NOVA SCOTIA RISK SHARING POOL

SEPTEMBER 2019 OPERATIONAL REPORT

ACTUARIAL HIGHLIGHTS

Related Bulletin: F19-081 Nova Scotia RSP September 2019 Operational Report

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FACILITY Association

ACTUARIAL HIGHLIGHTS

RSP NOVA SCOTIA

OPERATIONAL REPORT

SEPTEMBER 2019

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1 Summary

Key Points

(a) Liam McFarlane has resigned as the Facility Association's Appointed Actuary; Mr. Cosimo Pantaleo of Ernst & Young LLP has assumed the Appointed Actuary's role (effective as of October 24, 2019), pending formal appointment by the Facility Association Board (expected at its December 12, 2019 meeting); and

(b) There were no other specific issues or events warranting additional comment for this month – results were reasonably aligned with our expectations, other than higher-than-expected volume.

1.1 Valuation Schedule (Fiscal Year 2019)

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

NOVA SCOTIA RISK SHARING POOL
FISCAL YEAR 2019 – SCHEDULE OF VALUATIONS

Valuation Date	Discount Rate (per annum)	Operational Report	Description of Changes
Sep. 30, 2018 (completed)	2.28% mfad 25 bp	Oct. 2018	updated valuation (roll forward): accident year 2018 loss ratio decreased 0.7 points to 92.9%; discount rate increased 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 decreased 0.2 points to 96.3%; discount rate decreased by 35 basis points; no change to selected margins for adverse deviations
Mar. 31, 2019 (completed)	1.43% mfad 25 bp	May 2019	updated valuation (roll forward): accident year 2019 loss ratio increased 1.4 points to 97.7%; discount rate decreased by 50 basis points; no change to selected margins for adverse deviations
Jun. 30, 2019 (completed)	1.41% mfad 25 bp	Aug. 2019	updated valuation: accident year 2019 loss ratio decreased 0.9 points to 96.8%; discount rate decreased by 2 basis points; selected margins for adverse deviations were updated
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 was Facility Association's Appointed Actuary (effective as of June 1, 2013). Mr. McFarlane has resigned his Appointment to take on a role at a different organization. Mr. Cosimo Pantaleo of Ernst & Young LLP has assumed the Appointed Actuary's role (effective as of October 24, 2019), pending formal appointment by the Facility Association Board (expected at its December 12, 2019 meeting).

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[1]

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 **Nova Scotia Court of Appeal** confirmed, in a unanimous decision released on **January 18, 2019** in relation to **Sparks v Holland** (**2019 NSCA 3**), that future Canada Pension Plan (CPP) disability benefits are deductible from future income loss awards in motor-vehicle accident claims in that province. Sparks sustained injuries as a result of a motor vehicle accident in Nova Scotia and sought damages for personal injuries and loss of income. The decision supported an earlier decision (Tibbets v Murphy, 2017 NSCA 35) that both past and future CPP disability benefits are deductible under section 133A of the Insurance Act.

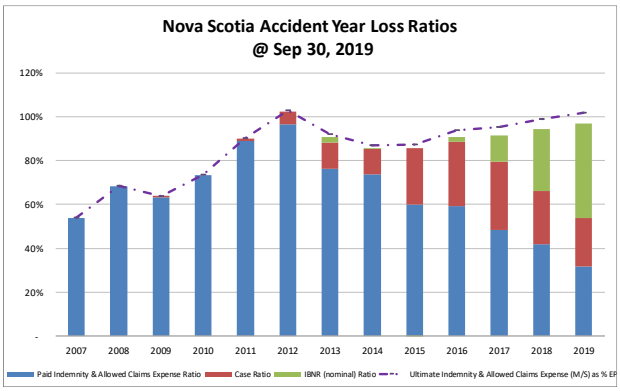
At the current time, no adjustments have been made to our valuation estimates as a result of this decision.

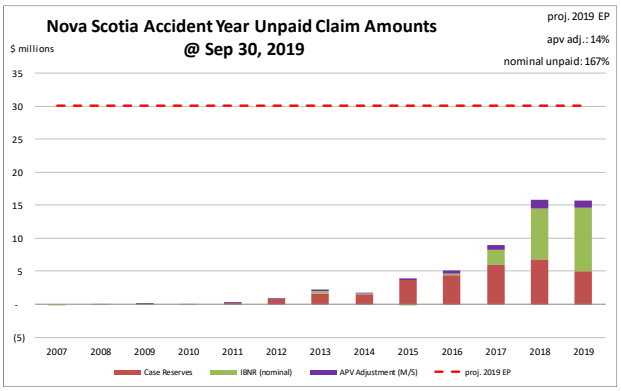
1.4 Current Provision Summary

The charts at the top of the next page show the current levels of claim liabilities[2] 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.

[1]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.

