NOVA SCOTIA RISK SHARING POOL

FEBRUARY 2019 OPERATIONAL REPORT

ACTUARIAL HIGHLIGHTS

Related Bulletin: F19-024 Nova Scotia RSP February 2019 Operational Report

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ACTUARIAL HIGHLIGHTS

RSP NOVA SCOTIA

OPERATIONAL REPORT

FEBRUARY 2019

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1 Summary

1.1 Valuation Schedule (Fiscal Year 2019)

The February 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 decreased 0.7 points to 92.9%; discount rate increased by 42 basis points; no change to selected margins for adverse deviations
Dec. 31, 2018		Mar. 2019	update valuation:
Mar. 31, 2019		May 2019	update valuation (roll forward)
Jun. 30, 2019		Aug. 2019	update valuation
Sep. 30, 2019		Oct. 2019	update valuation (roll forward)

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

1.2 Appointed Actuary and Hybrid Actuarial Services Model

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

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

1.3 Consideration of Recent Legal Decisions and Changes in Legislation / Regulation[1]

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

Consideration and assessment of potential impacts of legal decisions and changes in legislation /

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

regulation constitutes a regular part of the valuation process. Descriptions of some of the more recent changes are provided below.

The **Supreme Court of Canada** rendered its judgment on **Saadati v Moorhead** (**2017 SCC 28**, **rendered on June 2, 2017**). Saadati was involved in a collision in July of 2005 in British Columbia and sued the at-fault driver for damages. According to the Supreme Court decision, "*The trial judge found that the ... accident caused S[aadati] psychological injuries, including personality change and cognitive difficulties. ...and awarded S[aadati] $100,000 for non-pecuniary damages*." The trial decision was appealed to the BC Court of Appeal where the trial's $100,000 non-pecuniary award was dismissed. The Supreme Court upheld the $100,000 non-pecuniary award, determining:

- "*A finding of legally compensable mental injury need not rest, in whole or in part, on the claimant proving a recognized psychiatric injury.*"

- "*...a trier of fact adjudicating a claim of mental injury is not concerned with diagnosis, but with symptoms and their effects.*"

- "*Expert evidence can assist in determining whether or not a mental injury has been shown, but where psychiatric diagnosis is unavailable, it remains open to a trier of fact to find on other evidence adduced by the claimant that he or she has proven on a balance of probabilities the occurrence of mental injury.*"

At the current time, no adjustments have been made to our valuation estimates or views based on the judgment as rendered, and at this point we do not believe this judgment will have a further impact on our valuation results.

The **Nova Scotia Court of Appeal** confirmed, in a unanimous decision released on **January 18, 2019** in relation to **Sparks v Holland** (**2019 NSCA 3**), that future Canada Pension Plan (CPP) disability benefits are deductible from future income loss awards in motor-vehicle accident claims in that province. Sparks sustained injuries as a result of a motor vehicle accident in Nova Scotia and sought damages for personal injuries and loss of income. The decision supported an earlier decision (Tibbets v Murphy, 2017 NSCA 35) that both past and future CPP disability benefits are deductible under section 133A of the Insurance Act. At the current time, no adjustments have been made to our valuation estimates as a result of this decision.

1.4 Current Provision Summary

The charts at the top of the next page show the current levels of claim liabilities[2] booked by accident year. The left chart displays life-to-date payments, case reserves, IBNR, and the total including actuarial present value adjustments against accident year earned premium. The right chart shows the associated dollar amounts for the components of the claim liabilities and the current projected amount of 2019 full year earned premium (the red hash-mark line) to provide some perspective.

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[2]Claim liabilities refer to provision for unpaid indemnity and allowed claims expenses. Allowed claims expenses are first party legal and other expenses as listed in the RSP Claims Guide. Claims expenses paid through the member company expense allowance are NOT included in this discussion.
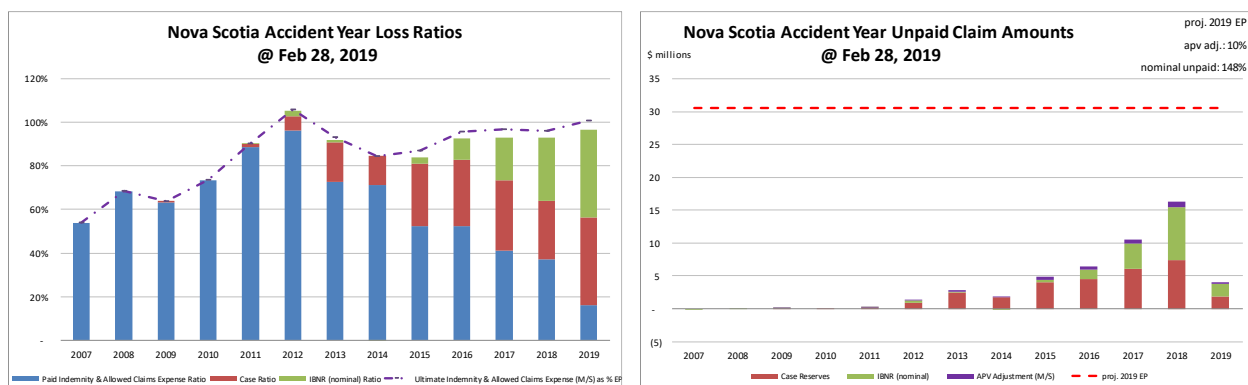
"M/S" refers to "Member Statement" values – that is, actuarial present value adjustments at the selected discount rate.

