NOVA SCOTIA RISK SHARING POOL

JANUARY 2021 OPERATIONAL REPORT

ACTUARIAL HIGHLIGHTS

Related Bulletin: F2021-015_NS_RSP_January_2021_Operational_Report

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ACTUARIAL HIGHLIGHTS

RSP NOVA SCOTIA

OPERATIONAL REPORT

JANUARY 2021

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1   Summary

1.1   Valuation Schedule (Fiscal Year 2021)

The January 2021 Operational Report leverages actuarial assumptions consistent with last month (that is, it does not reflect the results of an updated valuation). The following table summarizes the valuation implementations scheduled for fiscal year 2021.

NOVA SCOTIA RISK SHARING POOL FISCAL YEAR 2021 – SCHEDULE OF VALUATIONS			
Valuation Date	**Discount Rate (per annum)**	**Operational Report**	**Description of Changes**
Sep 30, 2020 (completed)	0.19% mfad[1] 25 bp	Oct. 2020	update valuation (roll-forward): accident year 2020 loss ratio <u>increased</u> 0.2 points to 87.7%; discount rate <u>decreased</u> 4 basis points; no change to selected margins for adverse deviations
Dec. 31, 2020	% mfad -- bp	Mar. 2021	update valuation:
Mar. 31, 2021	% mfad -- bp	May 2021	update valuation (roll-forward):
Jun. 30, 2021	% mfad -- bp	Aug. 2021	update valuation:
Sep. 30, 2021	% mfad -- bp	Oct. 2021	update valuation (roll-forward):

Under the proposed schedule for fiscal year 2021, the off-half valuation quarters ending March 31, 2021 and September 30, 2021 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

The Annual General Meeting of the members of Facility Association ("FA") appointed Mr. Cosimo Pantaleo as the Appointed Actuary at its meeting on February 20, 2020.

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.

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[1] The selected interest rate margin is limited to reducing the selected discount rate to 0%; the approach is that if the net impact is negative, the discount rate will be capped at 0%.

1.3 Consideration of Recent Legal Decisions and Changes in Legislation / Regulation[2]

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 (i.e. within the last five years) 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, and at this point we do not believe this judgment will have a further impact on our valuation results.

1.4 Current Provision Summary

The following charts show the current levels of claim liabilities[3] 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 2021full year earned premium (the red hash-mark line) to provide some perspective.
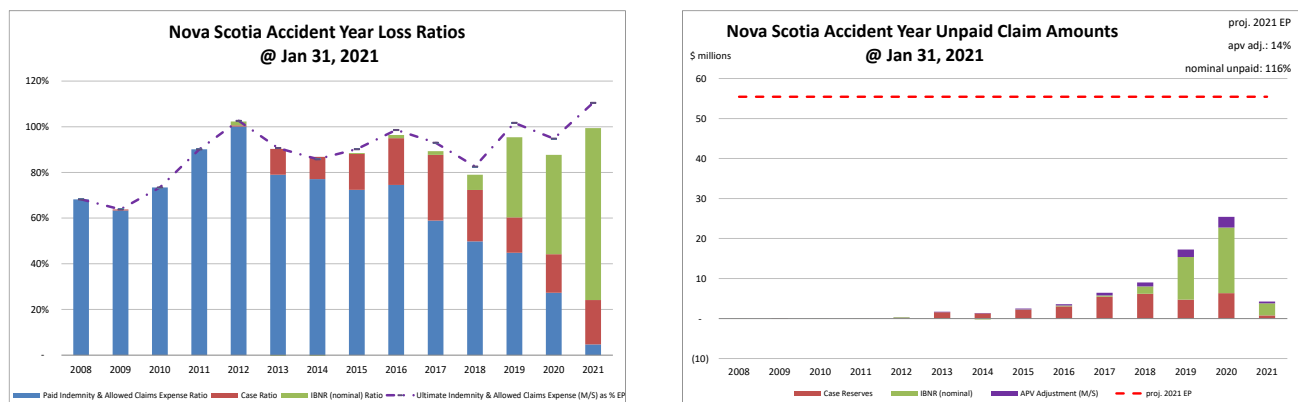
"M/S" refers to "Member Statement" values – that is, actuarial present value adjustments at the selected discount rate.

The current actuarial present value adjustments balance ($7.5 million – see the following table) represents 14% of the earned premium projected for the full year 2021 (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

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[2]This url to a pdf is to a helpful guide on how bills become laws: https://www.ola.org/sites/default/files/common/how-bills-become-law-en.pdf.