[2]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 ($4.3 million – see table below) represents 14% 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	29,834	54.8%
ibnr	20,324	37.3%
M/S apv adjust.	4,270	7.8%
M/S total	54,428	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 85% of the IBNR balance relates to accident years 2018 and 2019 (see Exhibit B). Approximately 91% of the M/S total claim liabilities are related to accident years 2015-2019 inclusive (i.e. the most recent 5 accident years) and less than 1% is related to accident years 2009 and prior (i.e. prior to the most recent 10 accident years).

The tables below summarize the premium liabilities and the total policy liabilities.

premium liabilities ($000s)

	amt	%
unearned prem	17,447	94.2%
prem def/(dpac)	(119)	(0.6%)
M/S apv adjust.	1,184	6.4%
M/S total	18,512	100.0%

policy liabilities ($000s)

	amt	%
claim	50,158	68.8%
premium	17,328	23.8%
M/S apv adjust.	5,454	7.5%
M/S total	72,940	100.0%

2 Activity During the Month of September 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[3].

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

Nova Scotia RSP Actual vs Projected Summary: Recorded Transaction Amounts ($ thousands)

Table 01	Earned Premium		Paid Indemnity & Allowed Claims Expense		Case increase / (decrease)		Recorded increase / (decrease)	
Accident Year	Actual	Actual less Projected	Actual	Actual less Projected	Actual	Actual less Projected	Actual	Actual less Projected
Prior	0	0	237	23	(161)	39	75	61
2017	6	6	92	(74)	212	327	305	254
2018	2	2	92	(200)	124	336	215	135
2019	2,539	(18)	960	116	620	97	1,580	212
TOTAL	2,546	(11)	1,381	(135)	795	798	2,175	663

(Recorded transaction amounts exclude IBNR & other actuarial provisions)

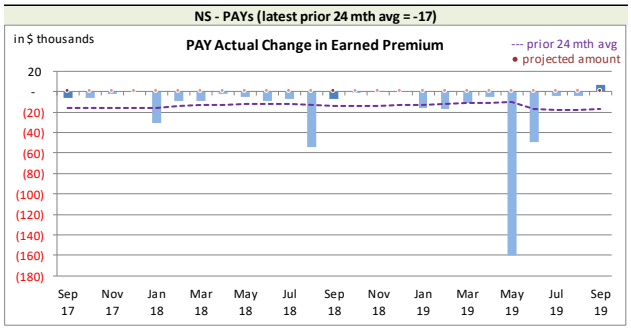
It is unusual to see actual earned premium transactions affecting prior accident years by this time in the calendar year – the prior accident years changes in the month reflect activity undertaken by a member reflecting recent audit findings.

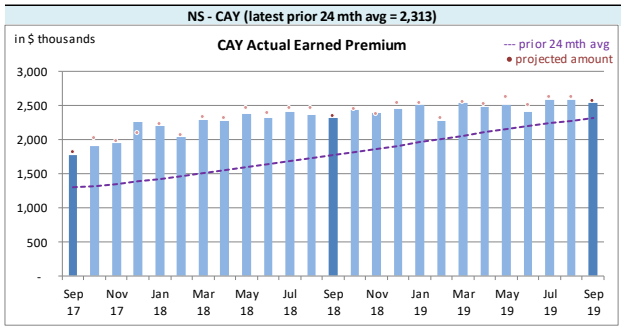
Claims transaction activity is generally volatile and changes from one month to the next are anticipated due to this natural "process variance" (i.e. random variation), and this is particularly true where volumes are low as found in this RSP. Each month, the projection variances are reviewed for signs 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 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.

Nova Scotia RSP Actual **Earned Premium** by Calendar Month





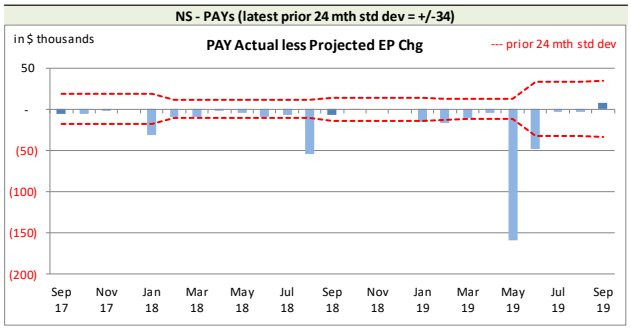
Earned premium changes during a given calendar month in relation to prior accident years tend to be at modest levels, although relatively high levels generally occur at the beginning of each year.

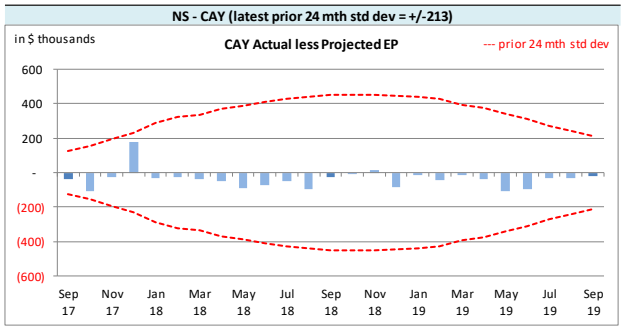
The associated variance between the actual changes and the projections from the previous month are shown in the charts at the top of the next page. **Earned premium** change projections are all attributed to the current accident year as the projection upload does not accept **earned premium** changes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

[4]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.

mean that the actual less projection variance will equal the actual **earned premium** change in relation to prior accident years.