The current actuarial present value adjustments balance ($3.0 million – see table immediately below) represents 10% of the earned premium projected for the full year 2019 (see the upper right corner of the right chart above). If our current estimates of the nominal unpaid amounts prove to match actual claims payments, the actuarial present value adjustments will be released into the net operating result over future periods.

claim liabilities ($000s)

	amt	%
case	29,413	60.9%
ibnr	15,872	32.9%
M/S apv adjust.	3,022	6.3%
M/S total	48,307	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 63% of the IBNR balance relates to accident years 2018 and 2019 (see Exhibit B). Approximately 87% 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 0.5% 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	14,585	97.3%
prem def/(dpac)	(268)	(1.8%)
M/S apv adjust.	670	4.5%
M/S total	14,987	100.0%

policy liabilities ($000s)

	amt	%
claim	45,285	71.5%
premium	14,317	22.6%
M/S apv adjust.	3,692	5.8%
M/S total	63,294	100.0%

2   Activity During the Month of February 2019

2.1   Recorded Premium and Claims Activity

The table at the top of the next page summarizes the extent to which premiums and claims amounts recorded during the month differ from projections reflected in the prior month's Operational Report[3].

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

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

| Table 01	Earned Premium		Paid Indemnity & Allowed Claims Expense		Case increase / (decrease)		Recorded increase / (decrease)	
Accident Year	Actual	Actual less Projected	Actual	Actual less Projected	Actual	Actual less Projected	Actual	Actual less Projected
Prior	-	-	259	95	(22)	(10)	236	84
2017	0	0	99	(1)	91	(85)	190	(86)
2018	(17)	(17)	675	352	(639)	(880)	36	(528)
2019	2,264	(42)	585	135	1,162	458	1,747	593
TOTAL	2,247	(59)	1,618	581	591	(518)	2,209	63

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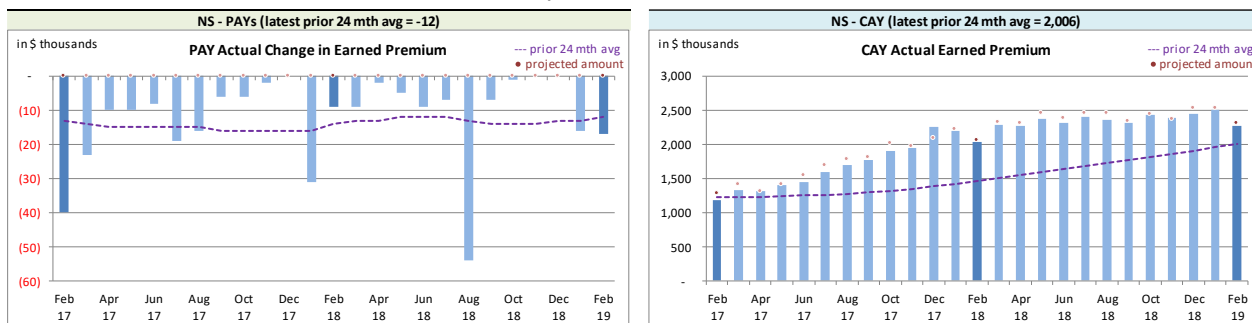
Earned premium changes during a given calendar month in relation to prior accident years tend to be at modest levels, although relatively high levels generally occur at the beginning of each year.

