



NOVA SCOTIA RISK SHARING POOL

JUNE 2019 OPERATIONAL REPORT

ACTUARIAL HIGHLIGHTS

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ACTUARIAL HIGHLIGHTS**RSP NOVA SCOTIA****OPERATIONAL REPORT****JUNE 2019**

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1 Summary

1.1 Valuation Schedule (Fiscal Year 2019)

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

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 <u>decreased</u> 0.7 points to 92.9%; discount rate <u>increased</u> by 42 basis points; no change to selected margins for adverse deviations
Dec. 31, 2018 (completed)	1.93% mfad 25 bp	Mar. 2019	updated valuation: accident year 2019 loss ratio <u>decreased</u> 0.2 points to 96.3%; discount rate <u>decreased</u> 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 <u>increased</u> 1.4 points to 97.7%; discount rate <u>decreased</u> by 50 basis points; no change to selected margins for adverse deviations
Jun. 30, 2019		Aug. 2019	update valuation
Sep. 30, 2019		Oct. 2019	update valuation (roll forward)

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

1.2 Appointed Actuary and Hybrid Actuarial Services Model

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

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

1.3 Consideration of Recent Legal Decisions and Changes in Legislation / Regulation¹

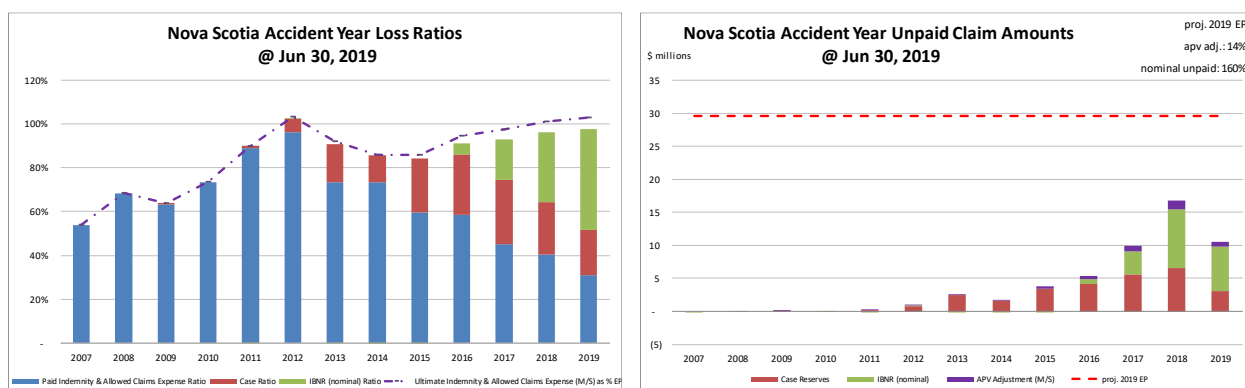
There have been no changes in these descriptions since last month's Highlights.

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 immediately below show the current levels of claim liabilities² booked by accident year. The left chart displays life-to-date payments, case reserves, IBNR, and the total including actuarial present value adjustments against accident year earned premium. The right chart shows the associated dollar amounts for the components of the claim liabilities and the current projected amount of 2019 full year earned premium (the red hash-mark line) to provide some perspective.



"M/\$" refers to "Member Statement" values – that is, actuarial present value adjustments at the selected discount rate.

The current actuarial present value adjustments balance (\$4.1 million – see table at the top of the next page) 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.

¹This 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>.

²Claim liabilities refer to provision for unpaid indemnity and allowed claims expenses. Allowed claims expenses are first party legal and other expenses as listed in the RSP Claims Guide. Claims expenses paid through the member company expense allowance are NOT included in this discussion.

claim liabilities (\$000s)

	amt	%
case	27,864	54.0%
ibnr	19,639	38.0%
M/S apv adjust.	4,120	8.0%
M/S total	51,623	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 80% of the IBNR balance relates to accident years 2018 and 2019 (see Exhibit B). Approximately 90% 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 immediately below summarize the premium liabilities and the total policy liabilities.

premium liabilities (\$000s)

	amt	%
unearned prem	15,421	94.0%
prem def/(dpac)	(46)	(0.3%)
M/S apv adjust.	1,032	6.3%
M/S total	16,407	100.0%

policy liabilities (\$000s)

	amt	%
claim	47,503	69.8%
premium	15,375	22.6%
M/S apv adjust.	5,152	7.6%
M/S total	68,030	100.0%

2 Activity During the Month of June 2019

2.1 Recorded Premium and Claims Activity

The table immediately below summarizes the extent to which premiums and claims amounts recorded during the month differ from projections reflected in the prior month's Operational Report³.

