



NOVA SCOTIA RISK SHARING POOL

NOVEMBER 2016 OPERATIONAL REPORT

ACTUARIAL HIGHLIGHTS

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ACTUARIAL HIGHLIGHTS

RSP NOVA SCOTIA

OPERATIONAL REPORT

NOVEMBER 2016

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1 Summary

1.1 Valuation Schedule (Fiscal Year 2016)

The November 2016 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 2017.

NOVA SCOTIA RISK SHARING POOL FISCAL YEAR 2016 – SCHEDULE OF VALUATIONS			
Valuation Date	Discount Rate (per annum)	Operational Report	Description of Changes
Sep. 30, 2016 (completed)	0.51% mfad: 25 bp	Oct. 2016	updated valuation (roll forward): accident year 2016 loss ratio remained at 94.8%; discount rate decreased by 5 basis points; no change to selected margins for adverse deviations
Dec. 31, 2016		Mar. 2017	update valuation:
Mar. 31, 2017		May 2017	update valuation (roll forward):
Jun. 30, 2017		Aug. 2017	update valuation:
Sep. 30, 2017		Oct. 2017	update valuation (roll forward):

Under the proposed schedule for fiscal year 2017, the “off-half” valuation quarters ending March 31, 2017 and September 30, 2017 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

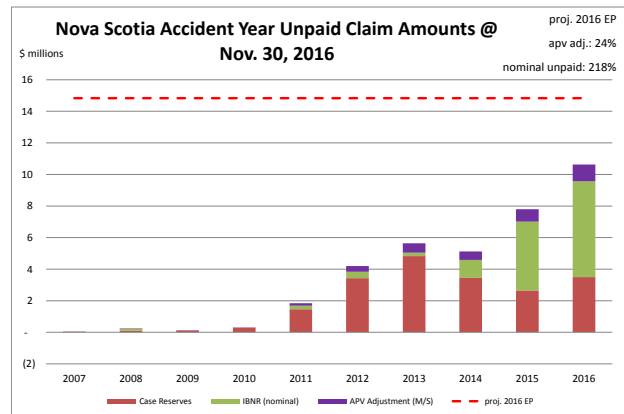
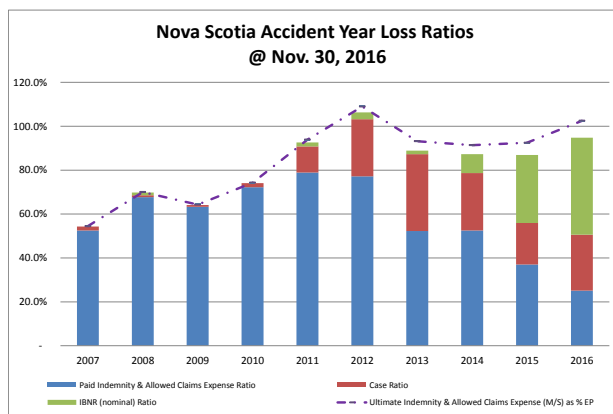
Consideration and assessment of potential impacts of legal decisions and changes in legislation / regulation constitutes a regular part of the valuation process. Descriptions of some of the more recent changes are provided below.

Nova Scotia Bill 86, known as the “**Fair Auto Insurance Reforms**” (FAIR) was introduced on November 9, 2011. FAIR was implemented in two phases. Regulations related to FAIR Phase I

(effective April 1, 2012) was published in the Royal Gazette Part 11, on January 13, 2012. These include provisions for enhanced mandatory benefits under Section B (these include medical, rehabilitation, funeral, death and loss of income benefits), prohibiting premium increases if no claim is made, assistance for volunteer Fire Departments, and periodic review of Auto Insurance Law. FAIR Phase II (effective April 1, 2013) includes provisions for diagnostic and treatment protocols for minor injuries, introduction of direct compensation for property damage, and limited liability and new priority of pay rules for rental companies. With the current valuation, reform adjustments (originally introduced with the June 30, 2014 valuation) were explicitly taken into account with the updated industry trend analysis (completed using industry data as at December 31, 2015), impacting the selection of ultimates.