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

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

Nova Scotia RSP Actual vs. Projected Summary: ***Earned Premium*** *Variances by Calendar Month*
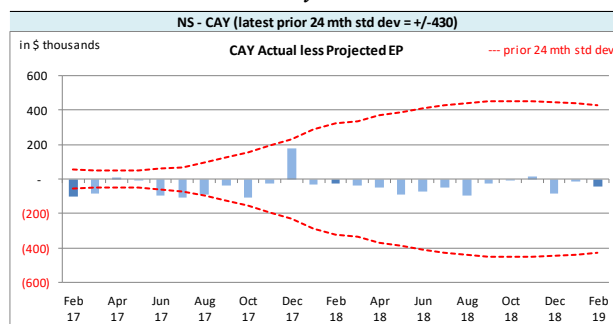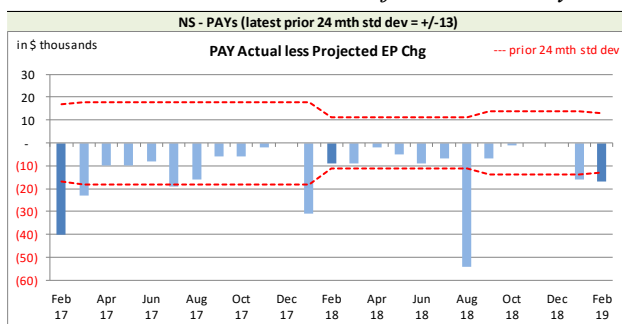
On Latest $ thousands		
Earned Premium	PAYs	CAY
Mthly Avg EP Chg (prior 24 mths)	(12)	2,006
std dev	13	430
A-P <> std dev	7	4
% <> std dev	28.0%	16.0%
norm <> std dev	31.7%	31.7%

We project **earned premium** changes from known unearned premium and projected written premium levels, but upload the total projections as current accident year (CAY). This process has generated prior accident years' (PAYs) bias[5], with actuals generally lower than projected, although the magnitude is not high relative to monthly premium. In addition to the PAYs' bias, the CAY has also shown bias[6], with actuals being generally lower than projected, and we have modified our projections processes in response. Over time, we may consider other projection approaches to narrow monthly variance levels further, but it is not currently deemed a priority.

Readers will note the significant widening of the CAY standard deviation band, reflecting volume increases and the impact as those increases are earned.

2.1.b   AvsP: Recorded Indemnity & Allowed Claims Expense

The charts 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.
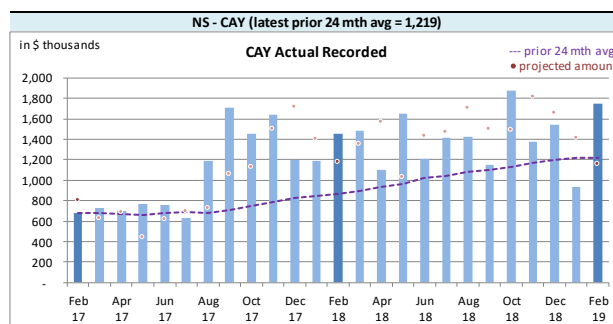
*Nova Scotia RSP Actual **Recorded** by Calendar Month*
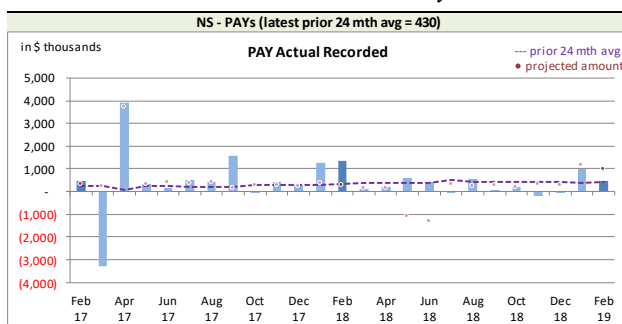
Recorded activity variances from the previous month's projections are shown in the charts

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

[6]We measure bias based on a 95% confidence range for a binominal distribution with trials based on the range being considered (24 in this case) and 50% probability of success. The 24-month variances at February 2019 has only 3 months where the actuals were higher than projected, and as the 95% confidence range is 7 to 17, bias continues to be indicated.

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: **Recorded** Variances by Calendar Month*
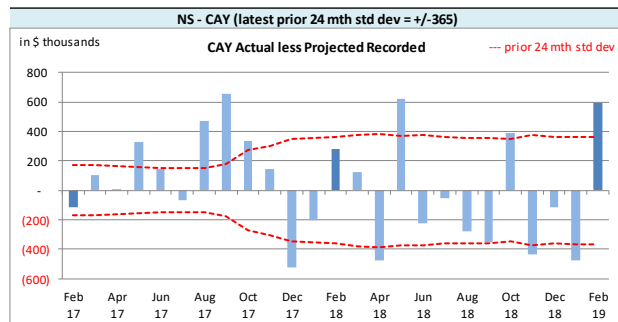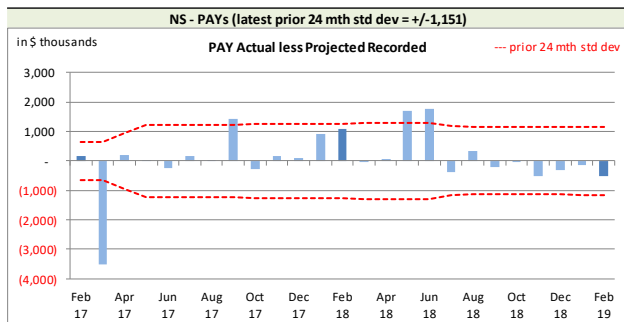
On Latest $ thousands		
Recorded	PAYs	CAY
Mthly Avg Recorded (prior 24 mths)	430	1,219
std dev	1,151	365
A-P <> std dev	4	11
% <> std dev	16.0%	44.0%
norm <> std dev	31.7%	31.7%

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. That said, 16% 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.