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

Table 01 Accident Year	Earned Premium		Paid Indemnity & Allowed Claims Expense		Case increase / (decrease)		Recorded increase / (decrease)	
	Actual	Actual less Projected	Actual	Actual less Projected	Actual	Actual less Projected	Actual	Actual less Projected
Prior	(0)	(0)	640	379	(346)	(130)	294	249
2017	(8)	(8)	153	(31)	(199)	(154)	(46)	(185)
2018	(41)	(41)	159	3	(180)	(379)	(21)	(376)
2019	2,400	(94)	759	(58)	454	168	1,213	110
TOTAL	2,351	(142)	1,711	293	(272)	(495)	1,440	(202)

(Recorded transaction amounts exclude IBNR & other actuarial provisions)

It is typically unusual to see actual earned premium transactions affecting accident years older than the first prior accident year, the changes in 2018 and prior accident years reflect activity undertaken by certain members to remove risks from the RSP, 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

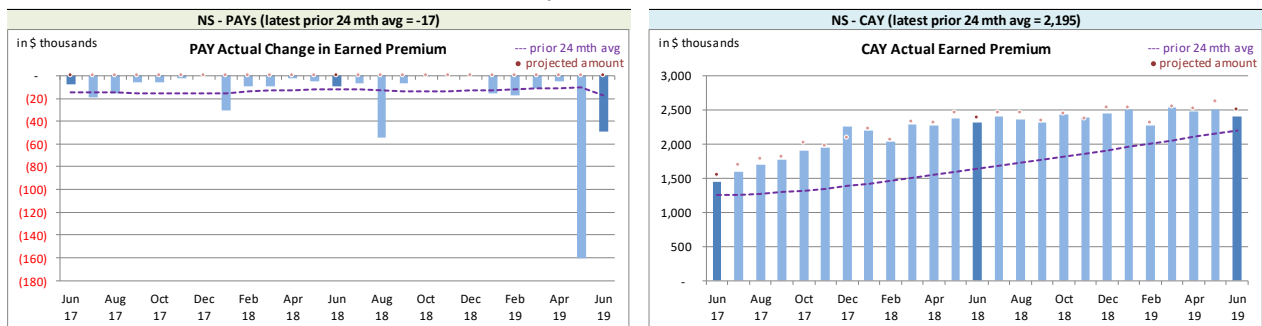
³There may be rounding differences in values in this document compared with the associated Bulletin and/or Operational Report.

our review is provided in the sub-sections that follow.

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

The charts immediately below show actual **earned premium**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.

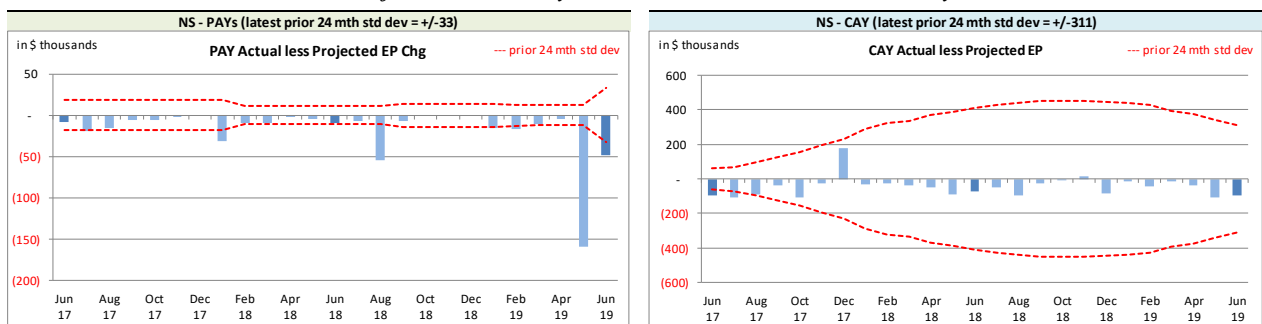
Nova Scotia RSP Actual **Earned Premium** by Calendar Month



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. As commented on earlier, this month’s variances are related to certain members’ activities in relation to recent audit findings.