1.4 Current Provision Summary

The charts immediately below show the current levels of claim liabilities¹ 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 2016 full 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 (\$3.5 million – see table immediately below) represents 24% of the earned premium projected for the full year 2016 (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	19,849	55.2%
ibnr	12,554	34.9%
M/S apv adjust.	3,547	9.9%
M/S total	35,950	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 pool is in case reserves. Approximately 83% of the IBNR balance relates to accident years 2015 and 2016

¹Claim 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.

(see Exhibit B). Approximately 93% of the M/S total claim liabilities are related to accident years 2012-2016 inclusive (i.e. the most recent 5 accident years) – this is a relatively high percentage, reflecting the relatively recent start time for this pool (2007).

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

premium liabilities (\$000s)			policy liabilities (\$000s)		
	amt	%		amt	%
unearned prem	8,432	92.2%	claim	32,403	71.9%
prem def/(dpac)	(97)	(1.1%)	premium	8,335	18.5%
M/S apv adjust.	807	8.8%	M/S apv adjust.	4,354	9.7%
M/S total	9,142	100.0%	M/S total	45,092	100.0%

2 Activity During the Month of November 2016

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 Report².

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

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	(2)	(2)	849	631	(761)	(615)	88	16
2014	(8)	(8)	48	(22)	(3)	(28)	45	(50)
2015	(15)	(15)	62	(44)	(62)	(393)	0	(437)
2016	1,228	(95)	322	(82)	373	(277)	695	(359)
TOTAL	1,203	(120)	1,280	483	(452)	(1,312)	828	(829)

(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” (this is particularly true where volumes are low). 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.

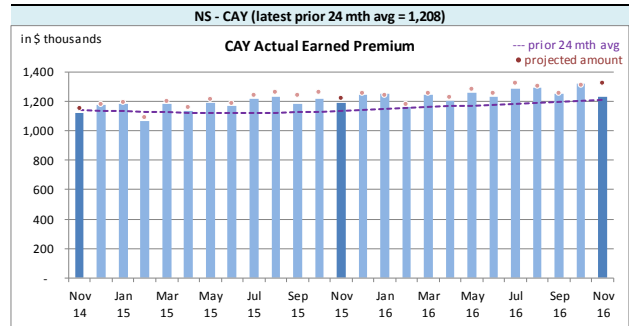
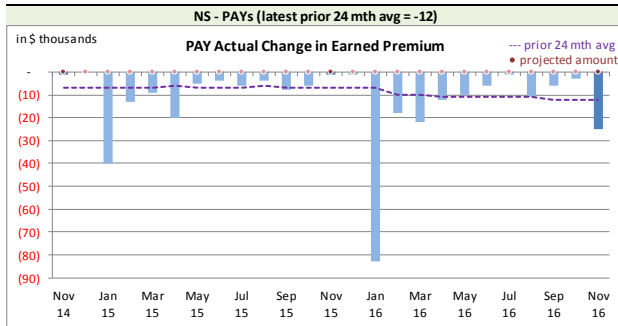
2.1.a Actual vs. Projected (AvsP): Earned Premium

The charts at the top of the next page show actual **earned premium**³ 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.

²There may be rounding differences in values in this document compared with the associated Bulletin and/or Operational Report.

³Premium 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.

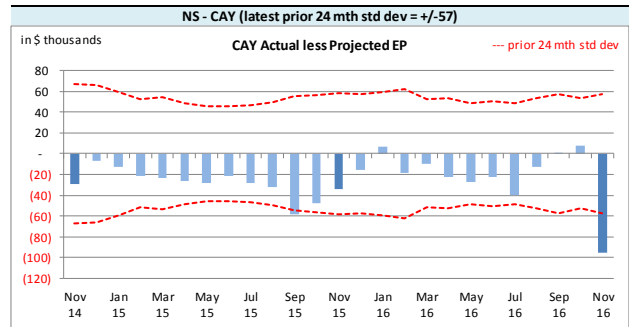
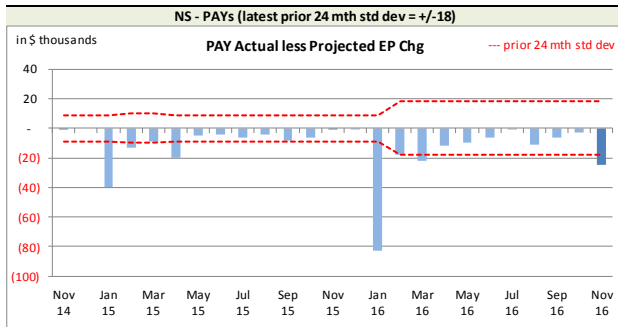
Nova Scotia RSP Actual Earned Premium by Calendar Month