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. Bias has not been indicated at a 95% confidence level on a lagging 24-month basis.

The CAY **recorded** variance (see right chart above) was outside of one standard deviation. The activity was reviewed and confirmed, with the variance 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, 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 influence[7] **Recorded** activity by Calendar Month*
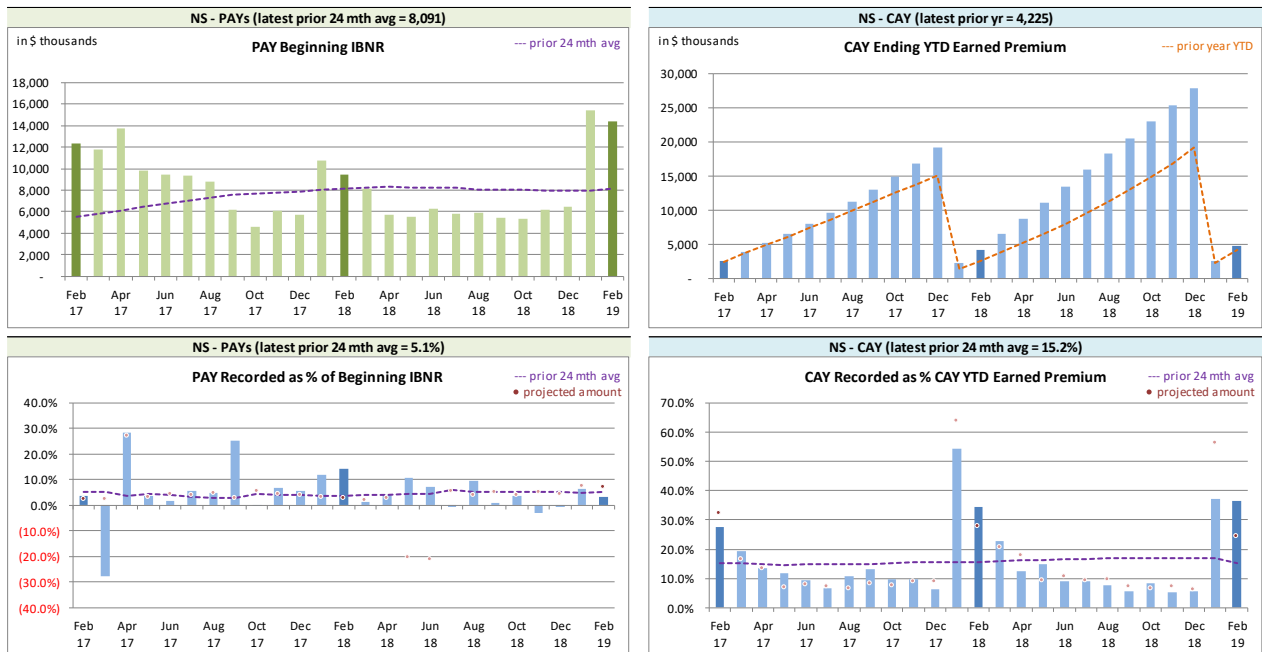
We track beginning prior accident years' IBNR as **recorded** activity "comes out of" IBNR. Changes in the prior accident years' beginning IBNR (see left chart above) occur for several possible reasons:

- 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.

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[7]Our recorded activity projections for the prior accident years are based on selected ratios of recorded activity to beginning unpaid balances, whereas the current accident year projections are based on selected ratios of year-to-date IBNR to year-to-date selected ultimate (i.e. selected LR x earned premium), deriving year-to-date recorded as selected ultimate less IBNR. In both cases, the ratio selection is based on our review of the more recent recorded activity and recent AvsP analyses.

