NOVA SCOTIA RISK SHARING POOL

MARCH 2021 OPERATIONAL REPORT

ACTUARIAL HIGHLIGHTS

Related Bulletin: F2021-029 NS RSP March 2021 Operational Report

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FACILITY ASSOCIATION

ACTUARIAL HIGHLIGHTS

RSP NOVA SCOTIA

OPERATIONAL REPORT

MARCH 2021

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1 Summary

Note to members: we are currently reviewing our member reporting requirements and intend to provide the **Actuarial Highlights quarterly instead of the current monthly reporting**, starting with the May 2021 participation reporting and aligned with the valuation schedule; please contact us with any questions or concerns in regards to this matter.

1.1 Valuation Schedule (Fiscal Year 2021)

The March 2021 Operational Report incorporates the results of an updated valuation (as at December 31, 2020) – the impact of the implementation of the valuation is discussed in section 1.2. 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 increased 0.2 points to 87.7%; discount rate decreased 4 basis points; no change to selected margins for adverse deviations
Dec. 31, 2020 (completed)	0.22% mfad 25 bp	Mar. 2021	update valuation: accident year 2020 loss ratio decreased 9.4 points to 78.3% and accident year 2021 loss ratio decreased 8.1 points to 91.3%; discount rate increased 3 basis points; no change to selected margins for adverse deviations
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 New Valuation

A valuation of the Nova Scotia Risk Sharing Pool ("RSP") as at September 30, 2020 has been

[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%.

completed since last month's Operational Report and the results of that valuation have been incorporated into this month's Report. The valuation was completed by the Facility Association's internal actuarial group in conjunction with, and approved by, the Appointed Actuary, under the hybrid model for actuarial services.

The valuation implementation impact is summarized in the following two tables, where the abbreviations PAYs refers to prior accident years, CAY refers to the current accident year (2021), and Prem Def refers to premium deficiency / deferred acquisition costs impacts.

Summary of Impact ($000s) of Implementing Result of Valuation as at Dec. 31, 2020[2]

NS	unfav / (fav) for the month and ytd					
	IMPACT in $000s from changes in:					
	ults & payout patterns			dsct rate	margins	
	Nominal [1]	apv adj. [2]	sub-tot [3]	apv adj. [4]	apv adj. [5]	TOTAL [6]
PAYs	(6,616)	(702)	(7,318)	(5)	-	(7,323)
CAY	(960)	(112)	(1,072)	(1)	-	(1,073)
Prem Def	(2,028)	(227)	(2,255)	(2)	-	(2,257)
TOTAL	(9,604)	(1,041)	(10,645)	(8)	-	(10,653)

As indicated in the preceding table, the incorporation of the new valuation had an estimated ***$10.7 million favourable impact*** on the month's net result from operations, subtracting an estimated 91.3 points (see following table) from the **year-to-date Combined Operating Ratio** to end at **45.2%**.

Summary of Impact (% YTD EP) of Implementing Result of Valuation as at Dec. 31, 2020

NS	ytd EP 11,669 (actual)					
	IMPACT unfav / (fav) as % ytd EP from changes in:					
	ults & payout patterns			dsct rate	margins	
	Nominal [1]	apv adj. [2]	sub-tot [3]	apv adj. [4]	apv adj. [5]	TOTAL [6]
PAYs	(56.7%)	(6.0%)	(62.7%)	-	-	(62.8%)
CAY	(8.2%)	(1.0%)	(9.2%)	-	-	(9.2%)
Prem Def	(17.4%)	(1.9%)	(19.3%)	-	-	(19.3%)
TOTAL	(82.3%)	(8.9%)	(91.2%)	(0.1%)	-	(91.3%)

The impact of the **nominal changes** is shown in column [1] of the two preceding summary tables. The change in the selected nominal ultimates was **favourable by $9.6 million** overall. This reflects

[2]In these tables, "PAYs" refers to prior accident years, "CAY" refers to the current accident year, and "Prem Def" refers to the provision for premium deficiency or the deferred policy acquisition asset (as applicable). "Nominal" refers to changes excluding any actuarial present value adjustments, whereas "apv adj." refers to actuarial present value adjustments.

The columns under the heading "ults & payout patterns" reflect the impact of changes in the valuation selected ultimates and claims payment patterns (i.e. based on unchanged selection of discount rates and margins for adverse deviation). The column "dsct rate" reflects the impact of the change in the selected discount rate and the column "margins" reflects the impact of any changes in selected margins for adverse deviations.

the impact attributable to the changes in the selected ultimate loss ratios (i.e. for each accident year, it is the product of life-to-date earned premium for the accident year and the change in the selected ultimate loss ratio).