[3]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.

over future periods.

claim liabilities ($000s)

	amt	%
case	31,684	44.3%
ibnr	32,396	45.3%
M/S apv adjust.	7,512	10.5%
M/S total	71,592	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 60% of the IBNR balance relates to accident years 2020 and 2021 (see Exhibit B). Approximately 87% of the M/S total claim liabilities are related to accident years 2017-2021 inclusive (i.e. the most recent 5 accident years), and just over 0% is related to accident years 2011 and prior (i.e. prior to the most recent 10 accident years).

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

premium liabilities ($000s)

	amt	%
unearned prem	26,044	90.3%
prem def/(dpac)	209	0.7%
M/S apv adjust.	2,602	9.0%
M/S total	28,855	100.0%

policy liabilities ($000s)

	amt	%
claim	64,080	63.8%
premium	26,253	26.1%
M/S apv adjust.	10,114	10.1%
M/S total	100,447	100.0%

2   Activity During the Month of January 2021

2.1   Recorded Premium and Claims Activity

The following table summarizes the extent to which premiums and claims amounts recorded during the month differ from projections reflected in the prior month's Operational Report[4].

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	(2)	(2)	182	(365)	(304)	162	(122)	(203)
2019	(19)	(19)	95	(214)	(193)	(307)	(98)	(521)
2020	(46)	(46)	964	(105)	(368)	20	597	(84)
2021	4,001	(13)	187	(340)	775	(973)	962	(1,313)
TOTAL	3,934	(81)	1,429	(1,023)	(90)	(1,098)	1,339	(2,121)

(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.

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

2.1.a   Actual vs. Projected (AvsP): Earned Premium

The following charts show actual **earned premium**[5] 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
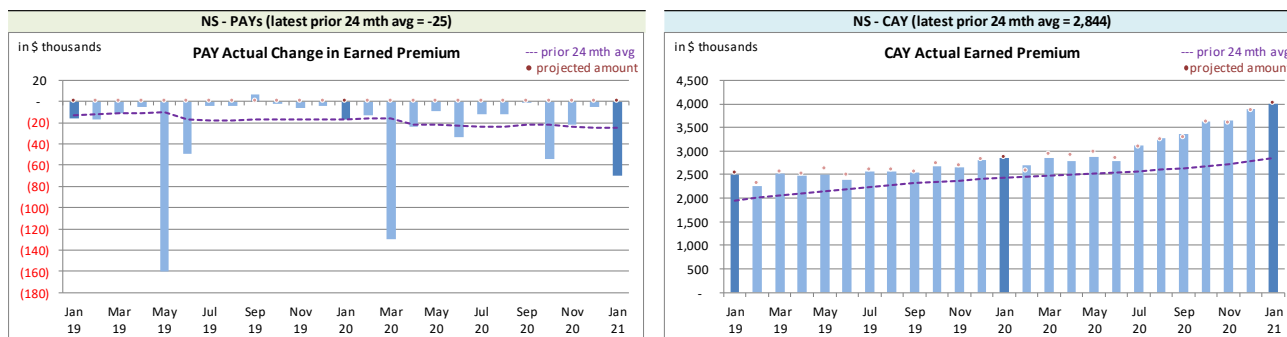
Earned premium changes during a given calendar month in relation to prior accident years tend to be at modest levels, although relatively high levels generally occur at the beginning of each year.

On Latest $ thousands		
Earned Premium	PAYs	CAY
Mthly Avg EP Chg (prior 24 mths)	(25)	2,844
std dev	40	427
A-P <> std dev	7	-
% <> std dev	28.0%	0.0%
norm <> std dev	31.7%	31.7%
performance vs 24-mth avg:	no better	better

The associated variance between the actual changes and the projections from the previous month are shown in the following charts. **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.