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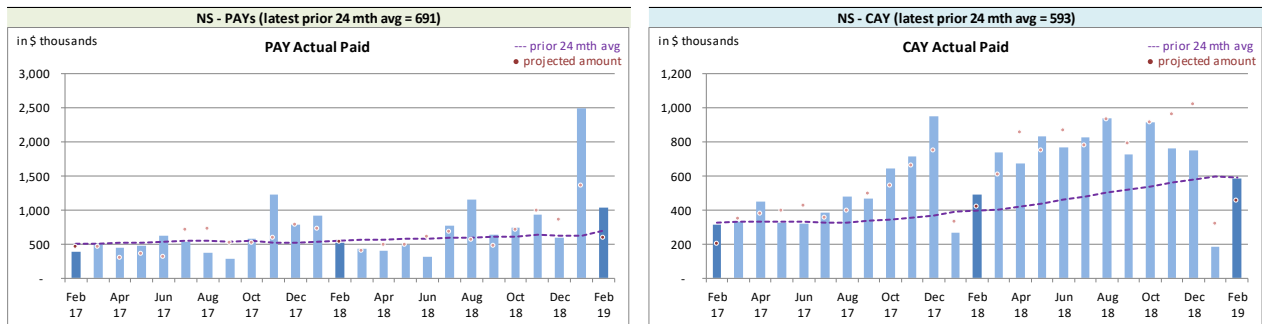
Paid activity variances from the previous month's projections are shown in the charts immediately below, including the "prior 24-month standard deviation" levels to show how the variances from projection compare with historical standard deviations.

*Nova Scotia RSP Actual vs Projected Summary: **Paid** Variances by Calendar Month*
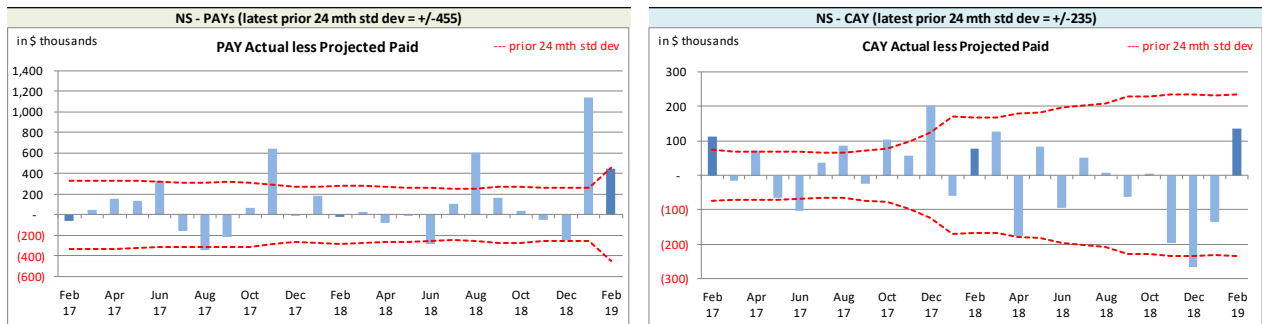
On Latest $ thousands		
Paid	PAYs	CAY
Mthly Avg Paid (prior 24 mths)	691	593
std dev	455	235
A-P <> std dev	6	7
% <> std dev	24.0%	28.0%
norm <> std dev	31.7%	31.7%

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. 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 table on left 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.

The current accident year (CAY) **paid** variances fell outside of one standard deviation 28% of the time over the last 25 calendar months (see table above), suggesting that the projection process has performed no better than simply projecting the prior 24-month average amount. No bias has been indicated at a 95% confidence level on a lagging 24-month basis.

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 influence[8] **Paid** activity by Calendar Month*

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

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

- the annual switchover as a current accident year becomes a prior accident year (occurs in January); and

- when a new valuation is implemented, where the valuation resulted in changes to the selection of prior accident years' ultimate (will show up as a beginning unpaid balance change one month after the valuation is implemented, i.e. the change will generally show in April, June, September, and November).

2.2 Actuarial Provisions

An "ultimate loss ratio matching method" (described in section 3) was used to determine the month's IBNR[9], and factors were applied to the nominal unpaid claims liability (case plus IBNR) to determine the discount amount (shown as a negative value to indicate its impact of reducing the liability) and the Provisions for Adverse Deviations. The loss ratios and the factors used to determine the current month's provisions and projections were based on the applicable valuation. The table immediately below summarizes variances in provisions included in this month's Operational Report and the

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[8]Our paid projections for the prior accident years are based on selected ratios of paid to beginning unpaid balances, whereas the current accident year projections are based on selected ratios of year-to-date paid to year-to-date selected ultimate indemnity (i.e. selected LR x earned premium). In both cases, the ratio selection is based on our review of the more recent recorded activity and recent AvsP analyses.

[9]For 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			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	2,189	(85)	(591)	3	1,839	(12)	3,437	(94)
2017	3,755	86	(504)	-	1,193	-	4,444	86
2018	8,005	512	(957)	23	1,846	(44)	8,894	491
2019	1,923	(633)	(261)	12	457	(20)	2,119	(641)
TOTAL	15,872	(120)	(2,313)	38	5,335	(76)	18,894	(158)

The IBNR provision is $0.1 million lower than projected from last month, counterbalancing the recorded claims activity and adjusting for the earned premium variance impacts indicated in section 2.1.