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

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



On Latest \$ thousands		
Earned Premium	PAYs	CAY
Mthly Avg EP Chg (prior 24 mths)	(12)	1,208
std dev	18	57
A-P <> std dev	6	2
% <> std dev	24.0%	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' bias⁴, with actuals generally lower than projected. However, the magnitude is not high relative to monthly

premium, and the variances are within the prior 24-month standard deviation more often than indicated by a normal distribution (see table at bottom of previous page). In addition to the prior accident years' bias, the CAY has also shown bias, with actuals being generally lower than projected. Starting with the August 2016 projections, we have modified our projections processes in an attempt to account for CAY bias. Over time, we may consider other projection approaches to narrow

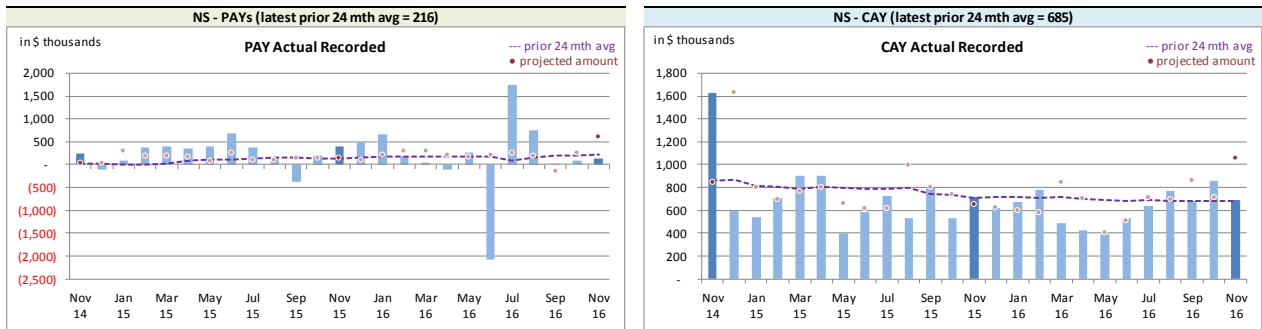
⁴The prior accident years (PAYs) variances will show bias as the projection upload forces all earned premium projections to be attributed to the current accident year.

monthly variance levels further, but it is not currently deemed a priority.

2.1.b AvsP: Recorded Indemnity & Allowed Claims Expense

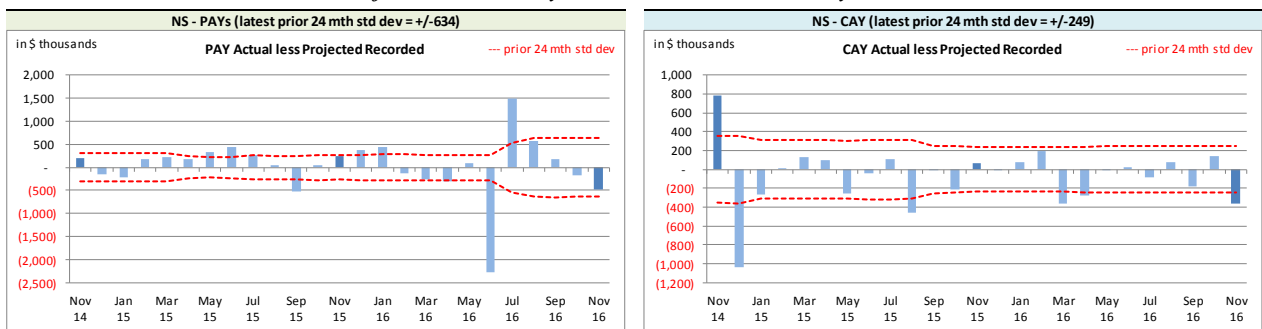
Actual **recorded** activity (**paid** and case reserve changes) over the last 25-month period are shown in the charts immediately below, including the “prior 24-month average” level.