*Nova Scotia RSP Actual vs. Projected Summary: **Earned Premium** Variances by Calendar Month*
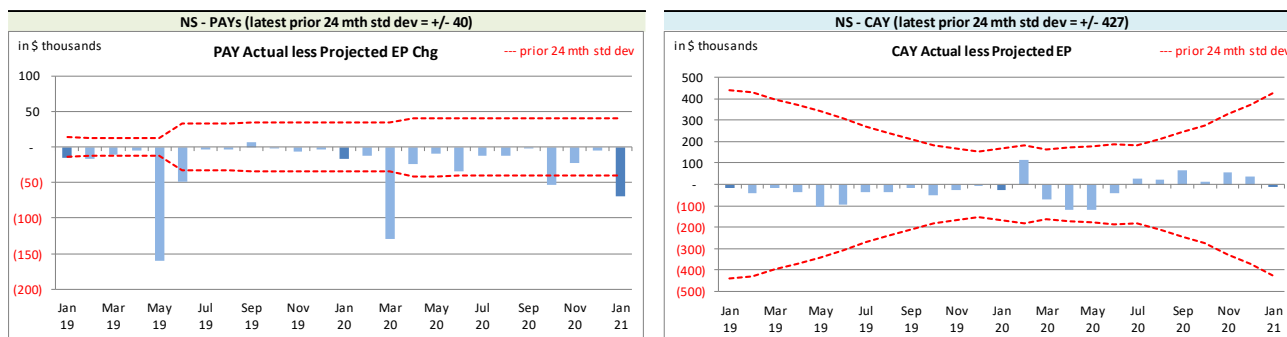
We project **earned premium** changes from known unearned premium balances and projected written premium levels, but upload the total projections as current accident year (CAY). This process has

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[5]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.

generated prior accident years' (PAYs) bias[6], 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[7], with actuals being generally lower than projected, and while we modified our projections processes in response, bias still exists. Over time, we may consider other projection approaches to address the bias issue, but it is not currently deemed as priority.

2.1.b AvsP: Recorded Indemnity & Allowed Claims Expense

The following charts 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.

*Nova Scotia RSP Actual **Recorded** by Calendar Month*
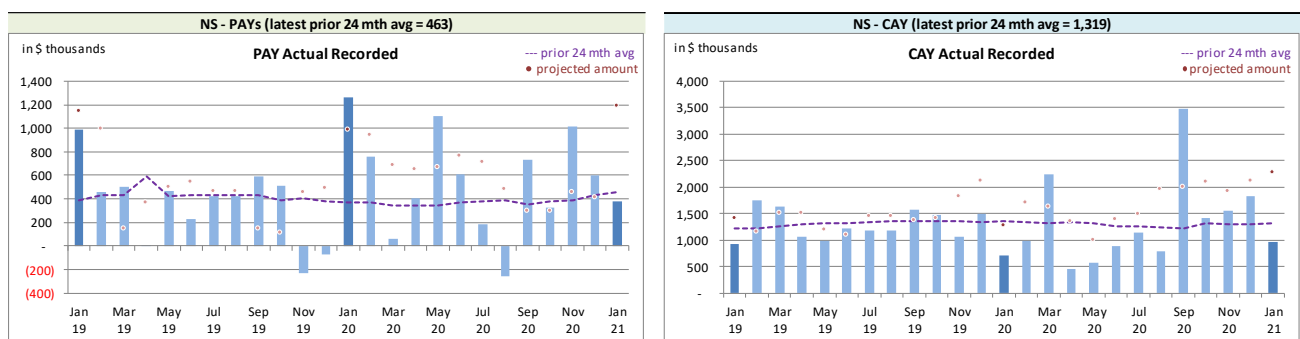
Recorded activity variances from the previous month's projections are shown in the following charts, including the "prior 24-month standard deviation" levels to show how the variances from projection compare with historical standard deviations.

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

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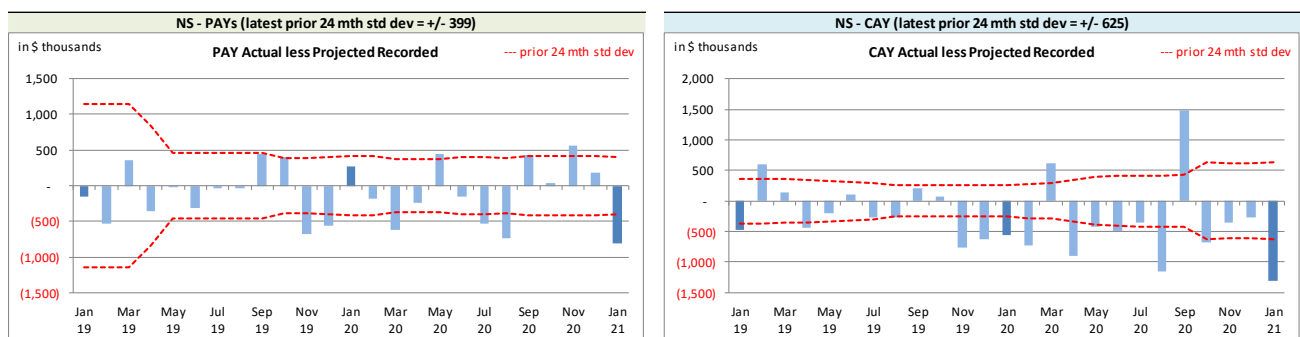
[6]The PAYs' variances will show bias as the projection upload forces all earned premium projections to be attributed to the CAY.