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

(i)   the change projected last month;

(ii)   the additional change due to variances in earned premium (because we apply a loss ratio to earned premium in determining ultimate level) and/or recorded claims (as IBNR is calculated as ultimate less recorded) differences; and

(iii)   the additional change due to valuation implementation impacts (as applicable)

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

The table at the top of the next page summarizes the variances in the provisions for premium deficiency liability / (deferred policy acquisition cost asset) included this month's Operational Report and the one-month projections from last month's Report. This RSP is in a deferred policy acquisition cost asset position (shown as a negative value) prior to actuarial present value adjustments and in a premium deficiency position (shown as a positive value) after actuarial present value adjustments. Actuarial present value adjustments increase the liability value as the adjustments increase the expected future policy obligations (costs) associated with the unearned premium. The variances noted are mainly driven by the unearned premium variance.

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:	(268)	6	670	(14)	402	(8)
balance as % unearned premium:	(1.8%)	-	4.6%	-	2.8%	-
actual unearned premium:	14,585					
less projected:	(322)					

3   Ultimate Loss Ratio Matching Method

An "ultimate loss ratio matching method" continues to be applied to the current month and two projected months shown in the Operational Reports, with IBNR determined by accident year as follows:

(a)   Earned premium to-date
(b)   Ultimate loss[10] ratio per latest valuation
(c)   Estimated ultimate incurred = (a) x (b)
(d)   Recorded indemnity & allowed claims expense to-date
(e)   IBNR = (c) – (d)

4   Calendar Year-to-Date Results

The table at the top of the next page summarizes the calendar year-to-date results for indemnity & allowed claims expenses[11], including IBNR.

In calculating the amounts as percentages of earned premium, the calendar year-to-date earned premium has been used, which includes not only the earned premium associated with the current accident year, but also earned premium adjustments related to prior accident years. Specifically, the current accident year (CAY) ratio in the table is 97.2% rather than 96.5% (the valuation ultimate ratio for accident year 2019), as the calendar year-to-date earned premium includes prior accident year earned premium adjustments. (Note that the ratios in this table may differ slightly from those shown in the Nova Scotia RSP Summary of Operations due to rounding.)

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[10]"Loss" here refers to indemnity and allowed claims expenses, but does not include the claims expense allowance included in member company overall expense allowances ("Expense Allowance" in the Operational Report).

[11]Allowed claims expenses are first party legal and other expenses as listed in the RSP Claims Guide. Claims expenses paid through the member company expense allowance are NOT included in this analysis.

Nova Scotia RSP Calendar Year-to-Date Indemnity & Allowed Claims Expense Summary ($ thousands)

Table 04	YTD Nominal Values		YTD actuarial present value adjustment		YTD Total		Change from Prior Month YTD	
	Amount	% EP	Amount	% EP	Amount	% EP	Amount	LR pts
PAYs	(31)	(0.7%)	83	1.8%	52	1.1%	(87)	(4.5%)
CAY	4,607	97.2%	196	4.1%	4,803	101.3%	2,266	(0.4%)
TOTAL	4,576	96.5%	279	5.9%	4,855	102.4%	2,179	(4.9%)

("% 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

TABLE EXHIBIT A	Amounts in $000s				
IBNR + M/S actuarial present value adjustments	Accident Year	Actual Jan. 2019	Actual Feb. 2019	Projected Mar. 2019	Projected Apr. 2019	Projected Dec. 2019
	2007	(1)	(1)	(1)	(1)	(1)
	2008	2	2	2	2	2
	2009	9	9	9	9	8
	2010	-	-	-	-	-
	2011	14	48	47	46	35
	2012	356	377	370	367	265
	2013	337	326	321	318	247
discount rate	2014	(48)	(50)	(47)	(47)	(8)
2.28%	2015	881	824	812	800	557
	2016	2,147	1,902	1,884	1,860	1,309
interest rate margin	2017	4,641	4,444	4,399	4,318	3,199
25 basis pts	2018	8,986	8,894	8,796	8,541	6,450
	2019	1,600	2,119	3,167	4,456	10,951
	TOTAL	18,924	18,894	19,759	20,669	23,014
	Change		(30)	865	910	

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 Jan. 2019	Actual Feb. 2019	Projected Mar. 2019	Projected Apr. 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	-	-	-	-		-
90.2%	2011	1	35	34	34		24
105.2%	2012	281	305	299	296		203
91.9%	2013	184	174	171	169		116
83.4%	2014	(166)	(167)	(164)	(162)		(110)
84.0%	2015	451	410	406	398		237
92.5%	2016	1,669	1,426	1,412	1,398		915
93.0%	2017	3,945	3,755	3,717	3,643		2,624
92.9%	2018	8,057	8,005	7,925	7,687		5,717
96.5%	2019	1,485	1,923	2,883	4,083		9,940
	TOTAL	15,913	15,872	16,689	17,552		19,671
	Change		(41)	817	863		