The **PAYs** overall showed a **$6.6 million favourable** nominal variance or 56.7% of the PAYs nominal unpaid balance of $59.2 million determined at the end of last month (February 2021), driven by favourable claims development and updates to a priori loss ratios to include more recent data and updated trends. While the valuation implementation impact does differ from the valuation changes themselves (as they apply to different periods), the main drivers of PAY change were:

1) Favourable development of Third Party Liability - Bodily Injury claims for accident year 2019. The table below summarizes the movements for 2019 & prior by government line:

Nova Scotia RSP - valuation changes in selected ultimate
(favourable) / unfavourable **during Quarter**

Accident Year	Third Party Liability	Accident Benefits	Other Coverages	Total
2015 & Prior	200	(190)	-	10
2016	47	(19)	(1)	27
2017	615	21	-	636
2018	182	202	(2)	382
2019	(3,873)	(337)	(14)	(4,224)
TOTAL	**(2,829)**	**(323)**	**(17)**	**(3,169)**

2) Accident year 2020. Lower than expected claims frequency due to a reduction in driving as a result of the COVID-19 pandemic led to a large reduction in ultimate claims across all coverages; this is reflected in the implementation through both actual data and through revised actuarial assumptions to estimate the ultimate expected loss ratio.

The CAY and premium deficiency impacts are a result of the change in the selected loss ratio for accident year **2021** (decreased 8.1 points to 91.3%). This change is also driven by revised assumptions for the continuing impact of COVID-19 on claims costs in 2021.

The impacts related to actuarial present value ("apv") adjustments are split into the impact prior to any change in the selected discount rate and selected margins for adverse deviations or "MfADs" (at the level they were selected i.e. coverage and accident half-year), the impact of then updating the discount rate, and finally the impact of any changes to the MfADs (at the level they were selected). The changes in actuarial present value adjustments are shown in the preceding summary tables in columns [2], [4], and [5].

Column [2] recognizes that changing the nominal selections also changed the unpaid estimates (including changes to the relative mix by government line, which had an impact on the weighted-average MfADs). It also reflects the fact that we updated the projected emergence of claims payments, resulting in a change in the projected cash flows. These changes generated a favourable change of $1.0 million in the actuarial present value adjustments, prior to any changes in the selected

discount rate and/or MfADs.

Updated projected cash flows were reviewed against the selected risk-free yield curve, derived from Government of Canada benchmark bond yields monthly series using values for December 2020. Column [4] accounts for the change in the **discount rate** selected (increased 3 basis point to **0.22%**), indicating a favourable impact of $8 thousand. The impact *related only to claims liabilities* (i.e. PAYs plus CAY) was $6 thousand at March 2021 – this compares to the $47 thousand change one would estimate as the impact by interpolation using the interest rate sensitivity table provided in last month's Actuarial Highlights.

Column [5] accounts for any changes to selected MfADs. The selected **investment rate MfAD** was **left unchanged at 25 basis points** and the selected **claims development MfADs** at the coverage and accident year level were also left unchanged (as per our usual practice, development margins are reviewed with the June 30 valuation).

Consideration was given to recent legal decisions and changes in legislation / regulation as outlined in section 1.4.

1.3 Appointed Actuary and Hybrid Actuarial Services Model

The Annual General Meeting of the members of Facility Association ("FA") appointed Mr. Cosimo Pantaleo as the Appointed Actuary at its meeting on March 4, 2021.

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

1.4 Consideration of Recent Legal Decisions and Changes in Legislation / Regulation

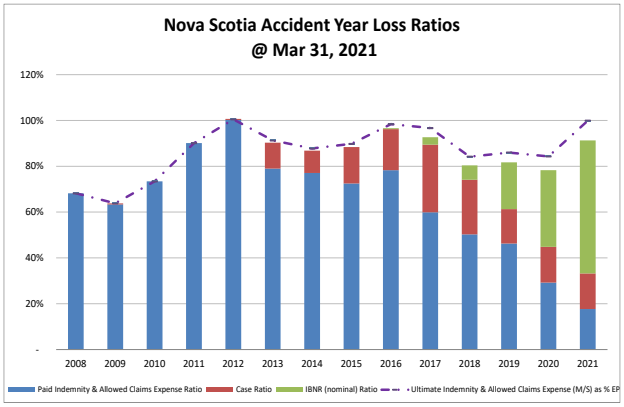
There have been no changes in these descriptions since last month's Highlights.

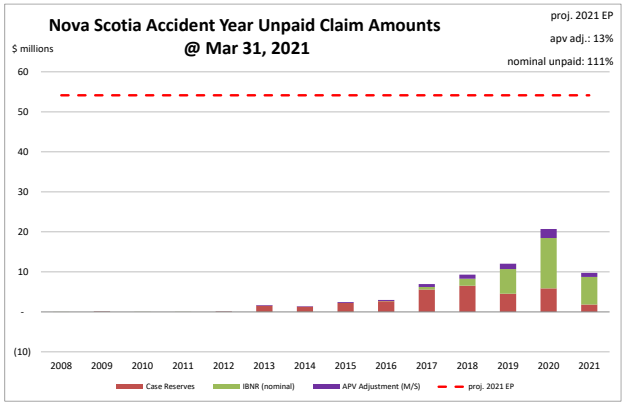
Consideration and assessment of potential impacts of legal decisions and changes in legislation / regulation constitutes a regular part of the valuation process. Descriptions of some of the more recent (i.e. within the last five years) changes are provided below.

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.

1.5 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 ($7.1 million – see the following table) represents 13% 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 over future periods.

claim liabilities ($000s)

	amt	%
case	32,209	47.8%
ibnr	28,020	41.6%
M/S apv adjust.	7,134	10.6%
M/S total	67,363	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 70% 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.