[7]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 January 2021 has only 7 months where the actuals were higher than projected, and as the 95% confidence range is 8 to 17, bias continues to be indicated.

On Latest $ thousands		
Recorded	PAYs	CAY
Mthly Avg Recorded (prior 24 mths)	463	1,319
std dev	399	625
A-P <> std dev	10	16
% <> std dev	40.0%	64.0%
norm <> std dev	31.7%	31.7%
performance vs 24-mth avg:	worse	worse

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, 40% 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 the preceding table), 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 rolling 25-month basis (9 of 25 variances are positive).

The PAY **recorded** variance was outside the one standard deviation band this month (see proceeding chart on the left) the lower than projected recorded activity was reviewed and attributed to process variance.

The current accident year (CAY) **recorded** variances fell outside of one standard deviation 64% of the time over the last 25 calendar months (see preceding table on the left), 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. Bias has been indicated at a 95% confidence level on a rolling 25-month basis (7 of 25 variances are positive).

The CAY **recorded** variance was outside the one standard deviation band this month (see preceding chart on the right) the lower projected recorded activity was reviewed and attributed to process variance.

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, the following charts 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[8] **Recorded** activity by Calendar Month*
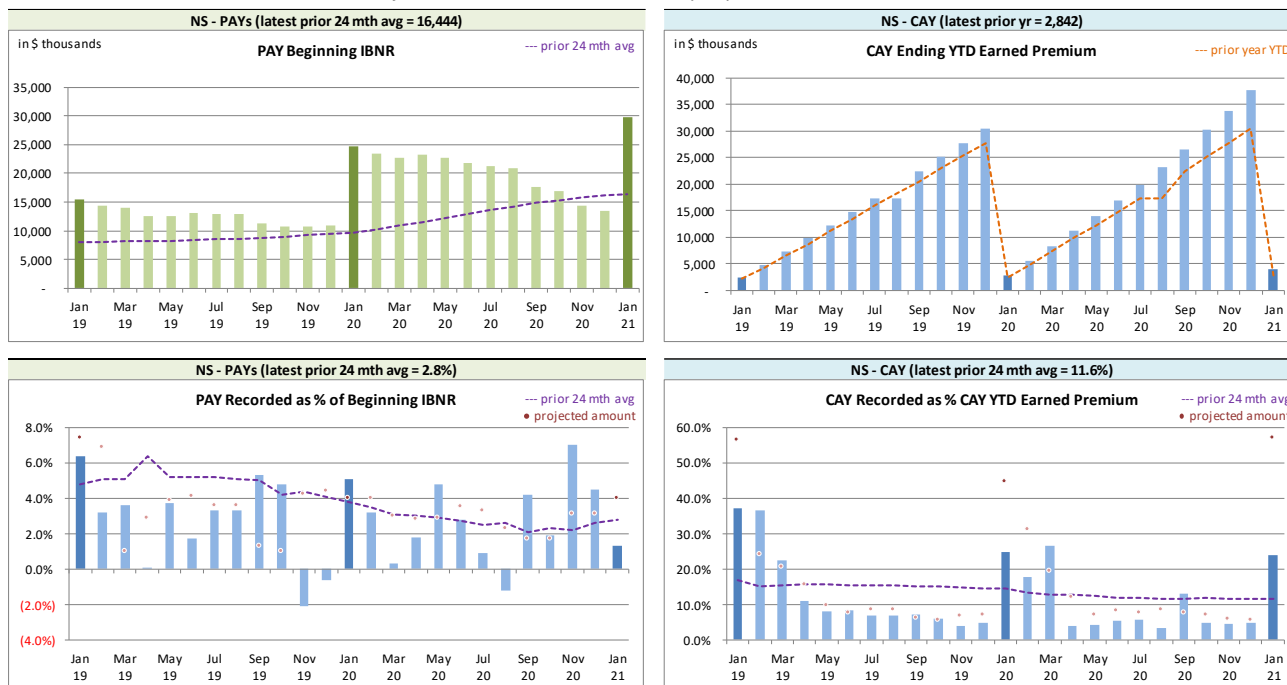
We track PAY beginning IBNR as **recorded** activity comes out of IBNR. Changes in the PAY beginning IBNR (see upper left of the preceding group of charts) occur for several possible reasons:

- to offset actual **recorded** activity (through loss ratio matching);

- the annual switchover as a CAY becomes a PAY (occurs in January); and

- when a new valuation is implemented, where the valuation resulted in changes to the selection of PAYs' ultimates (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 following charts 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.