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

EXHIBIT C

Premium Liabilities

TABLE EXHIBIT C	Amounts in $000s				
	Actual	Actual	Projected	Projected	Projected
Premium Liabilities	Jan. 2019	Feb. 2019	Mar. 2019	Apr. 2019	Dec. 2019
(1) unearned premium (UP)	15,064	14,585	14,461	14,710	16,538
FOR MEMBER SHARING					
(2) expected future costs ratio {% of (1)}	102.7%	102.8%	102.9%	103.0%	105.8%
(3) expected future costs {(1) x (2)}	15,473	14,987	14,876	15,154	17,503
(4) premium deficiency / (deferred policy acquisition cost)	409	402	415	444	965
Excluding Actuarial Present Value Adjustments					
(5) expected future costs ratio {% of (1)}	98.1%	98.2%	98.3%	98.4%	101.1%
(6) expected future costs {(1) x (5)}	14,781	14,317	14,211	14,478	16,721
(7) premium deficiency / (deferred policy acquisition cost)	(283)	(268)	(250)	(232)	183

EXHIBIT D

Projected Year-end Policy Liabilities

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

Nova Scotia	Projected Balances as at Dec. 31, 2019 ($000s)									
ending 2019	**nominal values**			**actuarial present value adjustments (apvs)**						
Acc Yr	Case	IBNR	Total Unpaid	discount	investment PfAD	nominal development PfAD	development PfAD discount	development PfAD	Total apvs	TOTAL
2008	-	2	2	-	-	-	-	-	-	2
2009	57	4	61	(2)	-	6	-	6	4	65
2010	4	-	4	-	-	-	-	-	-	4
2011	146	24	170	(6)	1	17	(1)	16	11	181
2012	841	203	1,044	(43)	5	104	(4)	100	62	1,106
2013	2,165	116	2,281	(98)	11	228	(10)	218	131	2,412
2014	1,521	(110)	1,411	(38)	3	141	(4)	137	102	1,513
2015	3,193	237	3,430	(96)	10	418	(12)	406	320	3,750
2016	4,010	915	4,925	(207)	20	606	(25)	581	394	5,319
2017	5,610	2,624	8,234	(420)	41	1,005	(51)	954	575	8,809
2018	7,026	5,717	12,743	(790)	89	1,529	(95)	1,434	733	13,476
PAYs (sub-total):	24,573	9,731	34,304	(1,700)	180	4,054	(202)	3,852	2,332	36,636
CAY (2019)	9,941	9,940	19,881	(1,352)	139	2,386	(162)	2,224	1,011	20,892
claims liabilities:	34,514	19,671	54,185	(3,052)	319	6,440	(364)	6,076	3,343	57,528

	Unearned Premium	Premium Deficiency / (DPAC)	Total Provision	discount	investment PfAD	nominal development PfAD	development PfAD discount	development PfAD	Total apvs	TOTAL*
premium liabilities:	16,538	183	16,721	(889)	99	1,662	(90)	1,572	782	17,503

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

policy liabilities:			70,906	(3,941)	418	8,102	(454)	7,648	4,125	75,031

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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, 2018 from the valuation), followed by the selected discount rate and the associated margin for investment income.

| Accident Year | Selected Claims Development MfADs (Sep. 30, 2018) | | | |
| | 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	12.5%	10.0%	12.3%	12.2%
2016	12.5%	10.0%	12.5%	12.3%
2017	12.5%	10.0%	9.7%	12.2%
2018	12.4%	10.0%	5.8%	12.0%
2019	11.9%	10.0%	5.1%	10.1%
prem liab	11.9%	10.0%	5.1%	10.1%