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

Nova Scotia RSP Actual vs. Projected Summary: **Earned Premium** Variances by Calendar Month



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

On Latest \$ thousands		
Earned Premium	PAYs	CAY
Mthly Avg EP Chg (prior 24 mths)	(17)	2,195
std dev	33	311
A-P <> std dev	7	2
% <> std dev	28.0%	8.0%
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) bias⁵, with actuals generally lower than projected, although the magnitude is not high relative to monthly

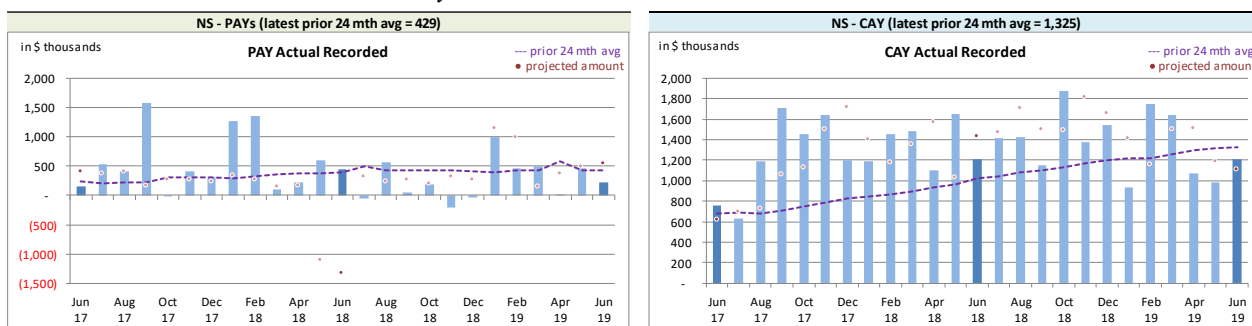
premium. In addition to the PAYs' bias, the CAY has also shown bias⁶, with actuals being generally lower than projected, and we have modified our projections processes in response. Over time, we may consider other projection approaches to narrow monthly variance levels further, but it is not currently 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 immediately below show actual **recorded** activity (**paid** and case reserve changes), in each of the most recent 25 calendar months, along with a "prior 24-month average" to show how each month's actual compares with the average amount of the preceding 24 calendar months.

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

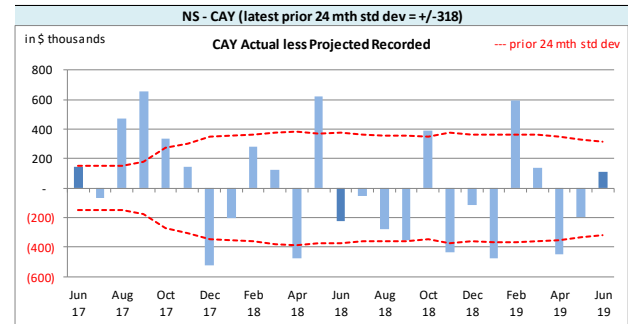
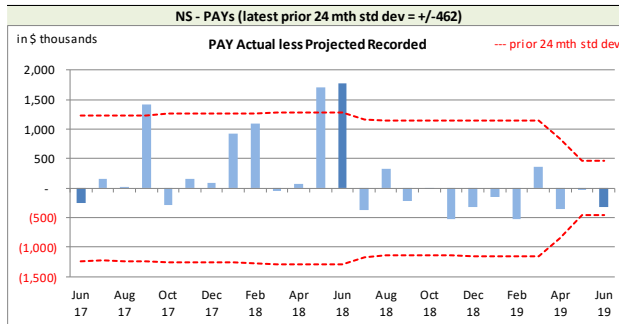


Recorded activity variances from the previous month's projections are shown in the charts at the top of the next page, including the "prior 24-month standard deviation" levels to show how the variances from projection compare with historical standard deviations.