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[8]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.

*Nova Scotia RSP Actual **Paid** by activity Calendar Month*
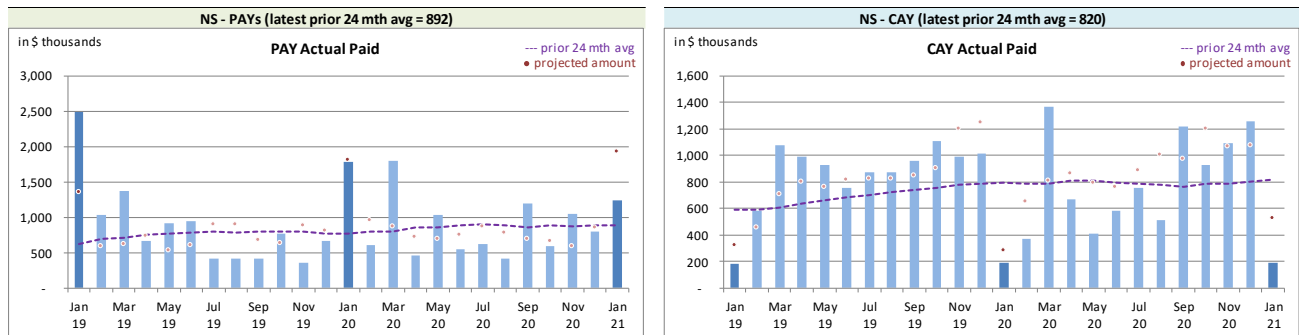
Paid activity variances from the previous month's projections are shown in the following charts, including the "prior 24-month standard deviation" levels to show how the variances from projection compare with historical standard deviations.

*Nova Scotia RSP Actual vs Projected Summary: **Paid** Variances by Calendar Month*
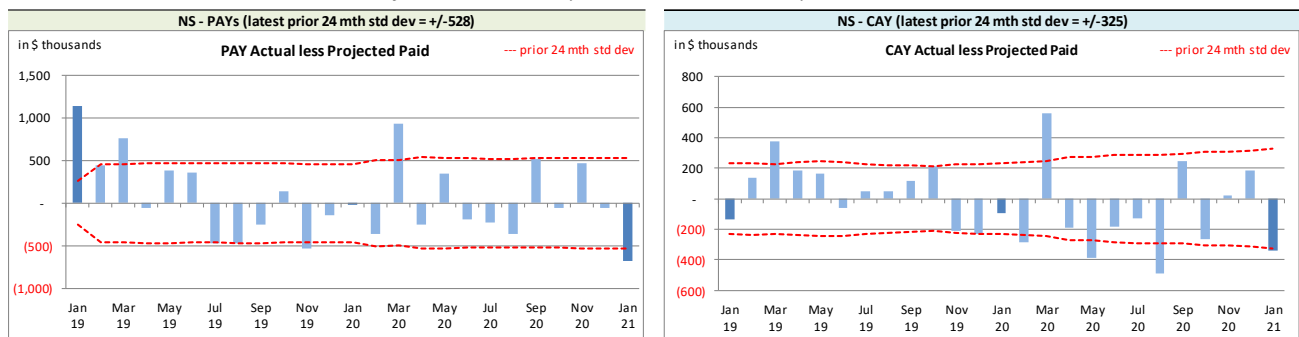
On Latest $ thousands		
Paid	PAYs	CAY
Mthly Avg Paid (prior 24 mths)	892	820
std dev	528	325
A-P <> std dev	7	8
% <> std dev	28.0%	32.0%
norm <> std dev	31.7%	31.7%
performance vs 24-mth avg:	no better	no better

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 preceding table on the left), suggesting the projection process has performed no better than simply projecting the prior 24-month average amount (assuming it follows a normal distribution). Bias has not been indicated at a 95% confidence level on a rolling 25-month basis (10 of 25 variances are positive).

The PAY **paid** variance was outside the one standard deviation band this month (see proceeding chart on the left) the lower than projected recorded activity was reviewed and attributed to process variance.

The current accident year (CAY) **paid** variances fell outside of one standard deviation 32% of the time over the last 25 calendar months (see the preceding table), suggesting that the projection process has performed no 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 (12 of 25 variances are positive).