[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.

premium liabilities ($000s)

	amt	%
unearned prem	25,496	97.9%
prem def/(dpac)	(1,779)	(6.8%)
M/S apv adjust.	2,323	8.9%
M/S total	26,040	100.0%

policy liabilities ($000s)

	amt	%
claim	60,229	64.5%
premium	23,717	25.4%
M/S apv adjust.	9,457	10.1%
M/S total	93,403	100.0%

2 Activity During the Month of March 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)	596	320	152	370	749	691
2019	(20)	(20)	166	(135)	174	154	340	19
2020	(35)	(35)	236	(209)	(236)	(276)	(0)	(485)
2021	4,159	(107)	989	(229)	191	(1,254)	1,180	(1,483)
TOTAL	4,101	(165)	1,988	(252)	280	(1,007)	2,268	(1,259)

(Recorded transaction amounts exclude IBNR & other actuarial provisions)

Claims transaction activity is generally volatile and changes from one month to the next are anticipated due to this natural "process variance" (i.e. random variation), and this is particularly true where volumes are low as found in this RSP. Each month, the projection variances are reviewed for signs of projection bias and to identify potential ways to reduce the level of the variance. Commentary from our review is provided in the sub-sections that follow.

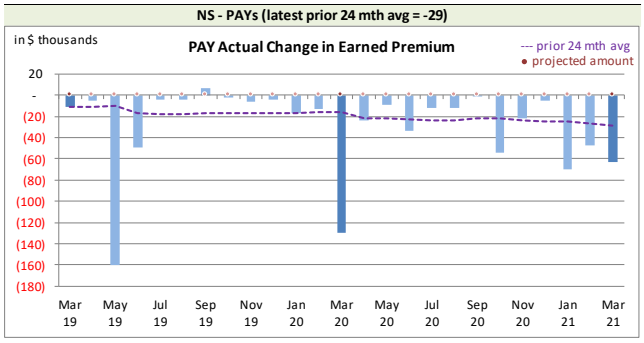
2.1.a Actual vs. Projected (AvsP): Earned Premium

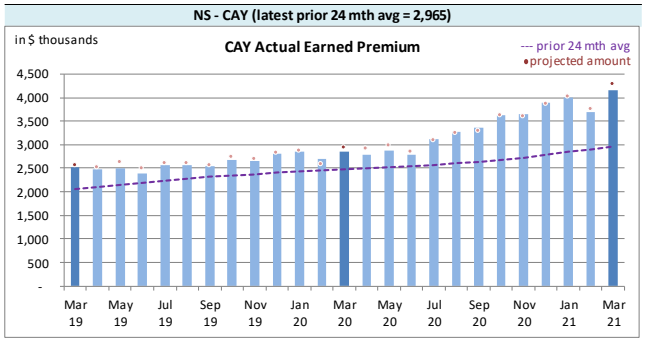
The following charts show actual **earned premium**[5] activity in each of the most recent 25 calendar months, along with a "prior 24-month average" to show how each month's actual compares with the average amount of the preceding 24 calendar months.

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

[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.

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



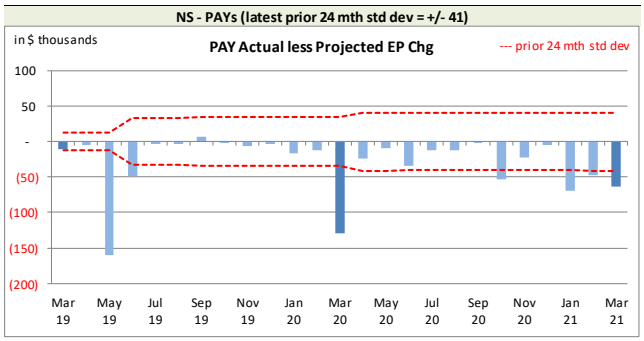


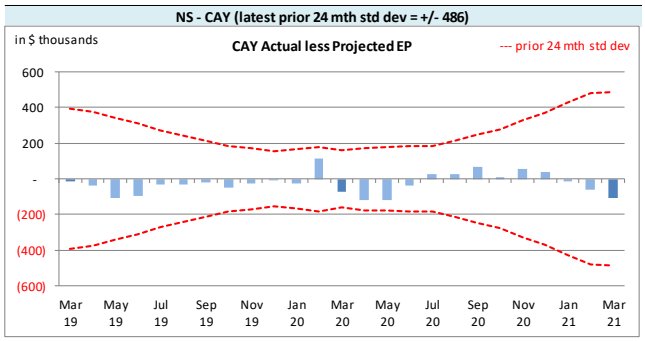
On Latest $ thousands		
Earned Premium	PAYs	CAY
Mthly Avg EP Chg (prior 24 mths)	(29)	2,965
std dev	41	486
A-P <> std dev	7	-
% <> std dev	28.0%	0.0%
norm <> std dev	31.7%	31.7%
performance vs 24-mth avg:	no better	better

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 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 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

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

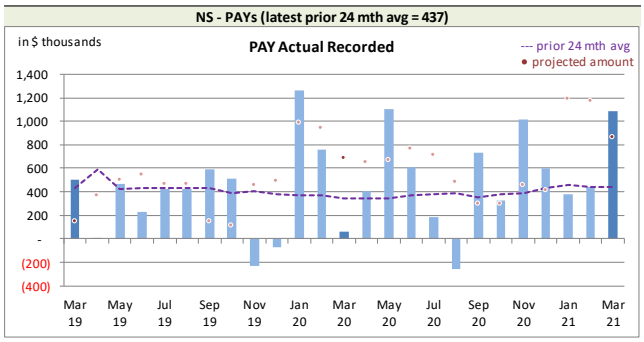
[7]We measure bias based on a 95% confidence range for a binominal distribution with trials based on the range being considered (25 in this case) and 50% probability of success. The rolling 25-month CAY variances at March 2021 has only 7 months where the actuals were higher than projected, and as the 95% confidence range is 8 to 17, bias continues to be indicated.

