



## **NEW BRUNSWICK RISK SHARING POOL**

### **APRIL 2019 OPERATIONAL REPORT**

# **ACTUARIAL HIGHLIGHTS**

Related Bulletin: [F19-037 New Brunswick RSP April 2019 Operational Report](#)

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

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## 1 Summary

### 1.1 Valuation Schedule (Fiscal Year 2019)

The April 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 (completed)	1.93% mfad 25 bp	Mar. 2019	updated valuation: accident year 2019 loss ratio <u>increased</u> 0.9 points to 75.5%; discount rate <u>decreased</u> by 36 basis points; no change to selected margins for adverse deviations
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<sup>1</sup>

Consideration and assessment of potential impacts of legal decisions and changes in legislation / regulation constitutes a regular part of the valuation process. At the current time, there are no specific

<sup>1</sup>This link is to a helpful guide on how bills become laws: <http://www.ontla.on.ca/lao/en/media/laointernet/pdf/bills-and-lawmaking-background-documents/how-bills-become-law-en.pdf>.

recent decisions or changes for inclusion here.

## 1.4 Harmonized Sales Tax

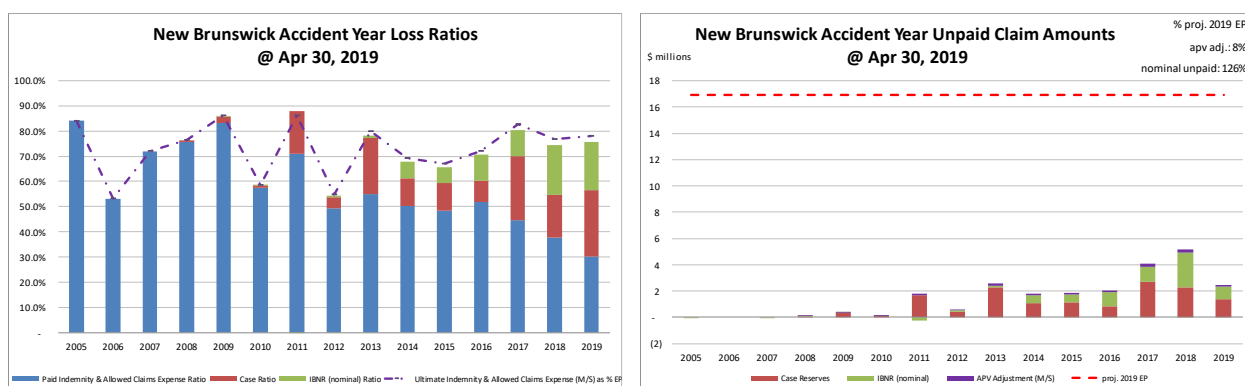
There has been a minor clarifying change in these descriptions since last month's Highlights.

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%.

No explicit adjustments have been made to the valuation assumptions from the **most recent** valuation (December 31, 2018), on the basis that current estimates have implicitly incorporated the impact.

## 1.5 Current Provision Summary

The charts immediately below show the current levels of claim liabilities<sup>2</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.



"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 (\$1.4 million – see table at the top of the next page) represents 8% 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.

<sup>2</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.

claim liabilities (\$000s)		
	amt	%
case	14,269	63.0%
ibnr	7,029	31.0%
M/S apv adjust.	1,361	6.0%
M/S total	22,659	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 51% of the IBNR balance relates to accident years 2018 and 2019 (see Exhibit B). Approximately 69% of the M/S claim liabilities

are related to accident years 2015-2019 inclusive (i.e. the most recent 5 accident years), and 2% 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)			policy liabilities (\$000s)		
	amt	%		amt	%
unearned prem	7,873	121.7%	claim	21,298	73.1%
prem def/(dpac)	(1,705)	(26.4%)	premium	6,168	21.2%
M/S apv adjust.	304	4.7%	M/S apv adjust.	1,665	5.7%
M/S total	6,472	100.0%	M/S total	29,131	100.0%