The CAY **paid** variance was just outside the one standard deviation band this month (see preceding chart on the right) the lower projected recorded activity was reviewed and attributed to process variance.

We have included, for reference, the following charts 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[9] **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 of the preceding group of charts) occur for several possible reasons:

- to offset actual **paid** activity (may reduce case or IBNR or both);

- the annual switchover as a CAY becomes a PAY (occurs in January); and

- when a new valuation is implemented, where the valuation resulted in changes to the selection of PAYs' ultimates (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).

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[9]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.

2.2 Actuarial Provisions

An ultimate loss ratio matching method (described in section 3) was used to determine the month's IBNR[10], 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 following table 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	2,333	198	(73)	(1)	2,589	43	4,849	240
2019	10,652	502	(77)	(1)	1,957	25	12,532	526
2020	16,396	44	(114)	(1)	2,786	9	19,068	52
2021	3,015	1,299	(23)	(2)	467	39	3,459	1,336
TOTAL	32,396	2,043	(287)	(5)	7,799	116	39,908	2,154

The IBNR provision is $2.0 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 following table 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 premium deficiency position (shown as a positive amount) prior and after the 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.

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[10]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:	209	(1)	2,602	(18)	2,811	(19)
balance as % unearned premium:	0.8%	-	10.0%	-	10.8%	-
actual unearned premium:	26,044					
less projected:	(174)					

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[11] 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 following table summarizes the calendar year-to-date results for indemnity & allowed claims expenses[12], 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 101.2% rather than 99.4% (the valuation ultimate ratio for accident year 2021), 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.)

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[11]"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).

[12]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	
	Amount	% EP	Amount	% EP	Amount	% EP
PAYs	(64)	(1.6%)	(144)	(3.7%)	(208)	(5.3%)
CAY	3,977	101.2%	444	11.3%	4,421	112.5%
TOTAL	3,913	99.5%	300	7.6%	4,213	107.2%

("% EP" based on 2020 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).

Actuarial Highlights – RSP Nova Scotia
Operational Report January 2021

6 EXHIBITS

The exhibits listed below are provided on the pages that follow:

EXHIBIT A   IBNR for Member Sharing – includes Actuarial Present Value Adjustments

EXHIBIT B   IBNR

EXHIBIT C   Premium Liabilities

EXHIBIT D   Projected Year-end Policy Liabilities

EXHIBIT E   Discount Rate & Margins for Adverse Deviations

EXHIBIT F   Interest Rate Sensitivity

EXHIBIT G   Components of IBNR Change During Month

EXHIBIT A

IBNR for Member Sharing – includes Actuarial Present Value Adjustments

TABLE EXHIBIT A		Amounts in $000s				
IBNR + M/S actuarial present value adjustments	Accident Year	Actual Dec. 2020	Actual Jan. 2021	Projected Feb. 2021	Projected Mar. 2021	Projected Dec. 2021
	2008	(3)	(3)	(3)	(3)	(3)
	2009	12	12	12	12	11
	2010	4	4	4	4	4
	2011	4	4	4	4	4
	2012	275	259	256	254	219
	2013	62	51	50	50	48
	2014	(137)	(139)	(139)	(138)	(115)
	2015	298	288	283	280	244
discount rate	2016	602	537	529	524	459
0.19%	2017	765	1,004	985	971	769
	2018	2,868	2,833	2,739	2,673	2,179
interest rate margin	2019	12,466	12,532	12,069	11,725	8,941
25 basis pts	2020	19,819	19,068	18,361	17,836	14,252
	2021	-	3,459	5,085	7,008	28,784
	TOTAL	37,034	39,908	40,234	41,199	55,795
	Change		2,874	326	965	

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. 2020	Actual Jan. 2021	Projected Feb. 2021	Projected Mar. 2021	Projected Dec. 2021
	68.2%	2008	(3)	(3)	(3)	(3)	(3)
	63.8%	2009	5	5	5	5	5
	73.4%	2010	4	4	4	4	4
	90.1%	2011	4	4	4	4	4
	102.4%	2012	244	229	227	225	193
	89.6%	2013	(85)	(95)	(94)	(93)	(79)
	85.0%	2014	(241)	(243)	(241)	(239)	(205)
	88.6%	2015	71	62	61	60	48
	96.4%	2016	277	212	210	208	177
	89.3%	2017	65	309	297	294	226
	79.0%	2018	1,876	1,850	1,776	1,723	1,339
	95.5%	2019	10,573	10,652	10,226	9,919	7,386
	87.7%	2020	17,033	16,396	15,740	15,268	12,078
	99.4%	2021	-	3,015	4,316	5,882	23,734
		TOTAL	29,822	32,396	32,527	33,256	44,906
		Change		2,574	131	729	