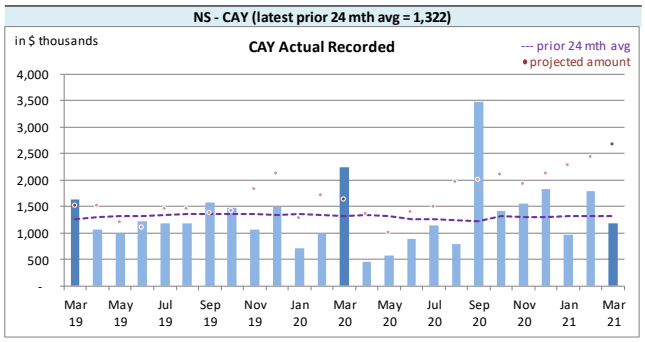
projections processes in response, bias still exists. Over time, we may consider other projection approaches to address the bias issue, but it is not currently deemed as priority.

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.

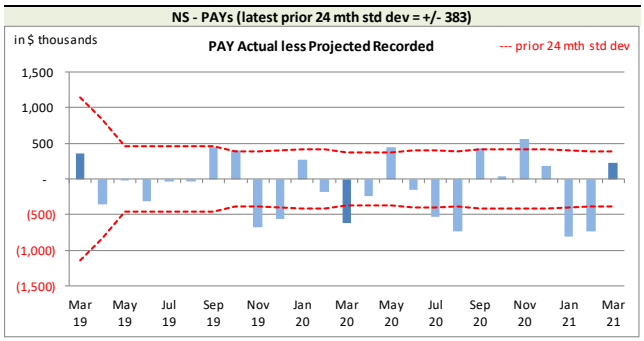
*Nova Scotia RSP Actual **Recorded** by Calendar Month*

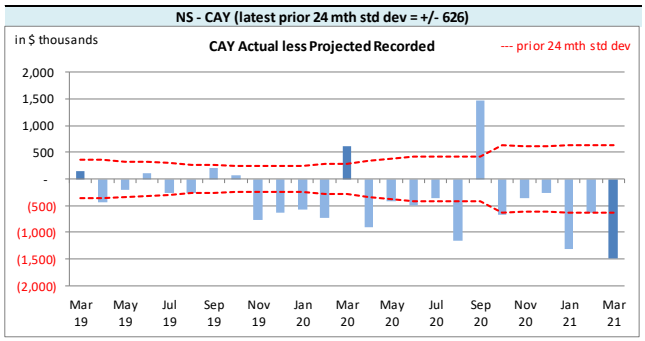




Recorded activity variances from the previous month's projections are shown in the following charts, including the "prior 24-month standard deviation" levels to show how the variances from projection compare with historical standard deviations.

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





On Latest $ thousands		
Recorded	PAYs	CAY
Mthly Avg Recorded (prior 24 mths)	437	1,322
std dev	383	626
A-P <> std dev	11	16
% <> std dev	44.0%	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, 44% 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 (10 of 25 variances are positive).

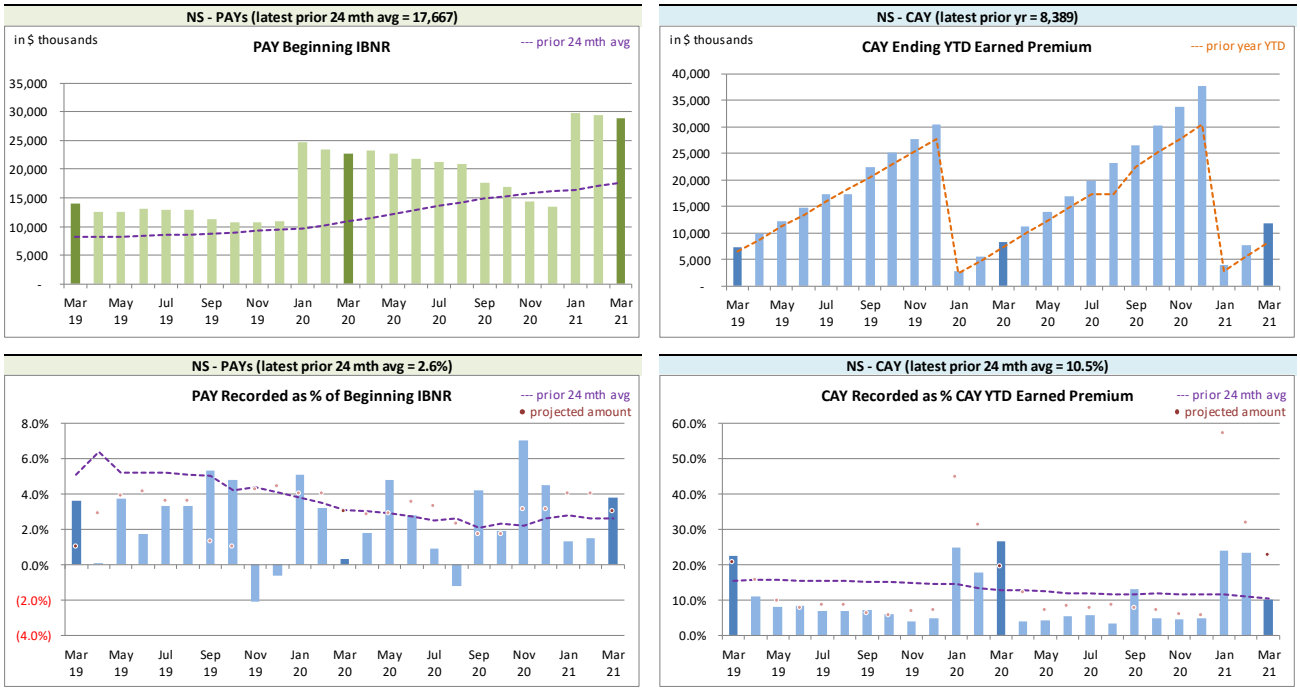
The current accident year (CAY) **recorded** variances fell outside of one standard deviation 64% of the time over the last 25 calendar months (see preceding table on the left), suggesting that the projection process has performed worse than simply projecting the prior 24-month average amount. We are 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 (6 of 25 variances are positive).