discount rate: 2.28%
margin (basis points): 25

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EXHIBIT F

Interest Rate Sensitivity

The tables below present sensitivity to the member statement claims liability as projected to Dec. 31, 2018 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 (2.28%), the prior valuation assumption (1.86%) and the prior fiscal year end valuation assumption (1.73%) 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, 2018 projected Unpaid							
	1.28%	1.78%	2.28%	2.78%	3.28%	3.78%	1.86%	1.73%
2007	-	-	-	-	-	-	-	-
2008	-	-	-	-	-	-	-	-
2009	63	63	62	62	61	61	63	63
2010	4	4	4	4	4	4	4	4
2011	908	900	892	884	877	869	899	901
2012	1,834	1,817	1,800	1,783	1,767	1,751	1,814	1,818
2013	2,374	2,360	2,346	2,332	2,318	2,305	2,357	2,361
2014	1,808	1,797	1,786	1,775	1,764	1,753	1,795	1,798
2015	5,062	5,015	4,968	4,922	4,877	4,834	5,007	5,019
2016	7,189	7,108	7,027	6,949	6,873	6,798	7,095	7,116
2017	10,705	10,557	10,413	10,273	10,137	10,003	10,534	10,572
2018	18,241	17,964	17,694	17,430	17,176	16,927	17,921	17,992
Total	48,188	47,585	46,992	46,414	45,854	45,305	47,489	47,644
	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							
	1.28%	1.78%	2.28%	2.78%	3.28%	3.78%	1.86%	1.73%
Total	1,196	593	-	(578)	(1,138)	(1,687)	497	652
	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							
	1.28%	1.78%	2.28%	2.78%	3.28%	3.78%	1.86%	1.73%
2007	-	-	-	-	-	-	-	-
2008	-	-	-	-	-	-	-	-
2009	1.6%	1.6%	-	-	(1.6%)	(1.6%)	1.6%	1.6%
2010	-	-	-	-	-	-	-	-
2011	1.8%	0.9%	-	(0.9%)	(1.7%)	(2.6%)	0.8%	1.0%
2012	1.9%	0.9%	-	(0.9%)	(1.8%)	(2.7%)	0.8%	1.0%
2013	1.2%	0.6%	-	(0.6%)	(1.2%)	(1.7%)	0.5%	0.6%
2014	1.2%	0.6%	-	(0.6%)	(1.2%)	(1.8%)	0.5%	0.7%
2015	1.9%	0.9%	-	(0.9%)	(1.8%)	(2.7%)	0.8%	1.0%
2016	2.3%	1.2%	-	(1.1%)	(2.2%)	(3.3%)	1.0%	1.3%
2017	2.8%	1.4%	-	(1.3%)	(2.7%)	(3.9%)	1.2%	1.5%
2018	3.1%	1.5%	-	(1.5%)	(2.9%)	(4.3%)	1.3%	1.7%
Total	2.5%	1.3%	-	(1.2%)	(2.4%)	(3.6%)	1.1%	1.4%
	curr - 100 bp	curr - 50 bp	curr val assumption	curr + 50bp	curr + 100bp	curr + 150bp	prior val assumption	prior fyr end assumption

EXHIBIT G

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

RSP	Nova Scotia
AccountCode Desc	IBNR - Discounted

M/S IBNR - in $000s

AccYear	Values						
	Sum of Prior Month Actual Amount	Sum of Projected Change	Sum of Change Due to AvsP Variances	Sum of Change Due to Valuation Implementation	Sum of Total Change	Sum of % Total Change	Sum of Current Month Final Amount
2007	(1)	-	-	-	-	-	(1)
2008	2	-	-	-	-	-	2
2009	9	-	-	-	-	-	9
2010	-	-	-	-	-	-	-
2011	14	-	34	-	34	242.9%	48
2012	356	(4)	25	-	21	5.9%	377
2013	337	(3)	(8)	-	(11)	(3.3%)	326
2014	(48)	-	(2)	-	(2)	4.2%	(50)
2015	881	(37)	(20)	-	(57)	(6.5%)	824
2016	2,147	(122)	(123)	-	(245)	(11.4%)	1,902
2017	4,641	(283)	86	-	(197)	(4.2%)	4,444
2018	8,986	(583)	491	-	(92)	(1.0%)	8,894
2019	1,600	1,160	(641)	-	519	32.4%	2,119
Grand Total	**18,924**	**128**	**(158)**	**-**	**(30)**	**(0.2%)**	**18,894**

EXHIBIT G

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

RSP | Nova Scotia
AccountCode Desc | IBNR - Undiscounted

IBNR - in $000s

AccYear	Sum of Prior Month Actual Amount	Sum of Projected Change	Sum of Change Due to AvsP Variances	Sum of Change Due to Valuation Implementation	Sum of Total Change	Sum of % Total Change	Sum of Current Month Final Amount
2007	(1)	-	-	-	-	-	(1)
2008	2	-	-	-	-	-	2
2009	5	-	-	-	-	-	5
2010	-	-	-	-	-	-	-
2011	1	-	34	-	34	3,400.0%	35
2012	281	(3)	27	-	24	8.5%	305
2013	184	(2)	(8)	-	(10)	(5.4%)	174
2014	(166)	2	(3)	-	(1)	0.6%	(167)
2015	451	(32)	(9)	-	(41)	(9.1%)	410
2016	1,669	(117)	(126)	-	(243)	(14.6%)	1,426
2017	3,945	(276)	86	-	(190)	(4.8%)	3,755
2018	8,057	(564)	512	-	(52)	(0.6%)	8,005
2019	1,485	1,071	(633)	-	438	29.5%	1,923
Grand Total	**15,913**	**79**	**(120)**	**-**	**(41)**	**(0.3%)**	**15,872**