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

⁶We measure bias based on a 95% confidence range for a binominal distribution with trials based on the range being considered (24 in this case) and 50% probability of success. The 24-month variances at June 2019 has only 2 months where the actuals were higher than projected, and as the 95% confidence range is 7 to 17, bias continues to be indicated.

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



On Latest \$ thousands			
	Recorded	PAYs	CAY
Mthly Avg Recorded (prior 24 mths)	429	1,325	
std dev	462	318	
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

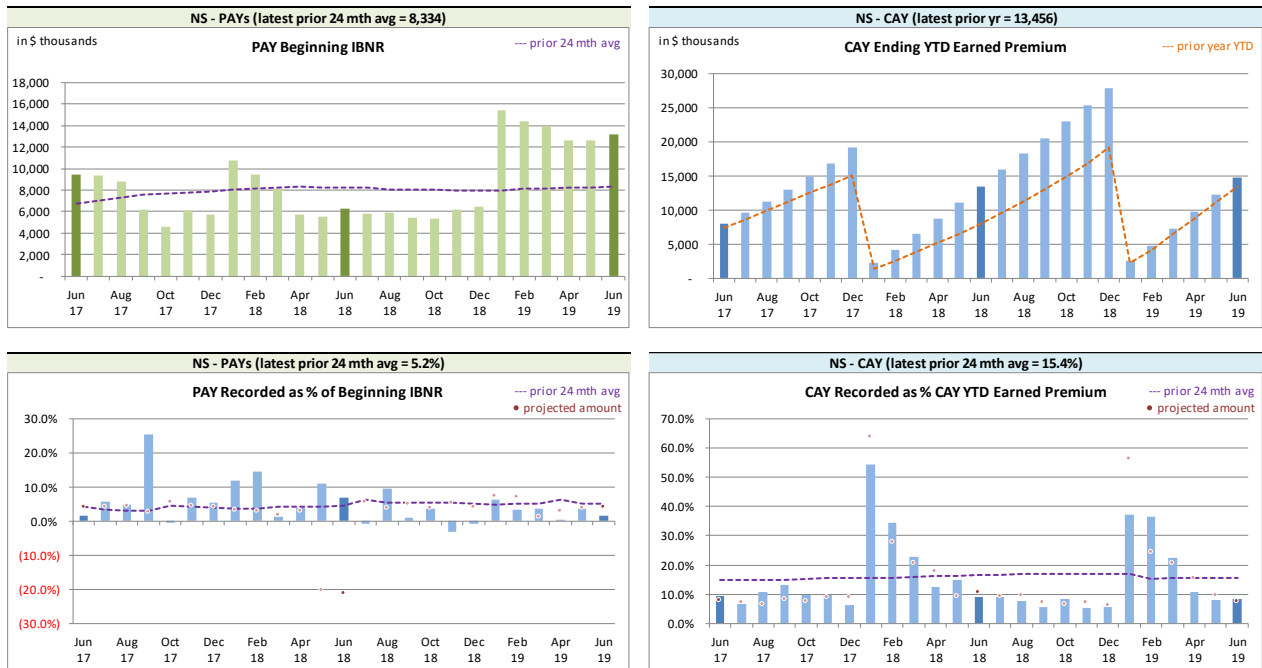
relative or overall terms. That said, 12% of prior accident years' (PAYs) **recorded** variances over the last 25 calendar months have fallen outside of one standard deviation of the actual **recorded** amounts (see table above), suggesting the projection process has performed better than simply projecting the prior 24-month average amount (assuming it follows a normal distribution). Bias has not been indicated at a 95% confidence level on a lagging 24-month basis, but on a lagging 12-month basis, bias is indicated (our projections tend to be too high and we are considering this for future projections).

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 lagging 24-month basis.

The method for establishing IBNR adjusts automatically for changes in **earned premium** and **recorded** claims activity level (see sections 2.2 and 3).