*Nova Scotia 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)	(17)	2,313
std dev	34	213
A-P <> std dev	6	-
% <> std dev	24.0%	0.0%
norm <> std dev	31.7%	31.7%

We project **earned premium** changes from known unearned premium and projected written premium levels, but upload the total projections as current accident year (CAY). This process has generated prior accident years' (PAYs) bias[5], with actuals generally lower than projected, although the magnitude is not high relative to monthly premium. In addition to the PAYs' bias, the CAY has also shown bias[6], 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 significant widening of the CAY standard deviation band, reflecting volume increases and the impact as those increases are earned.

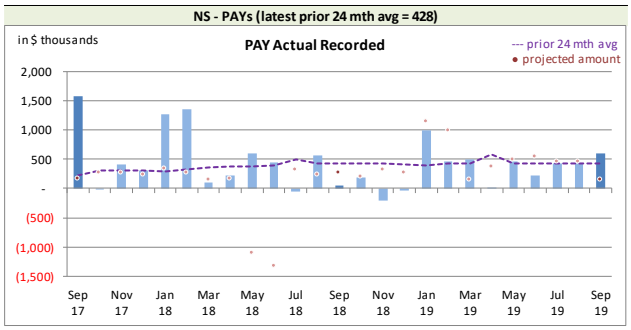
2.1.b AvsP: Recorded Indemnity & Allowed Claims Expense

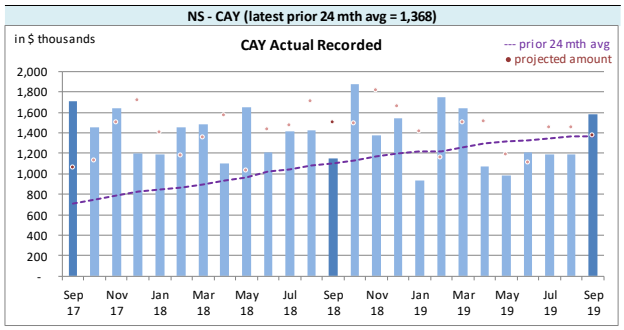
The charts at the top of the next page show actual **recorded** activity (**paid** and case reserve changes), in each of the most recent 25 calendar months, along with a "prior 24-month average" to show how each month's actual compares with the average amount of the preceding 24 calendar months.

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

[6]We measure bias based on a 95% confidence range for a binominal distribution with trials based on the range being considered (25 in this case) and 50% probability of success. The rolling 25-month CAY variances at September 2019 has only 2 months where the actuals were higher than projected, and as the 95% confidence range is 8 to 17, bias continues to be indicated.

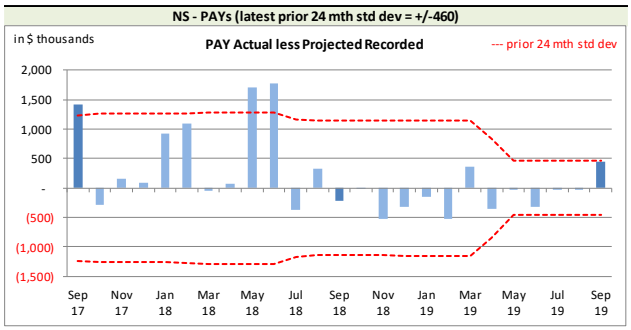
*Nova Scotia RSP Actual **Recorded** by Calendar Month*

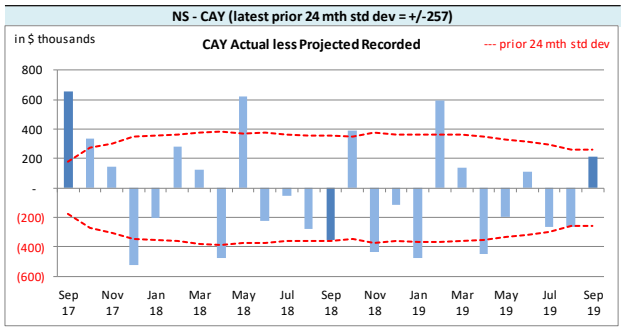




Recorded activity variances from the previous month's projections are shown in the charts below including the "prior 24-month standard deviation" levels to show how the variances from projection compare with historical standard deviations.

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





On Latest $ thousands		
Recorded	PAYs	CAY
Mthly Avg Recorded (prior 24 mths)	428	1,368
std dev	460	257
A-P <> std dev	3	11
% <> std dev	12.0%	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 in relative or overall terms. That said, 12% of 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 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 rolling 25-month basis (11 of 25 variances are positive), but on a lagging 12-month basis, bias is indicated (2 of 12 variances are positive, where the 95% confidence range is 3 to 9), and management is taking this into consideration as part of the projection process.