Nova Scotia RSP Actual Recorded by Calendar Month



Recorded activity variances from the previous month’s projections are shown in the charts immediately below, including the “prior 24-month standard deviation” levels.

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



On Latest \$ thousands			
	Recorded	PAYS	CAY
Mthly Avg Recorded (prior 24 mths)	216	216	685
std dev	634	634	249
A-P <> std dev	9	9	6
% <> std dev	36.0%	36.0%	24.0%
norm <> std dev	31.7%	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, for prior accident years’ (PAYS) **recorded** variances (left chart above), the percentage of months (36%) with variances in excess of one standard deviation suggests the projection process performs slightly worse than simply projecting based on a 24-month average.

As noted for the past few months, a member is in the process of completing a comprehensive review of their open claims transactions as reported to the FA RSP system. Our review over the three months July-September 2016 noted that correcting transactions were posted to reverse claim closures (and associated case reserve takedowns) posted by this member during the prior month (June 2016). Our investigation and discussion with the member, in conjunction with review by the FA internal

audit team, continues to ensure our records are accurate in relation to their own records on their RSP claims portfolio.

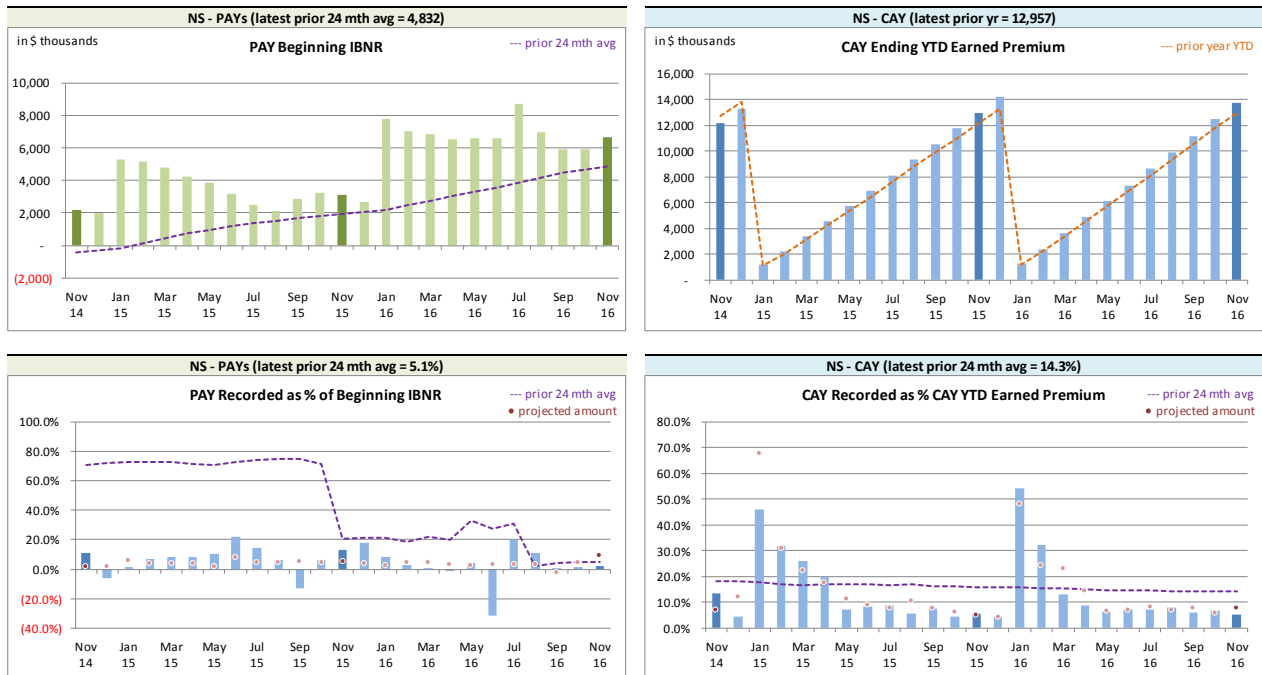
The current accident year (CAY) **recorded** variances (right chart at bottom of previous page), with 24% of months with variances in excess of a 24-month standard deviation suggests the projection process performs better than simply projecting based on a 24-month average. We do not see evidence of bias in the variances.

