019), as the calendar year-to-date earned premium includes prior accident year earned premium adjustments. (Note that the ratios in this table may differ slightly from those shown in the New Brunswick RSP Summary of Operations due to rounding.)

<sup>10</sup>“Loss” here refers to indemnity and allowed claims expenses, but does not include the claims expense allowance included in member company overall expense allowances (“Expense Allowance” in the Operational Report).

<sup>11</sup>Allowed claims expenses are first party legal and other expenses as listed in the RSP Claims Guide. Claims expenses paid through the member company expense allowance are NOT included in this analysis.

*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	(14)	(1.1%)	56	4.4%	42	3.3%	#N/A	#N/A
CAY	960	75.7%	30	2.4%	990	78.1%	#N/A	#N/A
TOTAL	946	74.6%	86	6.8%	1,032	81.4%	#N/A	#N/A

(“% EP” based on 2019 calendar year-to-date earned premium; ratios may not total due to rounding)

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

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

## 5 Current Operational Report – Additional Exhibits

Section 6 provides exhibits pertaining to the actuarial provisions reflected in the current month’s 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**

 IBNR + M/S actuarial present  
 value adjustments

 discount rate  
 2.29%

 interest rate margin  
 25 basis pts

Amounts in \$000s					
Accident Year	Actual Dec. 2018	Actual Jan. 2019	Projected Feb. 2019	Projected Mar. 2019	Projected Dec. 2019
2005	(2)	(2)	(2)	(2)	(2)
2006	-	-	-	-	-
2007	9	9	9	9	4
2008	9	10	10	10	7
2009	(442)	(443)	(434)	(429)	(191)
2010	65	66	64	63	35
2011	(77)	(61)	(60)	(59)	(2)
2012	215	216	210	208	112
2013	(181)	(124)	(123)	(122)	(12)
2014	395	564	552	547	293
2015	754	743	725	710	499
2016	1,430	1,409	1,379	1,362	1,020
2017	1,722	1,781	1,743	1,722	1,320
2018	3,067	2,991	2,928	2,895	2,370
2019	-	390	583	1,086	4,048
<b>TOTAL</b>	<b>6,964</b>	<b>7,549</b>	<b>7,584</b>	<b>8,000</b>	<b>9,501</b>
Change		585	35	416	

*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 Dec. 2018	Actual Jan. 2019	Projected Feb. 2019	Projected Mar. 2019	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	(483)	(483)	(473)	(468)	(223)
58.7%	2010	56	56	55	54	27
83.2%	2011	(156)	(137)	(134)	(133)	(63)
55.4%	2012	177	177	173	171	81
74.4%	2013	(306)	(249)	(244)	(242)	(114)
67.6%	2014	299	472	463	458	218
65.5%	2015	670	650	637	624	425
71.8%	2016	1,321	1,273	1,248	1,236	909
82.6%	2017	1,529	1,555	1,524	1,509	1,132
74.7%	2018	2,851	2,783	2,727	2,700	2,203
74.6%	2019	-	360	531	1,008	3,735
	<b>TOTAL</b>	<b>5,968</b>	<b>6,467</b>	<b>6,517</b>	<b>6,927</b>	<b>8,334</b>
	<b>Change</b>		<b>499</b>	<b>50</b>	<b>410</b>	

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



**EXHIBIT C**
**Premium Liabilities**
**TABLE EXHIBIT C**

	Amounts in \$000s				
	Actual Dec. 2018	Actual Jan. 2019	Projected Feb. 2019	Projected Mar. 2019	Projected Dec. 2019
Premium Liabilities					
(1) unearned premium (UP)	8,039	7,791	8,122	8,398	10,725
FOR MEMBER SHARING					
(2) expected future costs ratio {% of (1)}	80.3%	80.3%	80.4%	80.4%	80.9%
(3) expected future costs {(1) x (2)}	6,459	6,260	6,527	6,749	8,672
(4) premium deficiency / (deferred policy acquisition cost)	(1,580)	(1,531)	(1,595)	(1,649)	(2,053)
Excluding Actuarial Present Value Adjustments					
(5) expected future costs ratio {% of (1)}	77.2%	77.2%	77.2%	77.2%	77.7%
(6) expected future costs {(1) x (5)}	6,206	6,015	6,271	6,486	8,333
(7) premium deficiency / (deferred policy acquisition cost)	(1,833)	(1,776)	(1,851)	(1,912)	(2,392)

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

The table below presents the projected policy liabilities as at December 31, 2019, broken down by component.