We have included, for reference, additional charts at the top of the next page related to levels influencing **recorded** activity. Note in particular the increase in the level of PAYs beginning IBNR. 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 influence⁷ Recorded activity by Calendar Month



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

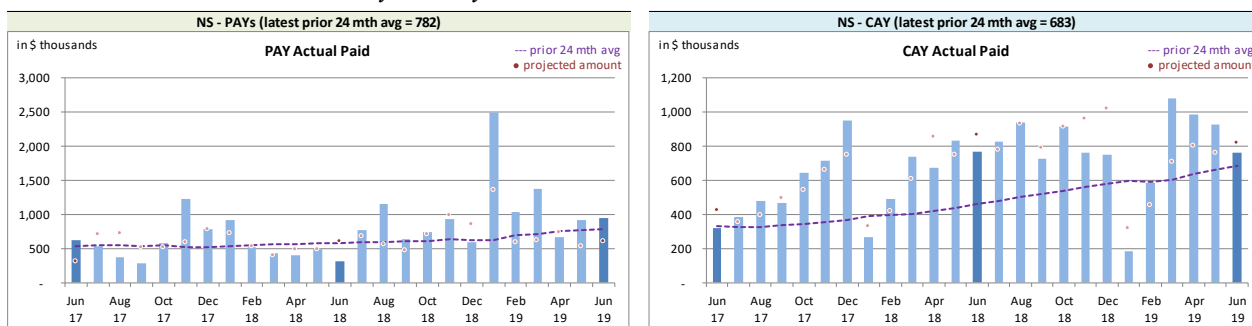
- to offset actual **recorded** activity (through loss ratio matching);
- the annual switchover as a current accident year becomes a prior accident year (occurs in January); and
- when a new valuation is implemented, where the valuation resulted in changes to the selection of prior accident years' ultimate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

2.1.c AvsP: Paid Indemnity & Allowed Claims Expense

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

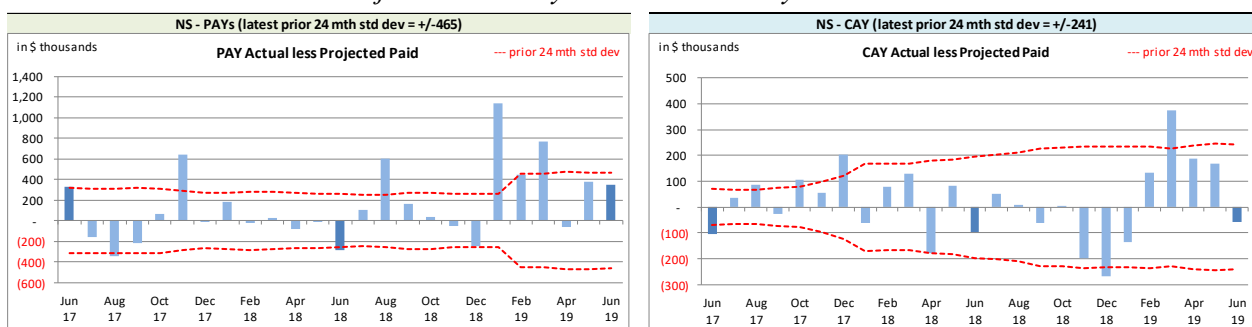
⁷Our recorded activity projections for the prior accident years are based on selected ratios of recorded activity to beginning unpaid balances, whereas the current accident year projections are based on selected ratios of year-to-date IBNR to year-to-date selected ultimate (i.e. selected LR x earned 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 charts immediately 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)		782	683
std dev		465	241
A-P <> std dev		7	6
% <> std dev		28.0%	24.0%
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 lagging 24-month basis.

The current accident year (CAY) **paid** variances fell outside of one standard deviation 24% 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 lagging 24-month basis.

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

Nova Scotia RSP Levels that influence⁸ **Paid** activity by Calendar Month



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

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

2.2 Actuarial Provisions

An “ultimate loss ratio matching method” (described in section 3) was used to determine the month's IBNR⁹, 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 at the top of the next page summarizes variances in provisions included in this month's Operational Report and the

⁸Our 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.

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

associated one-month projections from last month's Report.

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

Table 02

Accident Year	IBNR		actuarial present value adjustments				IBNR + actuarial present value adjustments	
			Discount Amount		Provisions for Adverse Deviations			
	Actual	Actual less Projected	Actual	Actual less Projected	Actual	Actual less Projected	Actual	Actual less Projected
Prior	517	(251)	(312)	9	1,522	(45)	1,727	(287)
2017	3,507	178	(299)	(1)	1,123	3	4,331	180
2018	8,857	337	(602)	1	1,932	(5)	10,187	333
2019	6,758	(202)	(432)	2	1,188	(3)	7,514	(203)
TOTAL	19,639	62	(1,645)	11	5,765	(50)	23,759	23

The IBNR provision is \$62 thousand higher than projected from last month, counterbalancing the recorded claims activity and adjusting for the earned premium variance impacts indicated in section 2.1.