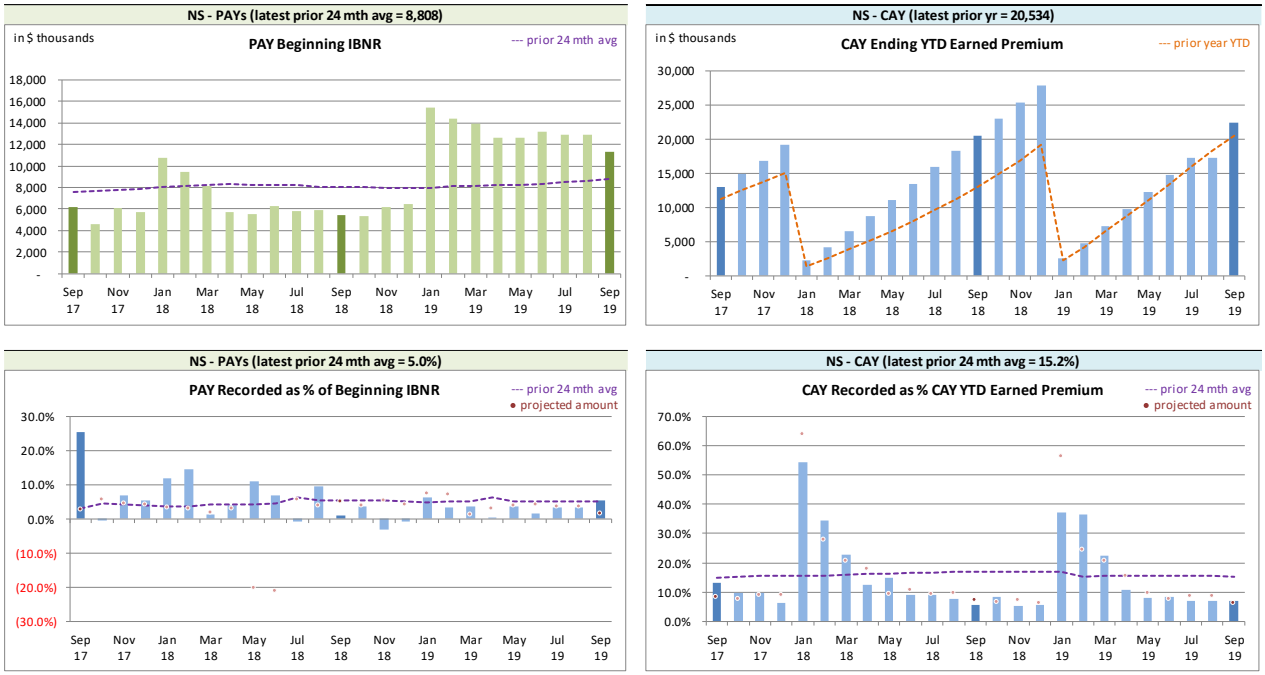
The current accident year (CAY) **recorded** variances fell outside of one standard deviation 44% of the time over the last 25 calendar months (see table above), suggesting that the projection process has performed worse than simply projecting the prior 24-month average amount. We are considering ways to improve our projection process as a result, but efforts so far have fallen short (although rapid growth may be hampering our projection capabilities). Bias has not been indicated at a 95% confidence level

on a rolling 25-month basis (11 of 25 variances are positive), nor on a rolling 12-month basis (5 of 12 variances are positive).

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 below related to levels influencing **recorded** activity. Note in particular the increase in the level of PAY beginning IBNR. 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), and part will also reflect the maturity level of the RSP.

Nova Scotia RSP Levels that influence[7] ***Recorded*** *activity by Calendar Month*



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

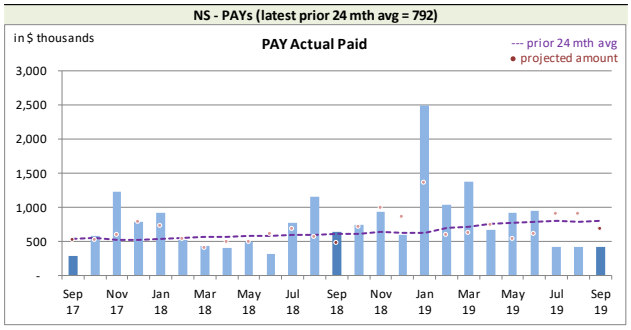
- to offset actual **recorded** activity (through loss ratio matching);
- the annual switchover as a current accident year becomes a prior accident year (occurs in January); and
- when a new valuation is implemented, where the valuation resulted in changes to the selection of prior accident years' ultimate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