## 2 Activity During the Month of April 2019

### 2.1 Recorded Premium and Claims Activity

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

*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	(1)	(1)	(145)	(375)	245	353	100	(22)
2017	(2)	(2)	40	1	(28)	(34)	13	(32)
2018	(7)	(7)	36	(112)	(85)	37	(48)	(74)
2019	1,308	(32)	508	124	208	8	717	132
TOTAL	1,298	(41)	439	(362)	341	365	781	3

(Recorded transaction amounts exclude IBNR & other actuarial provisions)

It is typically unusual to see actual earned premium transactions affecting accident years older than the first prior accident year – the changes in 2017 and prior accident year reflect activity undertaken by a member to remove risks from the RSP. Management is investigating the transactions.

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

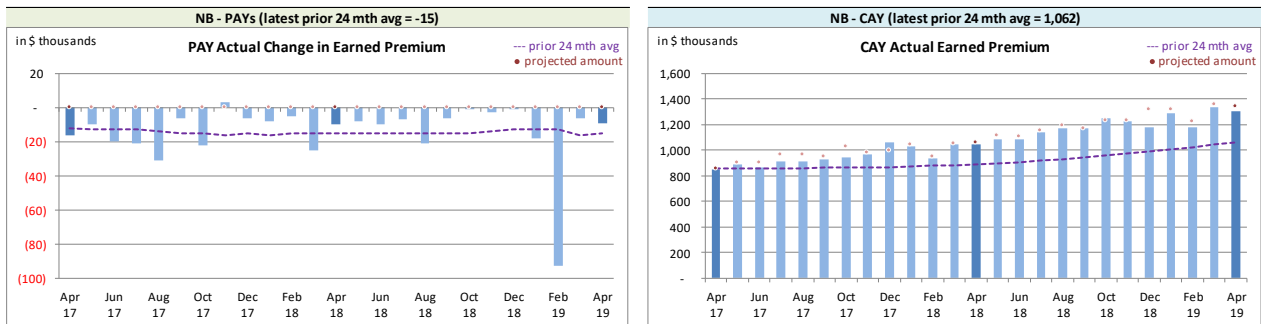
<sup>3</sup>There may be rounding differences in values in this document compared with the associated Bulletin and/or Operational Report.

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

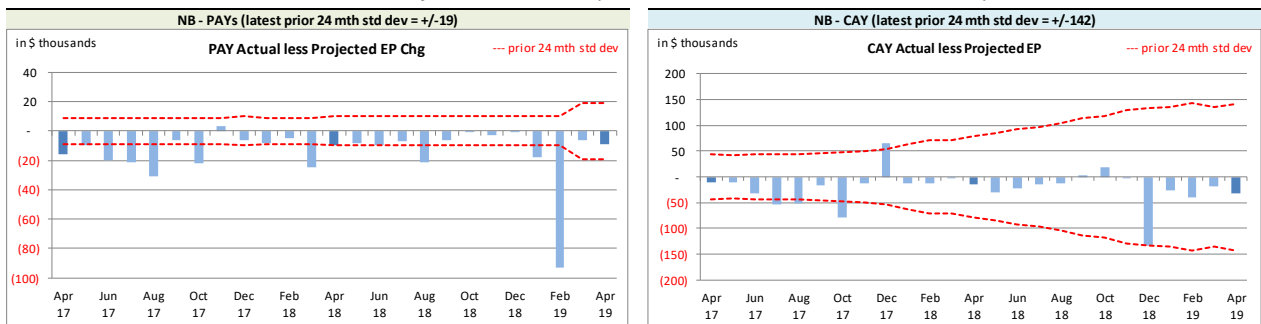


**Earned premium** changes during a given calendar month in relation to prior accident years tend to be at modest levels, although relatively high levels generally occur at the beginning of each year.

The unusually and relatively high prior accident years earned premium in February 2019 were investigated and related to a member removal of ineligible risks.

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

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



<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.