The CAY **recorded** 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.

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:

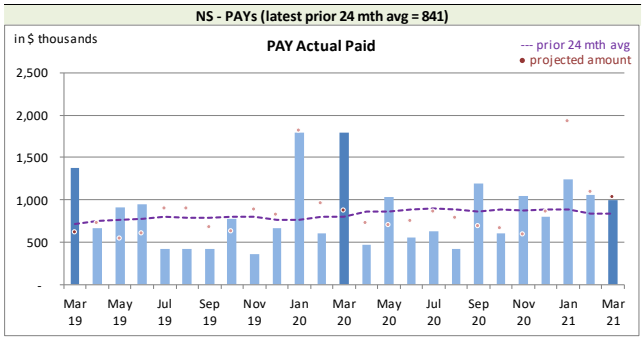
- to offset actual **recorded** activity (through loss ratio matching);
- the annual switchover as a CAY becomes a PAY (occurs in January); and
- when a new valuation is implemented, where the valuation resulted in changes to the selection of PAYs' ultimates (will show up as a beginning IBNR change one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

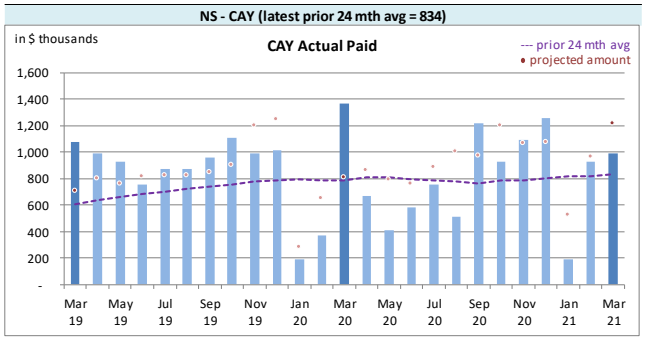
2.1.c AvsP: Paid Indemnity & Allowed Claims Expense

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.

[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.

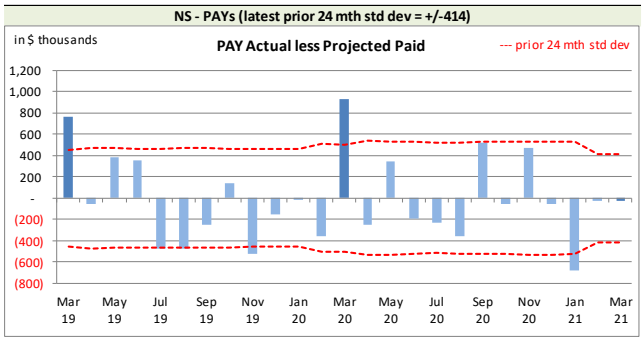
*Nova Scotia RSP Actual **Paid** by activity Calendar Month*

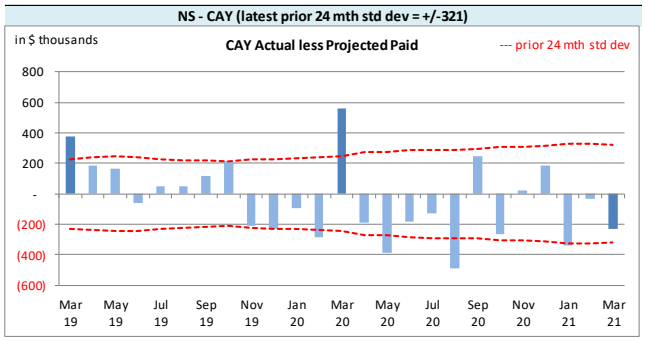




Paid activity variances from the previous month's projections are shown in the following charts, including the "prior 24-month standard deviation" levels to show how the variances from projection compare with historical standard deviations.