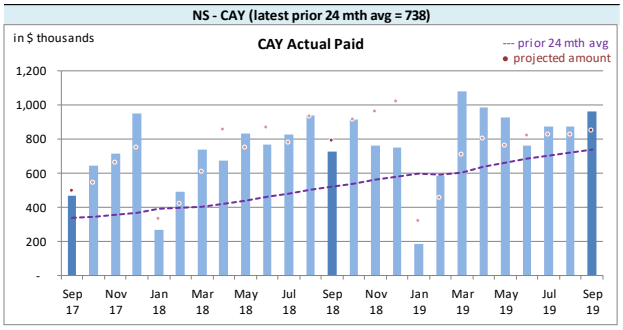
[7]Our recorded activity projections for the prior accident years are based on selected ratios of recorded activity to beginning unpaid balances, whereas the current accident year projections are based on selected ratios of year-to-date IBNR to year-to-date selected ultimate (i.e. selected LR x earned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

2.1.c AvsP: Paid Indemnity & Allowed Claims Expense

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

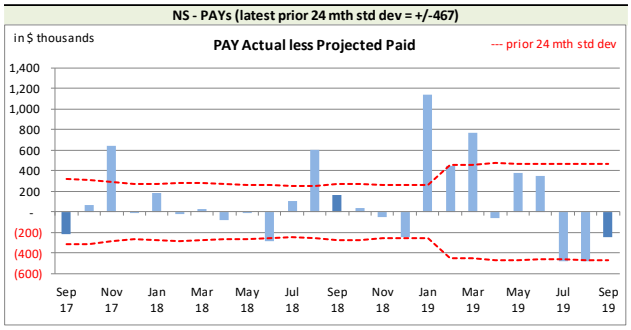
*Nova Scotia RSP Actual **Paid** by activity Calendar Month*

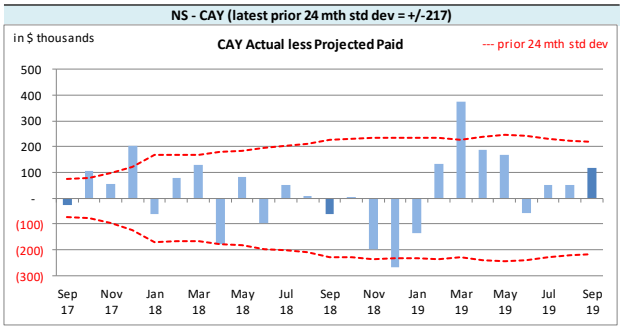




Paid activity variances from the previous month's projections are shown in the charts below, including the "prior 24-month standard deviation" levels to show how the variances from projection compare with historical standard deviations.

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





On Latest $ thousands		
Paid	PAYs	CAY
Mthly Avg Paid (prior 24 mths)	792	738
std dev	467	217
A-P <> std dev	7	4
% <> std dev	28.0%	16.0%
norm <> std dev	31.7%	31.7%

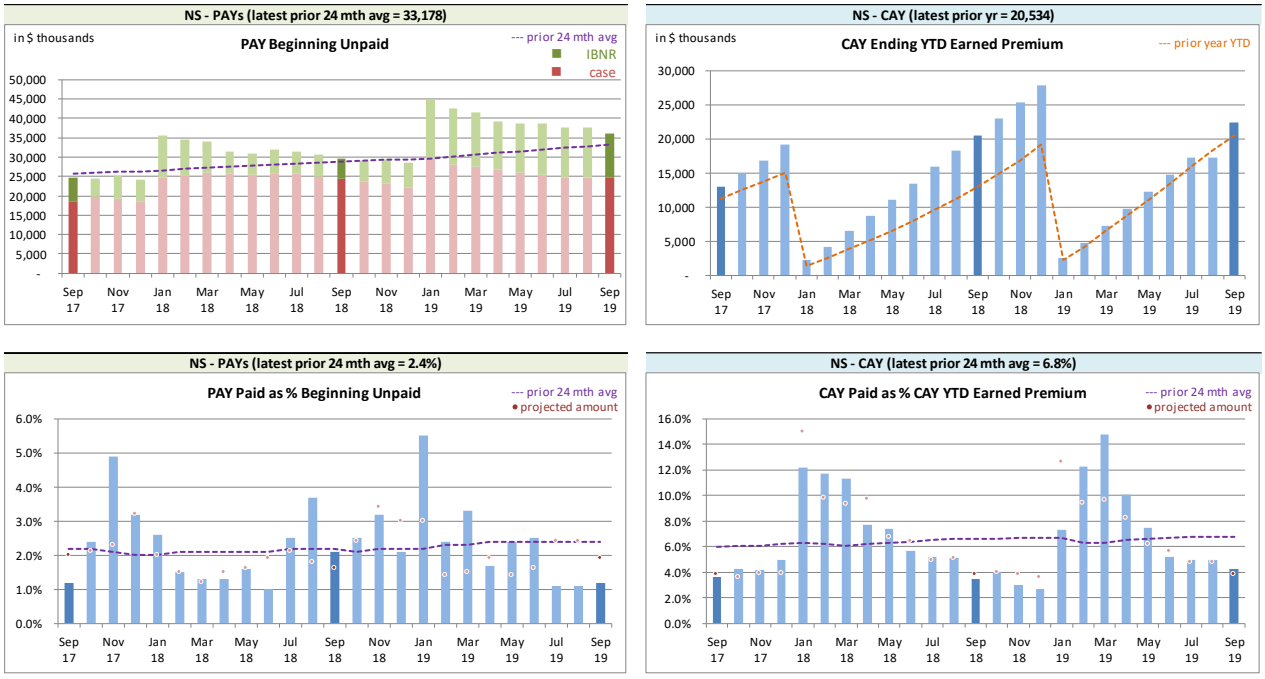
With respect to **paid** indemnity & allowed claims expense activity, caution must be exercised in reviewing the variances as this is a small pool and single claim transactions that are normal course for the business may look unusual and generate relatively significant variances that in nominal value terms are not that significant in relative or overall terms. That said, 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 left 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 rolling 25-month basis (13 of 25 variances are positive).