On Latest \$ thousands		
<b>Earned Premium</b>	PAYs	CAY
Mthly Avg EP Chg (prior 24 mths)	(15)	1,062
std dev	19	142
A-P <> std dev	10	4
% <> std dev	40.0%	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

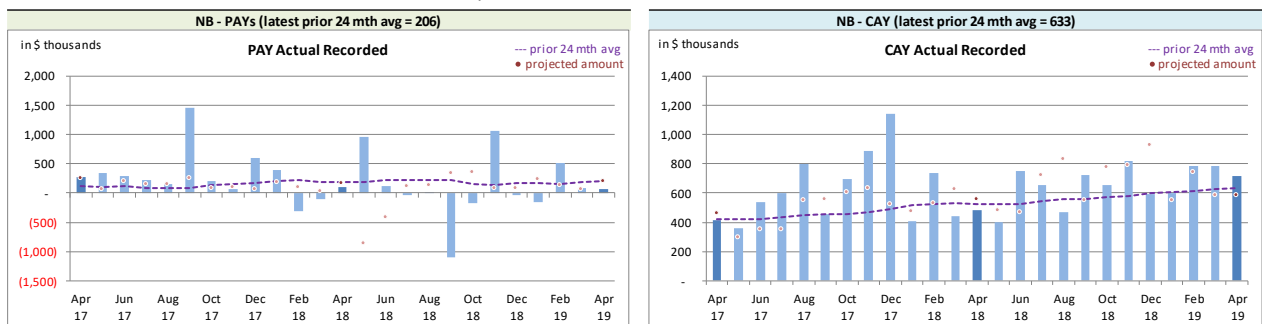
monthly premium. In addition to the PAYs' bias, the CAY has also shown bias<sup>6</sup>, with actuals being generally lower than projected, and we have modified our projections processes in response. Over time, we may consider other projection approaches to narrow monthly variance levels further, but it is not currently deemed a priority.

Readers will 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 immediately below show actual **recorded** activity (**paid** and case reserve changes), in each of the most recent 25 calendar months, along with a "prior 24-month average" to show how each month's actual compares with the average amount of the preceding 24 calendar months.

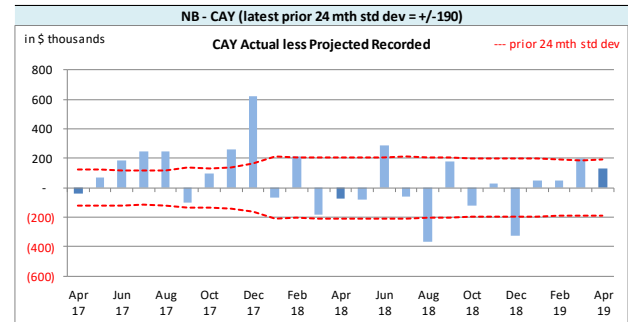
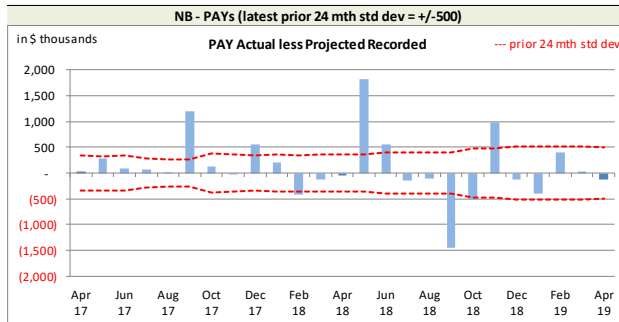
*New Brunswick RSP Actual Recorded by Calendar Month*



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

<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 April 2019 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 vs Projected Summary: **Recorded** Variances by Calendar Month*


On Latest \$ thousands			
	<b>Recorded</b>	PAYs	CAY
Mthly Avg Recorded (prior 24 mths)		206	633
std dev		500	190
A-P <> std dev		8	10
% <> std dev		32.0%	40.0%
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 in

relative or overall terms. 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.