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





On Latest $ thousands		
Paid	PAYs	CAY
Mthly Avg Paid (prior 24 mths)	841	834
std dev	414	321
A-P <> std dev	6	8
% <> std dev	24.0%	32.0%
norm <> std dev	31.7%	31.7%
performance vs 24-mth avg:	better	no better

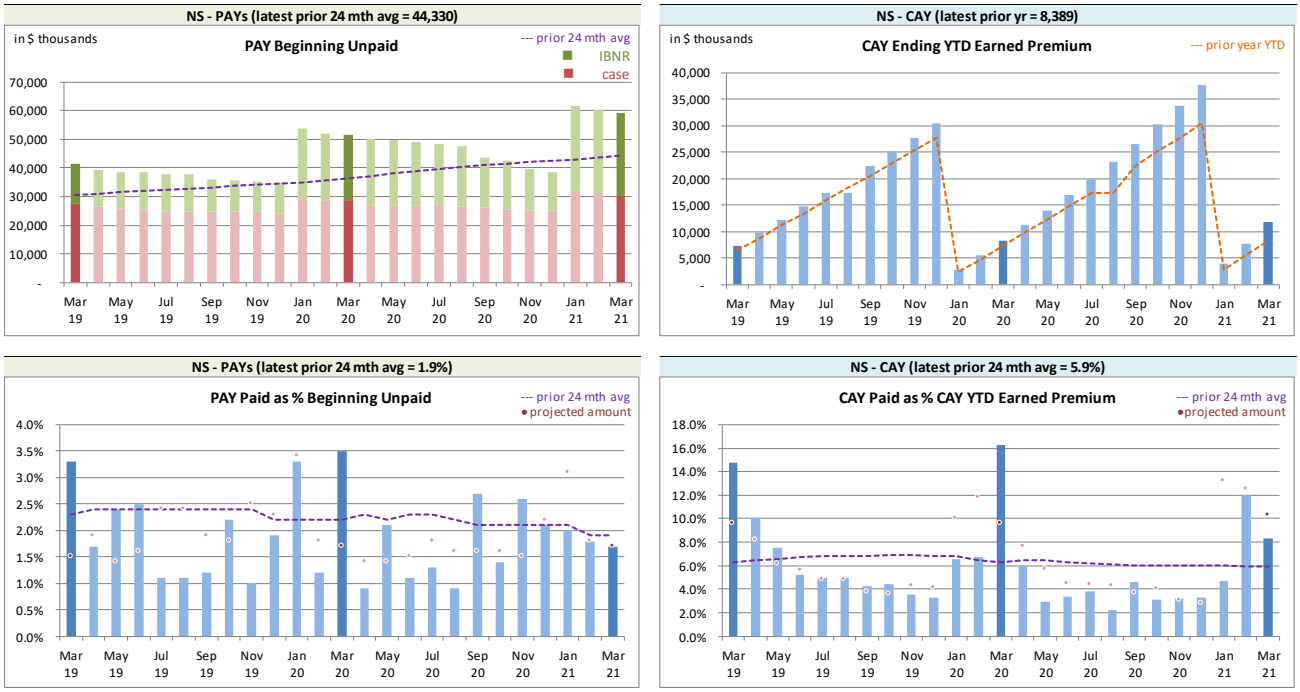
With respect to **paid** indemnity & allowed claims expense activity, caution must be exercised in reviewing the variances as this is a small pool and single claim transactions that are normal course for the business may look unusual and generate relatively significant variances that in nominal value terms are not that significant in relative or overall terms. That said, 24% 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 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 (8 of 25 variances are positive).

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 (11 of 25 variances are positive).

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).

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

[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.

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

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	2,364	401	(92)	(21)	2,636	124	4,908	504
2019	6,178	(4,216)	(54)	20	1,365	(517)	7,489	(4,713)
2020	12,596	(3,083)	(111)	(2)	2,368	(303)	14,853	(3,388)
2021	6,882	416	(61)	(4)	1,083	(95)	7,904	317
TOTAL	28,020	(6,482)	(318)	(7)	7,452	(791)	35,154	(7,280)

The IBNR provision is $6.5 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 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 deferred policy acquisition costs position (shown as a negative amount) prior to the actuarial present value adjustments, while in a premium deficiency position (shown as a positive amount) 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, and the valuation implementation.

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:	(1,779)	(2,038)	2,323	(283)	544	(2,321)
balance as % unearned premium:	(7.0%)	(8.0%)	9.1%	(0.9%)	2.1%	(8.9%)
actual unearned premium:	25,496					
less projected:	(535)					

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 92.7% rather than 91.3% (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.)

[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		Change from Prior Month YTD	
	Amount	% EP	Amount	% EP	Amount	% EP	Amount	LR pts
PAYs	(6,782)	(58.1%)	(1,100)	(9.4%)	(7,882)	(67.5%)	(7,496)	(62.4%)
CAY	10,819	92.7%	1,022	8.8%	11,841	101.5%	3,430	(9.6%)
TOTAL	4,038	34.6%	(78)	(0.7%)	3,960	33.9%	(4,066)	(72.1%)

("% 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, due to the valuation implementation.

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

5 Current Operational Report – Additional Exhibits

Section 6 provides exhibits pertaining to the actuarial provisions reflected in the current month's Operational Report.