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 Dec. 2020	Actual Jan. 2021	Projected Feb. 2021	Projected Mar. 2021	Projected Dec. 2021
(1) unearned premium (UP)	26,336	26,044	26,639	27,046	34,299
FOR MEMBER SHARING					
(2) expected future costs ratio {% of (1)}	110.8%	110.8%	110.9%	111.0%	114.6%
(3) expected future costs {(1) x (2)}	29,172	28,855	29,536	30,024	39,313
(4) premium deficiency / (deferred policy acquisition cost)	2,836	2,811	2,897	2,978	5,014
Excluding Actuarial Present Value Adjustments					
(5) expected future costs ratio {% of (1)}	100.8%	100.8%	100.9%	101.0%	104.3%
(6) expected future costs {(1) x (5)}	26,541	26,253	26,872	27,317	35,766
(7) premium deficiency / (deferred policy acquisition cost)	205	209	233	271	1,467

EXHIBIT D

Projected Year-end Policy Liabilities

The table below presents the projected policy liabilities as at December 31, 2021, broken down by component.

Nova Scotia	Projected Balances as at Dec. 31, 2021 ($000s)									
ending 2021	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
2008	-	(3)	(3)	-	-	-	-	-	-	(3)
2009	56	5	61	-	-	6	-	6	6	67
2010	-	4	4	-	-	-	-	-	-	4
2011	-	4	4	-	-	-	-	-	-	4
2012	64	193	257	-	-	26	-	26	26	283
2013	1,352	(79)	1,273	(4)	4	127	-	127	127	1,400
2014	1,104	(205)	899	(3)	3	90	-	90	90	989
2015	1,921	48	1,969	(6)	6	197	(1)	196	196	2,165
2016	2,650	177	2,827	(8)	8	283	(1)	282	282	3,109
2017	4,280	226	4,506	(14)	14	545	(2)	543	543	5,049
2018	5,514	1,339	6,853	(27)	27	843	(3)	840	840	7,693
2019	5,321	7,386	12,707	(64)	64	1,563	(8)	1,555	1,555	14,262
2020	6,439	12,078	18,517	(93)	93	2,185	(11)	2,174	2,174	20,691
PAYs (sub-total):	28,701	21,172	49,873	(219)	219	5,865	(26)	5,839	5,839	55,712
CAY (2021)	19,318	23,734	43,052	(258)	258	5,080	(30)	5,050	5,050	48,102
claims liabilities:	48,019	44,906	92,925	(477)	477	10,945	(56)	10,889	10,889	103,814

	Unearned Premium	Premium Deficiency / (DPAC)	Total Provision	discount	investment PfAD	nominal development PfAD	development PfAD discount	development PfAD	Total apvs	TOTAL*
premium liabilities:	34,299	1,467	35,766	(176)	176	3,565	(18)	3,547	3,547	39,313

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

policy liabilities:			128,691	(653)	653	14,510	(74)	14,436	14,436	143,127

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, 2020 from the valuation), followed by the selected discount rate and the associated margin for investment income.

Accident Year	Selected Claims Development MfADs (Sep. 30, 2020)			
	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%	10.0%	10.0%
2016	10.0%	10.0%	10.0%	10.0%
2017	12.5%	10.0%	5.6%	12.1%
2018	12.5%	10.0%	9.7%	12.3%
2019	12.5%	10.0%	10.7%	12.3%
2020	12.4%	10.0%	5.3%	11.8%
2021	12.0%	10.0%	5.1%	10.1%
prem liab	12.0%	10.0%	5.1%	10.1%