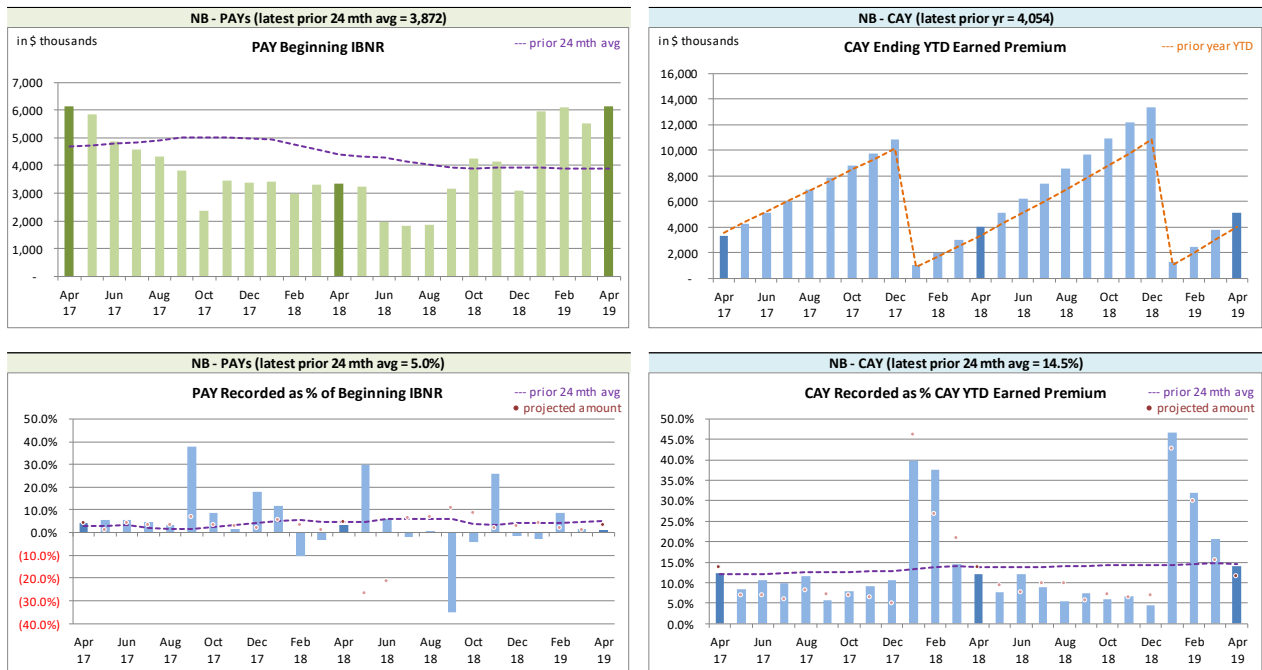
The current accident year (CAY) **recorded** variances fell outside of one standard deviation 40% of the time over the last 25 calendar months (see table above), suggesting the projection process has performed worse than simply projecting the prior 24-month average amount. We believe projection improvements introduced during 2018 are not yet fully reflected in the CAY variance measure (7 of the 11 variances beyond a standard deviation were related to the earlier 13 months, with only 4 related to the more recent 12 months). 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 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 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:

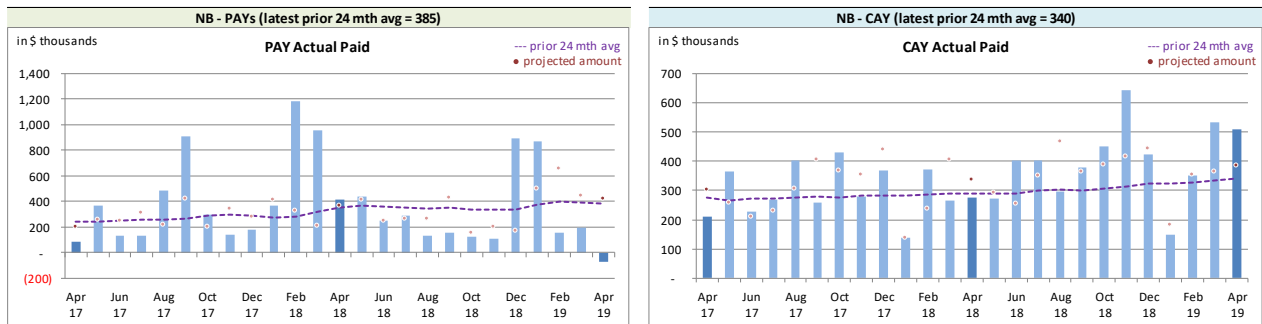
- to offset actual **recorded** activity (through loss ratio matching);
- the annual switchover as a current accident year becomes a prior accident year (occurs in January); and
- when a new valuation is implemented, where the valuation resulted in changes to the selection of prior accident years' ultimate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