IBNR (including actuarial present value adjustments) presented in section 6, Exhibit A, were derived on a discounted basis, and therefore reflect the time value of money and include an explicit provision for adverse deviations in accordance with accepted actuarial practice in Canada.

IBNR presented in section 6, Exhibit B, does NOT include any actuarial present value adjustments. The "Total IBNR" from this exhibit is shown in the Operational Report as "Undiscounted IBNR".

The ultimate loss ratios detailed in section 6, Exhibit B, refer to the estimates derived on the basis of various actuarial methodologies applied to the experience of the 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 0.22%

interest rate margin 25 basis pts

Accident Year	Actual Feb. 2021	Actual Mar. 2021	Projected Apr. 2021	Projected May. 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	258	(19)	(19)	(19)	(16)
2013	51	141	140	138	124
2014	(136)	124	123	122	110
2015	268	194	192	190	173
2016	520	326	322	318	286
2017	701	1,377	1,350	1,325	1,092
2018	2,818	2,749	2,720	2,653	2,258
2019	12,560	7,489	7,289	7,216	5,962
2020	18,778	14,853	14,430	14,081	11,875
2021	5,654	7,904	10,065	12,979	25,859
TOTAL	41,488	35,154	36,628	39,019	47,738
Change		(6,334)	1,474	2,391	

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 Feb. 2021	Actual Mar. 2021	Projected Apr. 2021	Projected May. 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
100.5%	2012	228	(23)	(23)	(23)	(20)
90.2%	2013	(95)	(13)	(13)	(13)	(13)
86.8%	2014	(240)	(3)	(3)	(3)	(3)
88.2%	2015	42	(25)	(25)	(25)	(22)
96.6%	2016	197	56	55	54	46
92.7%	2017	28	628	609	591	488
80.5%	2018	1,852	1,735	1,718	1,666	1,362
81.7%	2019	10,715	6,178	5,993	5,933	4,832
78.3%	2020	16,164	12,596	12,218	11,913	9,965
91.3%	2021	4,888	6,882	8,725	11,277	21,326
	TOTAL	33,788	28,020	29,263	31,379	37,970
	Change		(5,768)	1,243	2,116	

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 Feb. 2021	Actual Mar. 2021	Projected Apr. 2021	Projected May. 2021	Projected Dec. 2021
(1) unearned premium (UP)	25,548	25,496	25,595	26,378	33,651
FOR MEMBER SHARING					
(2) expected future costs ratio {% of (1)}	110.9%	102.1%	102.5%	103.0%	108.5%
(3) expected future costs {(1) x (2)}	28,322	26,040	26,226	27,160	36,498
(4) premium deficiency / (deferred policy acquisition cost)	2,774	544	631	782	2,847
Excluding Actuarial Present Value Adjustments					
(5) expected future costs ratio {% of (1)}	100.9%	93.0%	93.3%	93.8%	98.8%
(6) expected future costs {(1) x (5)}	25,768	23,717	23,888	24,738	33,240
(7) premium deficiency / (deferred policy acquisition cost)	220	(1,779)	(1,707)	(1,640)	(411)

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	58	5	63	-	-	6	-	6	6	69
2010	-	4	4	-	-	-	-	-	-	4
2011	-	4	4	-	-	-	-	-	-	4
2012	61	(20)	41	-	-	4	-	4	4	45
2013	1,385	(13)	1,372	(4)	4	137	-	137	137	1,509
2014	1,135	(3)	1,132	(3)	3	113	-	113	113	1,245
2015	1,980	(22)	1,958	(8)	8	196	(1)	195	195	2,153
2016	2,365	46	2,411	(7)	7	241	(1)	240	240	2,651
2017	4,520	488	5,008	(20)	20	606	(2)	604	604	5,612
2018	5,962	1,362	7,324	(37)	37	901	(5)	896	896	8,220
2019	4,403	4,832	9,235	(46)	46	1,136	(6)	1,130	1,130	10,365
2020	5,663	9,965	15,628	(94)	94	1,922	(12)	1,910	1,910	17,538
PAYs (sub-total):	27,532	16,644	44,176	(219)	219	5,262	(27)	5,235	5,235	49,411
CAY (2021)	17,358	21,326	38,684	(271)	271	4,565	(32)	4,533	4,533	43,217
claims liabilities:	44,890	37,970	82,860	(490)	490	9,827	(59)	9,768	9,768	92,628
	Unearned Premium	Premium Deficiency / (DPAC)	Total Provision	discount	investment PfAD	nominal development PfAD	development PfAD discount	development PfAD	Total apvs	TOTAL*
premium liabilities:	33,651	(411)	33,240	(197)	197	3,278	(20)	3,258	3,258	36,498
										*Total may not be sum of parts, as apvs apply to future costs within UPR
policy liabilities:			**116,100**	**(687)**	**687**	**13,105**	**(79)**	**13,026**	**13,026**	**129,126**

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, 2021 from the valuation), followed by the selected discount rate and the associated margin for investment income.