The current accident year (CAY) **paid** variances fell outside of one standard deviation 16% of the time over the last 25 calendar months (see table above), suggesting that the projection process has performed better than simply projecting the prior 24-month average amount. Bias has not been

indicated at a 95% confidence level on a rolling 25-month basis (16 of 25 variances are positive).

We have included, for reference, additional charts below related to levels influencing **paid** activity. Both case and IBNR increases contribute to the increase of PAY beginning unpaid. This is somewhat expected, given the maturity level of the RSP.

Nova Scotia RSP Levels that influence[8] ***Paid*** *activity by Calendar Month*



We track the PAY beginning unpaid balance (case and IBNR) as **paid** activity "comes out of" the unpaid balance. Changes in the PAY 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

[8]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.

IBNR[9], and factors were applied to the nominal unpaid claims liability (case plus IBNR) to determine the discount amount (shown as a negative value to indicate its impact of reducing the liability) and the Provisions for Adverse Deviations. The loss ratios and the factors used to determine the current month's provisions and projections were based on the applicable valuation.

The table below summarizes variances in provisions included in this month's Operational Report and the associated one-month projections from last month's Report.

Nova Scotia RSP Actual vs Projected Summary: IBNR and APV Amounts ($ thousands)

Table 02

			actuarial present value adjustments					
	IBNR		Discount Amount		Provisions for Adverse Deviations		IBNR + actuarial present value adjustments	
Accident Year	Actual	Actual less Projected	Actual	Actual less Projected	Actual	Actual less Projected	Actual	Actual less Projected
Prior	728	(60)	(303)	2	1,423	-	1,848	(58)
2017	2,232	(249)	(262)	(2)	1,009	10	2,979	(241)
2018	7,745	(134)	(537)	(7)	1,806	24	9,014	(117)
2019	9,619	(231)	(627)	6	1,761	(17)	10,753	(242)
TOTAL	20,324	(674)	(1,729)	(1)	5,999	17	24,594	(658)

The IBNR provision is $0.7 million lower than projected from last month, counterbalancing the recorded claims activity and adjusting for the earned premium variance impacts indicated in section 2.1.

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 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 value) prior to actuarial present value adjustments and in a premium deficiency position (shown as a positive value) after actuarial present value adjustments. Actuarial present value adjustments increase the liability value as the adjustments increase the expected future policy obligations (costs) associated with the unearned premium. The variances noted are mainly driven by the unearned premium variance.

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

Nova Scotia 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:	(119)	(27)	1,184	30	1,065	3
balance as % unearned premium:	(0.7%)	(0.2%)	6.8%	0.1%	6.1%	(0.1%)
actual unearned premium:	17,447					
less projected:	421					

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[10] 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[11], 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 97.9% rather than 96.8% (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 Nova Scotia 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).

[11]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.

Nova Scotia 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	(395)	(1.8%)	393	1.8%	(2)	-	(29)	(0.1%)
CAY	21,677	97.9%	1,134	5.1%	22,811	103.0%	2,572	(0.3%)
TOTAL	21,282	96.1%	1,527	6.9%	22,809	103.0%	2,543	(0.4%)

("% 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 Nova Scotia 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

discount rate 1.41%

interest rate margin 25 basis pts

Accident Year	Actual Aug. 2019	Actual Sep. 2019	Projected Oct. 2019	Projected Nov. 2019	Projected Dec. 2019
2007	(1)	(1)	(1)	(1)	(1)
2008	2	2	2	2	2
2009	10	10	10	10	10
2010	4	4	4	4	4
2011	15	15	15	14	14
2012	55	62	61	61	60
2013	317	530	522	516	511
2014	214	213	209	206	205
2015	394	223	222	215	202
2016	931	790	779	766	742
2017	3,286	2,979	2,942	2,854	2,768
2018	9,238	9,014	8,912	8,735	8,497
2019	9,761	10,753	12,114	13,430	14,758
TOTAL	24,226	24,594	25,791	26,812	27,772
Change		368	1,197	1,021	