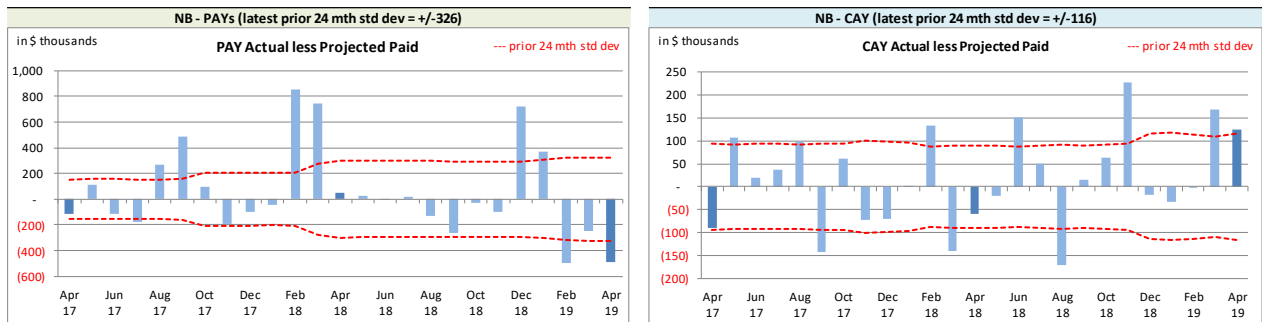
<sup>7</sup>Our recorded activity projections for the prior accident years are based on selected ratios of recorded activity to beginning unpaid balances, whereas the current accident year projections are based on selected ratios of year-to-date IBNR to year-to-date selected ultimate (i.e. selected LR 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>	
Mthly Avg Paid (prior 24 mths)	385	340
std dev	326	116
A-P <> std dev	9	10
% <> std dev	36.0%	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 in relative or overall terms.

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 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.

The CAY **paid** variance (see right chart above) was outside of one standard deviation this month. The

activity was reviewed and confirmed, with the variance attributed to process variance.

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

<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".

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	IBNR		actuarial present value adjustments				IBNR + actuarial present value adjustments	
			Discount Amount		Provisions for Adverse Deviations			
	Actual	Actual less Projected	Actual	Actual less Projected	Actual	Actual less Projected	Actual	Actual less Projected
Prior	2,314	22	(376)	(14)	1,077	41	3,015	49
2017	1,108	31	(214)	1	468	(1)	1,362	31
2018	2,638	70	(309)	(7)	595	14	2,924	77
2019	969	(156)	(148)	10	268	(17)	1,089	(163)
TOTAL	7,029	(33)	(1,047)	(10)	2,408	37	8,390	(6)

The IBNR provision is \$33 thousand lower 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:	(1,705)	56	304	(9)	(1,401)	47
balance as % unearned premium:	(21.7%)	-	3.9%	-	(17.8%)	-
actual unearned premium:	7,873					
less projected:	(257)					

### 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 77.4% rather than 75.5% (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	609	12.2%	245	4.9%	854	17.1%	1	(6.1%)
CAY	3,855	77.4%	120	2.4%	3,975	79.8%	1,013	(0.7%)
TOTAL	4,464	89.6%	365	7.3%	4,829	97.0%	1,014	(6.6%)