discount rate:	0.19%
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, 2020 from the latest valuation date (projections in exhibits A to D are to Dec. 31, 2020, and are based on more up-to-date information). We have included the most recent valuation selection (0.19%), the prior valuation assumption (0.23%) and the prior fiscal year end valuation assumption (1.46%) 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, 2020 projected Unpaid							
AY	0.00%	0.00%	0.19%	0.69%	1.19%	1.69%	0.23%	1.46%
2007	-	-	-	-	-	-	-	-
2008	-	-	-	-	-	-	-	-
2009	69	69	69	68	68	68	69	68
2010	-	-	-	-	-	-	-	-
2011	-	-	-	-	-	-	-	-
2012	549	549	549	545	541	536	549	538
2013	1,492	1,492	1,491	1,480	1,467	1,455	1,491	1,460
2014	970	970	969	962	955	947	969	951
2015	2,559	2,559	2,558	2,541	2,522	2,503	2,558	2,512
2016	3,431	3,431	3,430	3,403	3,375	3,346	3,429	3,359
2017	6,797	6,797	6,794	6,733	6,666	6,601	6,794	6,630
2018	8,867	8,867	8,862	8,768	8,665	8,564	8,862	8,610
2019	16,972	16,972	16,963	16,750	16,518	16,292	16,961	16,396
2020	25,179	25,179	25,163	24,809	24,425	24,052	25,161	24,221
Total	66,885	66,885	66,848	66,059	65,202	64,364	66,843	64,745
	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	0.00%	0.00%	0.19%	0.69%	1.19%	1.69%	0.23%	1.46%
Total	37	37	-	(789)	(1,646)	(2,484)	(5)	(2,103)
	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	0.00%	0.00%	0.19%	0.69%	1.19%	1.69%	0.23%	1.46%
2007	-	-	-	-	-	-	-	-
2008	-	-	-	-	-	-	-	-
2009	-	-	-	(1.4%)	(1.4%)	(1.4%)	-	(1.4%)
2010	-	-	-	-	-	-	-	-
2011	-	-	-	-	-	-	-	-
2012	-	-	-	(0.7%)	(1.5%)	(2.4%)	-	(2.0%)
2013	0.1%	0.1%	-	(0.7%)	(1.6%)	(2.4%)	-	(2.1%)
2014	0.1%	0.1%	-	(0.7%)	(1.4%)	(2.3%)	-	(1.9%)
2015	0.0%	0.0%	-	(0.7%)	(1.4%)	(2.2%)	-	(1.8%)
2016	0.0%	0.0%	-	(0.8%)	(1.6%)	(2.4%)	(0.0%)	(2.1%)
2017	0.0%	0.0%	-	(0.9%)	(1.9%)	(2.8%)	-	(2.4%)
2018	0.1%	0.1%	-	(1.1%)	(2.2%)	(3.4%)	-	(2.8%)
2019	0.1%	0.1%	-	(1.3%)	(2.6%)	(4.0%)	(0.0%)	(3.3%)
2020	0.1%	0.1%	-	(1.4%)	(2.9%)	(4.4%)	(0.0%)	(3.7%)
Total	0.1%	0.1%	-	(1.2%)	(2.5%)	(3.7%)	(0.0%)	(3.1%)
	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
2008	(3)	-	-	-	-	-	(3)
2009	12	-	-	-	-	-	12
2010	4	-	-	-	-	-	4
2011	4	-	-	-	-	-	4
2012	275	(3)	(13)	-	(16)	(5.8%)	259
2013	62	(3)	(8)	-	(11)	(17.7%)	51
2014	(137)	(2)	-	-	(2)	1.5%	(139)
2015	298	(9)	(1)	-	(10)	(3.4%)	288
2016	602	(13)	(52)	-	(65)	(10.8%)	537
2017	765	(16)	255	-	239	31.2%	1,004
2018	2,868	(94)	59	-	(35)	(1.2%)	2,833
2019	12,466	(460)	526	-	66	0.5%	12,532
2020	19,819	(803)	52	-	(751)	(3.8%)	19,068
2021	-	2,123	1,336	-	3,459	100.0%	3,459
Grand Total	**37,034**	**720**	**2,154**	**-**	**2,874**	**7.8%**	**39,908**

EXHIBIT G

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

RSP	Nova Scotia						
AccountCode Desc	IBNR - Undiscounted						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**
2008	(3)	-	-	-	-	-	(3)
2009	5	-	-	-	-	-	5
2010	4	-	-	-	-	-	4
2011	4	-	-	-	-	-	4
2012	244	(2)	(13)	-	(15)	(6.1%)	229
2013	(85)	1	(11)	-	(10)	11.8%	(95)
2014	(241)	2	(4)	-	(2)	0.8%	(243)
2015	71	(1)	(8)	-	(9)	(12.7%)	62
2016	277	(3)	(62)	-	(65)	(23.5%)	212
2017	65	(3)	247	-	244	375.4%	309
2018	1,876	(75)	49	-	(26)	(1.4%)	1,850
2019	10,573	(423)	502	-	79	0.7%	10,652
2020	17,033	(681)	44	-	(637)	(3.7%)	16,396
2021	-	1,716	1,299	-	3,015	100.0%	3,015
Grand Total	**29,822**	**531**	**2,043**	**-**	**2,574**	**8.6%**	**32,396**