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

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

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

The table at the top of the next page summarizes the variances in the provisions for premium deficiency liability / (deferred policy acquisition cost asset) included 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.

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:	(46)	2	1,032	(4)	986	(2)
balance as % unearned premium:	(0.3%)	-	6.7%	-	6.4%	-
actual unearned premium:	15,421					
less projected:	(60)					

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 loss¹⁰ 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 expenses¹¹, 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 99.4% rather than 97.7% (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).

¹¹Allowed 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	112	0.8%	621	4.3%	733	5.1%	(140)	(2.1%)
CAY	14,347	99.4%	756	5.2%	15,103	104.7%	2,468	0.1%
TOTAL	14,459	100.2%	1,377	9.5%	15,836	109.8%	2,328	(2.1%)

("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

 IBNR + M/S actuarial present
 value adjustments

 discount rate
 1.43%

 interest rate margin
 25 basis pts

Amounts in \$000s					
Accident Year	Actual May. 2019	Actual Jun. 2019	Projected Jul. 2019	Projected Aug. 2019	Projected Dec. 2019
2007	(1)	(1)	(1)	(1)	(1)
2008	2	2	2	2	2
2009	10	10	10	10	9
2010	4	4	4	4	4
2011	(23)	(23)	(23)	(23)	(20)
2012	61	101	98	98	90
2013	182	159	150	149	144
2014	98	26	22	22	31
2015	316	234	230	232	196
2016	1,435	1,215	1,179	1,145	1,008
2017	4,307	4,331	4,174	4,057	3,429
2018	10,221	10,187	9,859	9,577	8,462
2019	6,259	7,514	8,743	9,923	12,042
TOTAL	22,871	23,759	24,447	25,195	25,396
Change		888	688	748	

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

EXHIBIT B
IBNR
TABLE EXHIBIT B

TABLE EXHIBIT B		Amounts in \$000s					
IBNR	Ultimate Loss Ratio	Accident Year	Actual May. 2019	Actual Jun. 2019	Projected Jul. 2019	Projected Aug. 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	4
	73.4%	2010	4	4	4	4	4
	89.9%	2011	(32)	(32)	(32)	(32)	(28)
	102.8%	2012	(5)	35	35	35	30
	90.6%	2013	(11)	(30)	(30)	(30)	(26)
	85.0%	2014	(39)	(98)	(97)	(96)	(81)
	83.5%	2015	(42)	(104)	(100)	(91)	(76)
	91.2%	2016	932	736	711	690	592
	93.0%	2017	3,468	3,507	3,367	3,266	2,714
	96.3%	2018	8,875	8,857	8,556	8,299	7,271
	97.7%	2019	5,626	6,758	7,857	8,906	10,557
		TOTAL	18,782	19,639	20,277	20,957	20,962
	Change		857	638	680		

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

EXHIBIT C
Premium Liabilities
TABLE EXHIBIT C

	Amounts in \$000s				
	Actual May. 2019	Actual Jun. 2019	Projected Jul. 2019	Projected Aug. 2019	Projected Dec. 2019
Premium Liabilities					
(1) unearned premium (UP)	15,043	15,421	15,812	16,165	15,988
FOR MEMBER SHARING					
(2) expected future costs ratio {% of (1)}	106.3%	106.4%	106.5%	106.7%	107.6%
(3) expected future costs {(1) x (2)}	15,984	16,407	16,846	17,252	17,199
(4) premium deficiency / (deferred policy acquisition cost)	941	986	1,034	1,087	1,211
Excluding Actuarial Present Value Adjustments					
(5) expected future costs ratio {% of (1)}	99.6%	99.7%	99.8%	100.0%	100.8%
(6) expected future costs {(1) x (5)}	14,980	15,375	15,787	16,167	16,117
(7) premium deficiency / (deferred policy acquisition cost)	(63)	(46)	(25)	2	129