("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  
 1.93%

 interest rate margin  
 25 basis pts

Amounts in \$000s					
Accident Year	Actual Mar. 2019	Actual Apr. 2019	Projected May. 2019	Projected Jun. 2019	Projected Dec. 2019
2005	(2)	(2)	(2)	(2)	(2)
2006	-	-	-	-	-
2007	(4)	(4)	(4)	(4)	(4)
2008	10	10	10	10	9
2009	56	70	67	64	55
2010	54	54	51	48	42
2011	(167)	(165)	(156)	(140)	(107)
2012	109	109	106	100	85
2013	320	276	267	258	232
2014	729	730	703	660	560
2015	751	754	701	688	544
2016	1,247	1,183	1,099	1,079	941
2017	1,378	1,362	1,271	1,236	1,108
2018	2,883	2,924	2,836	2,777	2,394
2019	793	1,089	1,666	2,096	4,403
<b>TOTAL</b>	<b>8,157</b>	<b>8,390</b>	<b>8,615</b>	<b>8,870</b>	<b>10,260</b>
Change		233	225	255	

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

**EXHIBIT B**
**IBNR**
**TABLE EXHIBIT B**

TABLE EXHIBIT B		Amounts in \$000s					
IBNR	Ultimate	Accident	Actual	Actual	Projected	Projected	Projected
	Loss Ratio	Year	Mar. 2019	Apr. 2019	May. 2019	Jun. 2019	Dec. 2019
	84.0%	2005	(2)	(2)	(2)	(2)	(2)
	53.2%	2006	-	-	-	-	-
	72.0%	2007	(4)	(4)	(4)	(4)	(4)
	76.3%	2008	4	4	4	4	4
	86.1%	2009	42	42	40	37	31
	58.6%	2010	44	44	42	39	33
	85.1%	2011	(266)	(264)	(253)	(235)	(196)
	54.4%	2012	76	76	73	68	55
	78.3%	2013	156	113	108	100	83
	67.9%	2014	618	619	594	552	458
	65.8%	2015	642	645	593	581	450
	70.8%	2016	1,104	1,041	958	939	816
	80.4%	2017	1,122	1,108	1,019	988	883
	74.6%	2018	2,594	2,638	2,559	2,508	2,155
	75.5%	2019	698	969	1,514	1,909	4,009
		TOTAL	6,828	7,029	7,245	7,484	8,775
		Change		201	216	239	

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



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

	Amounts in \$000s				
	Actual Mar. 2019	Actual Apr. 2019	Projected May. 2019	Projected Jun. 2019	Projected Dec. 2019
Premium Liabilities					
(1) unearned premium (UP)	7,651	7,873	8,371	8,919	10,135
FOR MEMBER SHARING					
(2) expected future costs ratio {% of (1)}	82.1%	82.2%	82.3%	82.5%	84.0%
(3) expected future costs {(1) x (2)}	6,279	6,472	6,891	7,358	8,518
(4) premium deficiency / (deferred policy acquisition cost)	(1,372)	(1,401)	(1,480)	(1,561)	(1,617)
Excluding Actuarial Present Value Adjustments					
(5) expected future costs ratio {% of (1)}	78.2%	78.3%	78.5%	78.7%	80.1%
(6) expected future costs {(1) x (5)}	5,984	6,168	6,569	7,015	8,119
(7) premium deficiency / (deferred policy acquisition cost)	(1,667)	(1,705)	(1,802)	(1,904)	(2,016)