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 Aug. 2019	Actual Sep. 2019	Projected Oct. 2019	Projected Nov. 2019	Projected Dec. 2019
53.9%	2007	(1)	(1)	(1)	(1)	(1)
68.3%	2008	2	2	2	2	2
63.8%	2009	5	5	5	5	5
73.4%	2010	4	4	4	4	4
90.2%	2011	5	5	5	5	5
102.5%	2012	(7)	-	-	-	-
90.8%	2013	140	366	359	355	351
85.8%	2014	83	82	80	79	78
85.3%	2015	110	(60)	(59)	(57)	(54)
90.8%	2016	461	325	322	319	309
91.5%	2017	2,532	2,232	2,210	2,144	2,080
94.3%	2018	7,959	7,745	7,668	7,515	7,290
96.8%	2019	8,742	9,619	10,843	12,027	13,225
	TOTAL	20,035	20,324	21,438	22,397	23,294
	Change		289	1,114	959	

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

EXHIBIT C

Premium Liabilities

TABLE EXHIBIT C — Amounts in $000s

Premium Liabilities	Actual Aug. 2019	Actual Sep. 2019	Projected Oct. 2019	Projected Nov. 2019	Projected Dec. 2019
(1) unearned premium (UP)	16,350	17,447	17,648	17,647	17,293
FOR MEMBER SHARING					
(2) expected future costs ratio {% of (1)}	105.9%	106.1%	106.5%	106.8%	107.0%
(3) expected future costs {(1) x (2)}	17,314	18,512	18,794	18,839	18,509
(4) premium deficiency / (deferred policy acquisition cost)	964	1,065	1,146	1,192	1,216
Excluding Actuarial Present Value Adjustments					
(5) expected future costs ratio {% of (1)}	99.1%	99.3%	99.7%	99.9%	100.2%
(6) expected future costs {(1) x (5)}	16,208	17,328	17,595	17,637	17,328
(7) premium deficiency / (deferred policy acquisition cost)	(142)	(119)	(53)	(10)	35

EXHIBIT D

Projected Year-end Policy Liabilities

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

Nova Scotia	Projected Balances as at Dec. 31, 2019 ($000s)									
ending 2019	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
2007	-	(1)	(1)	-	-	-	-	-	-	(1)
2008	-	2	2	-	-	-	-	-	-	2
2009	65	5	70	(2)	-	7	-	7	5	75
2010	-	4	4	-	-	-	-	-	-	4
2011	139	5	144	(5)	1	14	(1)	13	9	153
2012	779	-	779	(19)	3	78	(2)	76	60	839
2013	1,620	351	1,971	(41)	8	197	(4)	193	160	2,131
2014	1,459	78	1,537	(29)	5	154	(3)	151	127	1,664
2015	3,261	(54)	3,207	(71)	13	321	(7)	314	256	3,463
2016	4,045	309	4,354	(118)	22	544	(15)	529	433	4,787
2017	5,475	2,080	7,555	(242)	38	922	(30)	892	688	8,243
2018	6,512	7,290	13,802	(511)	83	1,698	(63)	1,635	1,207	15,009
PAYs (sub-total):	23,355	10,069	33,424	(1,038)	173	3,935	(125)	3,810	2,945	36,369
CAY (2019)	6,465	13,225	19,690	(847)	138	2,343	(101)	2,242	1,533	21,223
claims liabilities:	29,820	23,294	53,114	(1,885)	311	6,278	(226)	6,052	4,478	57,592
	Unearned Premium	Premium Deficiency / (DPAC)	Total Provision	discount	investment PfAD	nominal development PfAD	development PfAD discount	development PfAD	Total apvs	TOTAL*
premium liabilities:	17,293	35	17,328	(614)	102	1,756	(63)	1,693	1,181	18,509
									*Total may not be sum of parts, as apvs apply to future costs within UPR	
policy liabilities:			**70,442**	**(2,499)**	**413**	**8,034**	**(289)**	**7,745**	**5,659**	**76,101**

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.

Selected Claims Development MfADs (Jun. 30, 2019)

Accident Year	Third Party Liability	Accident Benefits	Other Coverages	Total
	Margins	Margins	Margins	Margins
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%	10.0%	10.0%
2015	10.0%	10.0%	9.3%	10.0%
2016	12.5%	10.0%	12.5%	12.5%
2017	12.5%	10.0%	11.2%	12.2%
2018	12.5%	10.0%	11.8%	12.3%
2019	12.4%	10.0%	5.6%	11.9%
2020	12.0%	10.0%	5.1%	10.3%
prem liab	12.0%	10.0%	5.1%	10.3%