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 ending 2019		Projected Balances as at Dec. 31, 2019 (\$000s)							
Acc Yr	nominal values			actuarial present value adjustments (apvs)					
	Case	IBNR	Total Unpaid	discount	investment PfAD	nominal development PfAD	development PfAD discount	development PfAD	Total apvs
2007	-	(1)	(1)	-	-	-	-	-	(1)
2008	-	2	2	-	-	-	-	-	2
2009	61	4	65	(2)	-	7	-	7	70
2010	-	4	4	-	-	-	-	-	4
2011	138	(28)	110	(4)	1	11	-	11	118
2012	746	30	776	(19)	3	78	(2)	76	836
2013	2,184	(26)	2,158	(50)	9	216	(5)	211	2,328
2014	1,449	(81)	1,368	(27)	5	137	(3)	134	1,480
2015	2,779	(76)	2,703	(59)	11	327	(7)	320	2,975
2016	3,622	592	4,214	(110)	17	523	(14)	509	4,630
2017	5,147	2,714	7,861	(259)	47	959	(32)	927	8,576
2018	6,539	7,271	13,810	(539)	97	1,699	(66)	1,633	15,001
PAYs (sub-total):	22,665	10,405	33,070	(1,069)	190	3,957	(129)	3,828	36,019
CAY (2019)	8,797	10,557	19,354	(852)	135	2,303	(101)	2,202	20,839
claims liabilities:	31,462	20,962	52,424	(1,921)	325	6,260	(230)	6,030	56,858
	Unearned Premium	Premium Deficiency / (DPAC)	Total Provision	discount	investment PfAD	nominal development PfAD	development PfAD discount	development PfAD	Total apvs
									TOTAL*
premium liabilities:	15,988	129	16,117	(587)	95	1,634	(60)	1,574	17,199
*Total may not be sum of parts, as apvs apply to future costs within UPR									
policy liabilities:			68,541	(2,508)	420	7,894	(290)	7,604	74,057

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 (Mar. 31, 2019)

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%	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	12.5%	10.0%	12.0%	12.1%
2016	12.5%	10.0%	12.5%	12.4%
2017	12.5%	10.0%	9.4%	12.2%
2018	12.5%	10.0%	9.8%	12.3%
2019	12.4%	10.0%	5.7%	11.9%
2020	12.0%	10.0%	5.1%	10.3%
prem liab	12.0%	10.0%	5.1%	10.3%

discount rate: 1.43%
 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

AY	Actuarial Present Value of Provisions at Various Discount Rates - Dec. 31, 2019 projected Unpaid							
	0.43%	0.93%	1.43%	1.93%	2.43%	2.93%	1.93%	2.28%
2007	-	-	-	-	-	-	-	-
2008	-	-	-	-	-	-	-	-
2009	53	52	52	51	51	51	51	51
2010	-	-	-	-	-	-	-	-
2011	144	143	141	139	137	136	139	138
2012	611	606	601	596	591	586	596	592
2013	1,359	1,348	1,337	1,327	1,317	1,307	1,327	1,320
2014	1,026	1,019	1,012	1,005	998	992	1,005	1,000
2015	3,194	3,170	3,146	3,123	3,100	3,078	3,123	3,107
2016	5,273	5,224	5,176	5,129	5,082	5,037	5,129	5,096
2017	9,213	9,107	9,002	8,900	8,800	8,703	8,900	8,830
2018	15,931	15,709	15,494	15,285	15,078	14,879	15,285	15,139
2019	22,132	21,782	21,443	21,113	20,790	20,478	21,113	20,885
Total	58,936	58,160	57,404	56,668	55,944	55,247	56,668	56,158
	curr - 100 bp	curr - 50 bp	curr val assumption	curr + 50bp	curr + 100bp	curr + 150bp	prior val assumption	prior fyr end assumption

AY	Dollar Impact Relative to Valuation Assumption							
	0.43%	0.93%	1.43%	1.93%	2.43%	2.93%	1.93%	2.28%
Total	1,532	756	-	(736)	(1,460)	(2,157)	(736)	(1,246)
	curr - 100 bp	curr - 50 bp	curr val assumption	curr + 50bp	curr + 100bp	curr + 150bp	prior val assumption	prior fyr end assumption