## 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)									
nominal values				actuarial present value adjustments (apvs)							
Acc Yr	Case	IBNR	Total Unpaid	discount	investment PfAD	nominal development PfAD	development PfAD discount	development PfAD	Total apvs	TOTAL	
2005	-	(2)	(2)	-	-	-	-	-	-	(2)	
2006	-	-	-	-	-	-	-	-	-	-	
2007	-	(4)	(4)	-	-	-	-	-	-	(4)	
2008	69	4	73	(2)	-	7	-	7	5	78	
2009	312	31	343	(10)	1	34	(1)	33	24	367	
2010	92	33	125	(4)	-	13	-	13	9	134	
2011	1,480	(196)	1,284	(40)	5	128	(4)	124	89	1,373	
2012	407	55	462	(16)	2	46	(2)	44	30	492	
2013	2,121	83	2,204	(73)	9	220	(7)	213	149	2,353	
2014	1,076	458	1,534	(54)	8	153	(5)	148	102	1,636	
2015	1,061	450	1,511	(59)	8	151	(6)	145	94	1,605	
2016	847	816	1,663	(78)	10	203	(10)	193	125	1,788	
2017	2,509	883	3,392	(190)	24	414	(23)	391	225	3,617	
2018	1,929	2,155	4,084	(257)	33	494	(31)	463	239	4,323	
PAYs (sub-total):	11,903	4,766	16,669	(783)	100	1,863	(89)	1,774	1,091	17,760	
CAY (2019)	3,620	4,009	7,629	(488)	61	877	(56)	821	394	8,023	
claims liabilities:	15,523	8,775	24,298	(1,271)	161	2,740	(145)	2,595	1,485	25,783	
	Unearned Premium	Premium Deficiency / (DPAC)	Total Provision	discount	investment PfAD	nominal development PfAD	development PfAD discount	development PfAD	Total apvs	TOTAL*	
premium liabilities:	10,135	(2,016)	8,119	(353)	47	738	(33)	705	399	8,518	
*Total may not be sum of parts, as apvs apply to future costs within UPR											
policy liabilities:			32,417	(1,624)	208	3,478	(178)	3,300	1,884	34,301	

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

**EXHIBIT E**
**Discount Rate & Margins for Adverse Deviations**

The tables below present selected margins for adverse development by coverage (the total is a weighted average, based on the unpaid claims projection for December 31, 2019 from the valuation), followed by the selected discount rate and the associated margin for investment income.

Accident Year	Selected Claims Development MfADs (Dec. 31, 2018)			Total
	Third Party Liability	Accident Benefits	Other Coverages	
	Margins	Margins	Margins	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%	9.4%	10.0%
2015	10.0%	10.0%	10.0%	10.0%
2016	12.5%	10.0%	10.9%	12.2%
2017	12.5%	10.0%	9.9%	12.2%
2018	12.5%	10.0%	11.6%	12.1%
2019	12.3%	10.0%	5.7%	11.5%
prem liab	11.7%	10.0%	5.6%	9.4%

discount rate: 1.93%  
 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, 2019 from the latest valuation date (projections in exhibits A to D are to Dec. 31, 2019, and are based on more up-to-date information). We have included the most recent valuation selection (1.93%), the prior valuation assumption (2.29%) and the prior fiscal year end valuation assumption (2.29%) for comparative purposes. A 25 basis point margin for investment return adverse deviation is used in all scenarios presented.

\$ Format: \$000s

Actuarial Present Value of Provisions at Various Discount Rates - Dec. 31, 2019 projected Unpaid								
AY	0.93%	1.43%	1.93%	2.43%	2.93%	3.43%	2.29%	2.29%
2005	-	-	-	-	-	-	-	-
2006	-	-	-	-	-	-	-	-
2007	1	1	1	1	1	1	1	1
2008	48	48	47	47	47	46	47	47
2009	111	110	109	109	108	107	109	109
2010	89	88	87	87	86	85	87	87
2011	920	912	905	898	891	884	900	900
2012	312	309	306	303	300	298	304	304
2013	1,773	1,757	1,742	1,727	1,712	1,698	1,731	1,731
2014	1,330	1,318	1,306	1,295	1,284	1,272	1,298	1,298
2015	1,361	1,347	1,334	1,320	1,307	1,295	1,324	1,324
2016	1,729	1,708	1,687	1,666	1,646	1,627	1,672	1,672
2017	3,757	3,701	3,647	3,593	3,542	3,491	3,608	3,608
2018	4,720	4,642	4,565	4,491	4,419	4,348	4,511	4,511
2019	8,500	8,356	8,216	8,078	7,947	7,819	8,117	8,117
Total	24,651	24,297	23,952	23,615	23,290	22,971	23,709	23,709
	curr - 100 bp	curr - 50 bp	curr val assumption	curr + 50bp	curr + 100bp	curr + 150bp	prior val assumption	prior fyr end assumption

Dollar Impact Relative to Valuation Assumption								
AY	0.93%	1.43%	1.93%	2.43%	2.93%	3.43%	2.29%	2.29%
Total	699	345	-	(337)	(662)	(981)	(243)	(243)
	curr - 100 bp	curr - 50 bp	curr val assumption	curr + 50bp	curr + 100bp	curr + 150bp	prior val assumption	prior fyr end assumption