Selected Claims Development MfADs (Dec. 31, 2020)

Accident Year	Third Party Liability Margins	Accident Benefits Margins	Other Coverages Margins	Total 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%	9.9%	10.0%	9.9%
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%	12.5%	12.1%
2018	12.5%	10.0%	11.3%	12.3%
2019	12.5%	10.0%	10.3%	12.3%
2020	12.5%	10.0%	9.3%	12.3%
2021	12.4%	10.0%	5.4%	11.8%
prem liab	12.0%	10.0%	5.1%	10.0%

discount rate:	0.22%
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, 2021 from the latest valuation date (projections in exhibits A to D are to Dec. 31, 2021, and are based on more up-to-date information). We have included the most recent valuation selection (0.22%), the prior valuation assumption (0.19%) and the prior fiscal year end valuation assumption (0.19%) 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, 2021 projected Unpaid							
AY	0.00%	0.00%	0.22%	0.72%	1.22%	1.72%	0.19%	0.19%
2007	-	-	-	-	-	-	-	-
2008	-	-	-	-	-	-	-	-
2009	46	46	46	46	46	45	46	46
2010	-	-	-	-	-	-	-	-
2011	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
2012	45	45	45	44	44	43	45	45
2013	799	799	799	794	788	783	799	799
2014	705	705	705	700	695	691	705	705
2015	1,296	1,296	1,296	1,285	1,275	1,265	1,296	1,296
2016	2,221	2,221	2,220	2,204	2,187	2,170	2,220	2,220
2017	4,989	4,989	4,987	4,947	4,904	4,863	4,987	4,987
2018	7,228	7,228	7,224	7,155	7,082	7,013	7,225	7,225
2019	10,148	10,148	10,143	10,024	9,903	9,785	10,143	10,143
2020	18,689	18,689	18,677	18,423	18,164	17,911	18,679	18,679
Total	46,165	46,165	46,141	45,621	45,087	44,568	46,144	46,144
	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%	0.22%	0.72%	1.22%	1.72%	0.19%	0.19%
Total	24	24	-	(520)	(1,054)	(1,573)	3	3
	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%	0.22%	0.72%	1.22%	1.72%	0.19%	0.19%
2007	-	-	-	-	-	-	-	-
2008	-	-	-	-	-	-	-	-
2009	-	-	-	-	-	(2.2%)	-	-
2010	-	-	-	-	-	-	-	-
2011	-	-	-	-	-	-	-	-
2012	-	-	-	(2.2%)	(2.2%)	(4.4%)	-	-
2013	-	-	-	(0.6%)	(1.4%)	(2.0%)	-	-
2014	-	-	-	(0.7%)	(1.4%)	(2.0%)	-	-
2015	-	-	-	(0.8%)	(1.6%)	(2.4%)	-	-
2016	0.0%	0.0%	-	(0.7%)	(1.5%)	(2.3%)	-	-
2017	0.0%	0.0%	-	(0.8%)	(1.7%)	(2.5%)	-	-
2018	0.1%	0.1%	-	(1.0%)	(2.0%)	(2.9%)	0.0%	0.0%
2019	0.0%	0.0%	-	(1.2%)	(2.4%)	(3.5%)	-	-
2020	0.1%	0.1%	-	(1.4%)	(2.7%)	(4.1%)	0.0%	0.0%
Total	0.1%	0.1%	-	(1.1%)	(2.3%)	(3.4%)	0.0%	0.0%
	curr - 100 bp	curr - 50 bp	curr val assumption	curr + 50bp	curr + 100bp	curr + 150bp	prior val assumption	prior fyr end assumption

EXHIBIT G

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	258	(3)	1	(275)	(277)	(107.4%)	(19)
2013	51	(1)	-	91	90	176.5%	141
2014	(136)	1	(1)	260	260	(191.2%)	124
2015	268	(3)	(9)	(62)	(74)	(27.6%)	194
2016	520	(5)	(221)	32	(194)	(37.3%)	326
2017	701	(12)	(33)	721	676	96.4%	1,377
2018	2,818	(69)	(463)	463	(69)	(2.4%)	2,749
2019	12,560	(358)	(24)	(4,689)	(5,071)	(40.4%)	7,489
2020	18,778	(537)	476	(3,864)	(3,925)	(20.9%)	14,853
2021	5,654	1,933	1,390	(1,073)	2,250	39.8%	7,904
Grand Total	**41,488**	**946**	**1,116**	**(8,396)**	**(6,334)**	**(15.3%)**	**35,154**

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
2008	(3)	-	-	-	-	-	(3)
2009	5	-	-	-	-	-	5
2010	4	-	-	-	-	-	4
2011	4	-	-	-	-	-	4
2012	228	(2)	1	(250)	(251)	(110.1%)	(23)
2013	(95)	1	(2)	83	82	(86.3%)	(13)
2014	(240)	2	(2)	237	237	(98.8%)	(3)
2015	42	-	(11)	(56)	(67)	(159.5%)	(25)
2016	197	(2)	(168)	29	(141)	(71.6%)	56
2017	28	(1)	(43)	644	600	2,142.9%	628
2018	1,852	(56)	(474)	413	(117)	(6.3%)	1,735
2019	10,715	(321)	(38)	(4,178)	(4,537)	(42.3%)	6,178
2020	16,164	(485)	455	(3,538)	(3,568)	(22.1%)	12,596
2021	4,888	1,578	1,376	(960)	1,994	40.8%	6,882
Grand Total	**33,788**	**714**	**1,094**	**(7,576)**	**(5,768)**	**(17.1%)**	**28,020**