AY	Percentage Impact Relative to Valuation Assumption							
	0.43%	0.93%	1.43%	1.93%	2.43%	2.93%	1.93%	2.28%
2007	-	-	-	-	-	-	-	-
2008	-	-	-	-	-	-	-	-
2009	1.9%	-	-	(1.9%)	(1.9%)	(1.9%)	(1.9%)	(1.9%)
2010	-	-	-	-	-	-	-	-
2011	2.1%	1.4%	-	(1.4%)	(2.8%)	(3.5%)	(1.4%)	(2.1%)
2012	1.7%	0.8%	-	(0.8%)	(1.7%)	(2.5%)	(0.8%)	(1.5%)
2013	1.6%	0.8%	-	(0.7%)	(1.5%)	(2.2%)	(0.7%)	(1.3%)
2014	1.4%	0.7%	-	(0.7%)	(1.4%)	(2.0%)	(0.7%)	(1.2%)
2015	1.5%	0.8%	-	(0.7%)	(1.5%)	(2.2%)	(0.7%)	(1.2%)
2016	1.9%	0.9%	-	(0.9%)	(1.8%)	(2.7%)	(0.9%)	(1.5%)
2017	2.3%	1.2%	-	(1.1%)	(2.2%)	(3.3%)	(1.1%)	(1.9%)
2018	2.8%	1.4%	-	(1.3%)	(2.7%)	(4.0%)	(1.3%)	(2.3%)
2019	3.2%	1.6%	-	(1.5%)	(3.0%)	(4.5%)	(1.5%)	(2.6%)
Total	2.7%	1.3%	-	(1.3%)	(2.5%)	(3.8%)	(1.3%)	(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

Page 1 of 2

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

RSP Nova Scotia
AccountCode Desc IBNR - Discounted

M/S IBNR - in \$000s

AccYear	Values				Sum of Total Change	Sum of % Total Change	Sum of Current Month Final Amount
	Sum of Prior Month Actual Amount	Sum of Projected Change	Sum of Change Due to AvsP Variances	Sum of Change Due to Valuation Implementation			
2007	(1)	-	-	-	-	-	(1)
2008	2	-	-	-	-	-	2
2009	10	-	-	-	-	-	10
2010	4	-	-	-	-	-	4
2011	(23)	-	-	-	-	-	(23)
2012	61	-	40	-	40	65.6%	101
2013	182	(3)	(20)	-	(23)	(12.6%)	159
2014	98	(2)	(70)	-	(72)	(73.5%)	26
2015	316	(7)	(75)	-	(82)	(25.9%)	234
2016	1,435	(58)	(162)	-	(220)	(15.3%)	1,215
2017	4,307	(156)	180	-	24	0.6%	4,331
2018	10,221	(367)	333	-	(34)	(0.3%)	10,187
2019	6,259	1,458	(203)	-	1,255	20.1%	7,514
Grand Total	22,871	865	23	-	888	3.9%	23,759

EXHIBIT G

Page 2 of 2

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

RSP Nova Scotia
AccountCode Desc IBNR - Undiscounted

IBNR - in \$000s

AccYear	Values				Sum of Total Change	Sum of % Total Change	Sum of Current Month Final Amount
	Sum of Prior Month Actual Amount	Sum of Projected Change	Sum of Change Due to AvsP Variances	Sum of Change Due to Valuation Implementation			
2007	(1)	-	-	-	-	-	(1)
2008	2	-	-	-	-	-	2
2009	5	-	-	-	-	-	5
2010	4	-	-	-	-	-	4
2011	(32)	-	-	-	-	-	(32)
2012	(5)	-	40	-	40	(800.0%)	35
2013	(11)	-	(19)	-	(19)	172.7%	(30)
2014	(39)	-	(59)	-	(59)	151.3%	(98)
2015	(42)	2	(64)	-	(62)	147.6%	(104)
2016	932	(47)	(149)	-	(196)	(21.0%)	736
2017	3,468	(139)	178	-	39	1.1%	3,507
2018	8,875	(355)	337	-	(18)	(0.2%)	8,857
2019	5,626	1,334	(202)	-	1,132	20.1%	6,758
Grand Total	18,782	795	62	-	857	4.6%	19,639