discount rate:	1.41%
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 (1.43%), the prior valuation assumption (1.93%) and the prior fiscal year end valuation assumption (2.28%) 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	0.41%	0.91%	1.41%	1.91%	2.41%	2.91%	1.43%	2.28%
2007	-	-	-	-	-	-	-	-
2008	-	-	-	-	-	-	-	-
2009	66	65	65	64	64	63	65	64
2010	-	-	-	-	-	-	-	-
2011	153	151	149	147	145	143	149	146
2012	752	746	739	733	727	721	739	729
2013	1,855	1,841	1,827	1,814	1,801	1,788	1,827	1,804
2014	1,123	1,115	1,108	1,100	1,093	1,086	1,107	1,095
2015	3,314	3,287	3,261	3,236	3,211	3,187	3,260	3,217
2016	4,692	4,647	4,603	4,560	4,518	4,477	4,601	4,529
2017	8,587	8,487	8,390	8,296	8,202	8,113	8,387	8,226
2018	15,538	15,329	15,124	14,926	14,731	14,542	15,116	14,781
2019	21,115	20,784	20,463	20,150	19,844	19,548	20,449	19,923
Total	57,195	56,452	55,729	55,026	54,336	53,668	55,700	54,514
	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	0.41%	0.91%	1.41%	1.91%	2.41%	2.91%	1.43%	2.28%
Total	1,466	723	-	(703)	(1,393)	(2,061)	(29)	(1,215)
	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	0.41%	0.91%	1.41%	1.91%	2.41%	2.91%	1.43%	2.28%
2007	-	-	-	-	-	-	-	-
2008	-	-	-	-	-	-	-	-
2009	1.5%	-	-	(1.5%)	(1.5%)	(3.1%)	-	(1.5%)
2010	-	-	-	-	-	-	-	-
2011	2.7%	1.3%	-	(1.3%)	(2.7%)	(4.0%)	-	(2.0%)
2012	1.8%	0.9%	-	(0.8%)	(1.6%)	(2.4%)	-	(1.4%)
2013	1.5%	0.8%	-	(0.7%)	(1.4%)	(2.1%)	-	(1.3%)
2014	1.4%	0.6%	-	(0.7%)	(1.4%)	(2.0%)	(0.1%)	(1.2%)
2015	1.6%	0.8%	-	(0.8%)	(1.5%)	(2.3%)	(0.0%)	(1.3%)
2016	1.9%	1.0%	-	(0.9%)	(1.8%)	(2.7%)	(0.0%)	(1.6%)
2017	2.3%	1.2%	-	(1.1%)	(2.2%)	(3.3%)	(0.0%)	(2.0%)
2018	2.7%	1.4%	-	(1.3%)	(2.6%)	(3.8%)	(0.1%)	(2.3%)
2019	3.2%	1.6%	-	(1.5%)	(3.0%)	(4.5%)	(0.1%)	(2.6%)
Total	2.6%	1.3%	-	(1.3%)	(2.5%)	(3.7%)	(0.1%)	(2.2%)
	curr - 100 bp	curr - 50 bp	curr val assumption	curr + 50bp	curr + 100bp	curr + 150bp	prior val assumption	prior fyr end assumption

EXHIBIT G

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

RSP	**Nova Scotia**
AccountCode Desc	**IBNR - Discounted**

M/S IBNR - in $000s

	Values						
AccYear	**Sum of Prior Month Actual Amount**	**Sum of Projected Change**	**Sum of Change Due to AvsP Variances**	**Sum of Change Due to Valuation Implementation**	**Sum of Total Change**	**Sum of % Total Change**	**Sum of Current Month Final Amount**
2007	(1)	-	-	-	-	-	(1)
2008	2	-	-	-	-	-	2
2009	10	-	-	-	-	-	10
2010	4	-	-	-	-	-	4
2011	15	(1)	1	-	-	-	15
2012	55	(1)	8	-	7	12.7%	62
2013	317	(3)	216	-	213	67.2%	530
2014	214	(3)	2	-	(1)	(0.5%)	213
2015	394	(12)	(159)	-	(171)	(43.4%)	223
2016	931	(15)	(126)	-	(141)	(15.1%)	790
2017	3,286	(66)	(241)	-	(307)	(9.3%)	2,979
2018	9,238	(107)	(117)	-	(224)	(2.4%)	9,014
2019	9,761	1,234	(242)	-	992	10.2%	10,753
Grand Total	**24,226**	**1,026**	**(658)**	**-**	**368**	**1.5%**	**24,594**

EXHIBIT G

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

RSP	**Nova Scotia**
AccountCode Desc	**IBNR - Undiscounted**

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
2007	(1)	-	-	-	-	-	(1)
2008	2	-	-	-	-	-	2
2009	5	-	-	-	-	-	5
2010	4	-	-	-	-	-	4
2011	5	-	-	-	-	-	5
2012	(7)	-	7	-	7	(100.0%)	-
2013	140	(1)	227	-	226	161.4%	366
2014	83	(1)	-	-	(1)	(1.2%)	82
2015	110	(7)	(163)	-	(170)	(154.5%)	(60)
2016	461	(5)	(131)	-	(136)	(29.5%)	325
2017	2,532	(51)	(249)	-	(300)	(11.8%)	2,232
2018	7,959	(80)	(134)	-	(214)	(2.7%)	7,745
2019	8,742	1,108	(231)	-	877	10.0%	9,619
Grand Total	**20,035**	**963**	**(674)**	**-**	**289**	**1.4%**	**20,324**