New Brunswick ending 2019				Projected Balances as at Dec. 31, 2019 (\$000s)						
Acc Yr	nominal values			actuarial present value adjustments (apvs)						TOTAL
	Case	IBNR	Total Unpaid	discount	investment PfAD	nominal development PfAD	development PfAD discount	development PfAD	Total apvs	
2005	-	(2)	(2)	-	-	-	-	-	-	(2)
2006	-	-	-	-	-	-	-	-	-	-
2007	5	3	8	-	-	1	-	1	1	9
2008	61	3	64	(2)	-	6	-	6	4	68
2009	(36)	(223)	(259)	8	(1)	26	(1)	25	32	(227)
2010	94	27	121	(4)	-	12	-	12	8	129
2011	1,057	(63)	994	(38)	4	99	(4)	95	61	1,055
2012	412	81	493	(18)	2	49	(2)	47	31	524
2013	1,743	(114)	1,629	(62)	7	163	(6)	157	102	1,731
2014	1,132	218	1,350	(61)	7	135	(6)	129	75	1,425
2015	968	425	1,393	(65)	7	139	(7)	132	74	1,467
2016	738	909	1,647	(86)	8	199	(10)	189	111	1,758
2017	2,352	1,132	3,484	(230)	24	422	(28)	394	188	3,672
2018	2,012	2,203	4,215	(316)	34	485	(36)	449	167	4,382
PAYS (sub-total):	10,538	4,599	15,137	(874)	92	1,736	(100)	1,636	854	15,991
CAY (2019)	4,427	3,735	8,162	(620)	65	939	(71)	868	313	8,475
claims liabilities:	14,965	8,334	23,299	(1,494)	157	2,675	(171)	2,504	1,167	24,466
	Unearned Premium	Premium Deficiency / (DPAC)	Total Provision	discount	investment PfAD	nominal development PfAD	development PfAD discount	development PfAD	Total apvs	TOTAL*
premium liabilities:	10,725	(2,392)	8,333	(419)	40	757	(39)	718	339	8,672
*Total may not be sum of parts, as apvs apply to future costs within UPR										
policy liabilities:			31,632	(1,913)	197	3,432	(210)	3,222	1,506	33,138

## 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 to Dec. 31, 2019, and 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  
AccountCode Desc

New Brunswick  
IBNR - Discounted

M/S IBNR - in \$000s

AccYear	Values Sum of Prior Month Actual Amount	Sum of Projected Change	Sum of Change Due to AvsP Variances	Sum of Change Due to Valuation Implementation	Sum of Total Change	Sum of % Total Change	Sum of Current Month Final Amount
2005	(2)	-	-	-	-	-	(2)
2006	-	-	-	-	-	-	-
2007	9	(2)	2	-	-	-	9
2008	9	-	1	-	1	11.1%	10
2009	(442)	139	(140)	-	(1)	0.2%	(443)
2010	65	(15)	16	-	1	1.5%	66
2011	(77)	40	(24)	-	16	(20.8%)	(61)
2012	215	(51)	52	-	1	0.5%	216
2013	(181)	103	(46)	-	57	(31.5%)	(124)
2014	395	(83)	252	-	169	42.8%	564
2015	754	(31)	20	-	(11)	(1.5%)	743
2016	1,430	13	(34)	-	(21)	(1.5%)	1,409
2017	1,722	21	38	-	59	3.4%	1,781
2018	3,067	(291)	215	-	(76)	(2.5%)	2,991
2019	-	461	(71)	-	390	100.0%	390
Grand Total	6,964	304	281	-	585	8.4%	7,549

**EXHIBIT G**

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

 RSP **New Brunswick**  
 AccountCode Desc **IBNR - Undiscounted**

IBNR - in \$000s

AccYear	Values				Sum of Total Change	Sum of % Total Change	Sum of Current Month Final Amount
	Sum of Prior Month Actual Amount	Sum of Projected Change	Sum of Change Due to AvsP Variances	Sum of Change Due to Valuation Implementation			
2005	(2)	-	-	-	-	-	(2)
2006	-	-	-	-	-	-	-
2007	8	(2)	2	-	-	-	8
2008	4	(1)	1	-	-	-	4
2009	(483)	140	(140)	-	-	-	(483)
2010	56	(16)	16	-	-	-	56
2011	(156)	45	(26)	-	19	(12.2%)	(137)
2012	177	(51)	51	-	-	-	177
2013	(306)	89	(32)	-	57	(18.6%)	(249)
2014	299	(87)	260	-	173	57.9%	472
2015	670	(40)	20	-	(20)	(3.0%)	650
2016	1,321	(13)	(35)	-	(48)	(3.6%)	1,273
2017	1,529	(15)	41	-	26	1.7%	1,555
2018	2,851	(285)	217	-	(68)	(2.4%)	2,783
2019	-	431	(71)	-	360	100.0%	360
<b>Grand Total</b>	<b>5,968</b>	<b>195</b>	<b>304</b>	<b>-</b>	<b>499</b>	<b>8.4%</b>	<b>6,467</b>