Percentage Impact Relative to Valuation Assumption								
AY	0.93%	1.43%	1.93%	2.43%	2.93%	3.43%	2.29%	2.29%
2005	-	-	-	-	-	-	-	-
2006	-	-	-	-	-	-	-	-
2007	-	-	-	-	-	-	-	-
2008	2.1%	2.1%	-	-	-	(2.1%)	-	-
2009	1.8%	0.9%	-	-	(0.9%)	(1.8%)	-	-
2010	2.3%	1.1%	-	-	(1.1%)	(2.3%)	-	-
2011	1.7%	0.8%	-	(0.8%)	(1.5%)	(2.3%)	(0.6%)	(0.6%)
2012	2.0%	1.0%	-	(1.0%)	(2.0%)	(2.6%)	(0.7%)	(0.7%)
2013	1.8%	0.9%	-	(0.9%)	(1.7%)	(2.5%)	(0.6%)	(0.6%)
2014	1.8%	0.9%	-	(0.8%)	(1.7%)	(2.6%)	(0.6%)	(0.6%)
2015	2.0%	1.0%	-	(1.0%)	(2.0%)	(2.9%)	(0.7%)	(0.7%)
2016	2.5%	1.2%	-	(1.2%)	(2.4%)	(3.6%)	(0.9%)	(0.9%)
2017	3.0%	1.5%	-	(1.5%)	(2.9%)	(4.3%)	(1.1%)	(1.1%)
2018	3.4%	1.7%	-	(1.6%)	(3.2%)	(4.8%)	(1.2%)	(1.2%)
2019	3.5%	1.7%	-	(1.7%)	(3.3%)	(4.8%)	(1.2%)	(1.2%)
Total	2.9%	1.4%	-	(1.4%)	(2.8%)	(4.1%)	(1.0%)	(1.0%)
	curr - 100 bp	curr - 50 bp	curr val assumption	curr + 50bp	curr + 100bp	curr + 150bp	prior val assumption	prior fyr end assumption

EXHIBIT G

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Components of Member Statement IBNR (i.e. “Discounted”) Change During Month

RSP New Brunswick  
AccountCode Desc IBNR - Discounted

M/S 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	(4)	-	-	-	-	-	(4)
2008	10	-	-	-	-	-	10
2009	56	(4)	18	-	14	25.0%	70
2010	54	(5)	5	-	-	-	54
2011	(167)	21	(19)	-	2	(1.2%)	(165)
2012	109	(8)	8	-	-	-	109
2013	320	(20)	(24)	-	(44)	(13.8%)	276
2014	729	(59)	60	-	1	0.1%	730
2015	751	(6)	9	-	3	0.4%	754
2016	1,247	(56)	(8)	-	(64)	(5.1%)	1,183
2017	1,378	(47)	31	-	(16)	(1.2%)	1,362
2018	2,883	(36)	77	-	41	1.4%	2,924
2019	793	459	(163)	-	296	37.3%	1,089
Grand Total	8,157	239	(6)	-	233	2.9%	8,390

EXHIBIT G

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

RSP  
AccountCode Desc

New Brunswick  
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	(4)	-	-	-	-	-	(4)
2008	4	-	-	-	-	-	4
2009	42	(4)	4	-	-	-	42
2010	44	(4)	4	-	-	-	44
2011	(266)	24	(22)	-	2	(0.8%)	(264)
2012	76	(7)	7	-	-	-	76
2013	156	(14)	(29)	-	(43)	(27.6%)	113
2014	618	(56)	57	-	1	0.2%	619
2015	642	(6)	9	-	3	0.5%	645
2016	1,104	(55)	(8)	-	(63)	(5.7%)	1,041
2017	1,122	(45)	31	-	(14)	(1.2%)	1,108
2018	2,594	(26)	70	-	44	1.7%	2,638
2019	698	427	(156)	-	271	38.8%	969
Grand Total	6,828	234	(33)	-	201	2.9%	7,029