The CAY **recorded** variance for the current month was outside the one standard deviation band. 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 immediately below related to levels influencing **recorded** activity. Note in particular the increase in the level of PAY beginning IBNR. Part of this will be as a response to valuations and showing up as a beginning IBNR change one month after the valuation is implemented (i.e. April, June, September, and November), and part will also reflect the maturity level of the RSP.

Nova Scotia RSP Levels that influence⁵ 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);

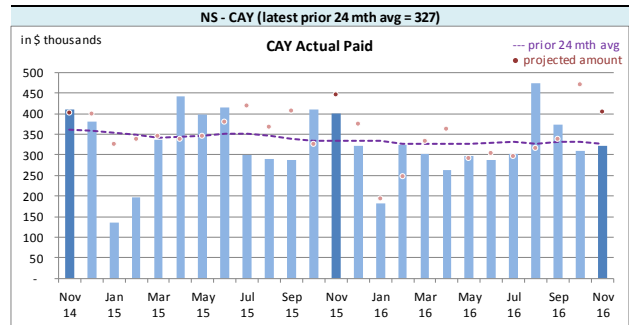
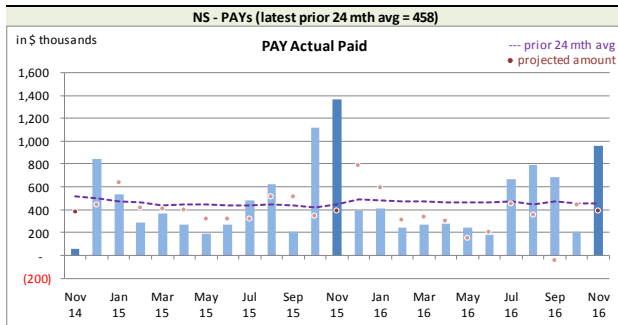
⁵Our recorded activity projections for the prior accident years are based on selected ratios of recorded activity to beginning unpaid balances, whereas the current accident year projections are based on selected ratios of year-to-date IBNR to year-to-date selected ultimate (i.e. selected LR x earned 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.

- 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

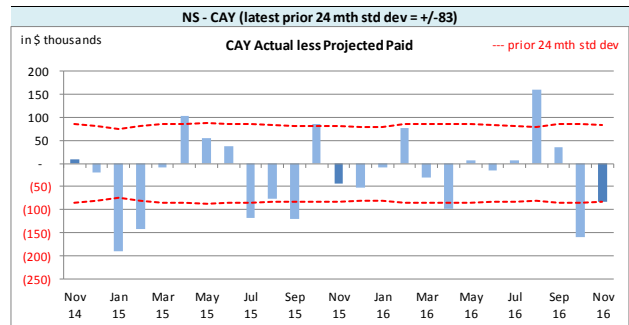
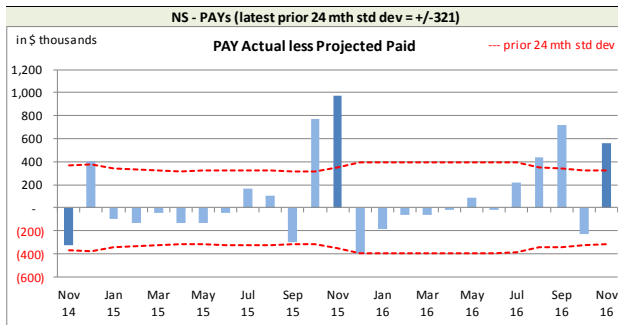
The charts immediately below show actual **paid** activity in each of the most recent 25 calendar months, along with a “prior 24-month average” to show how each month’s actual compares with the average amount of the preceding 24 calendar months.

Nova Scotia RSP Actual Paid by activity Calendar Month



The charts immediately below show the actual less projected **paid** variances for the last 25 calendar months, along with bands for the “prior 24-month standard deviations” 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)	458	458	327
std dev	321	321	83
A-P <> std dev	7	7	9
% <> std dev	28.0%	28.0%	36.0%
norm <> std dev	31.7%	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.

With 28% of months with prior accident years (PAYS) **paid** variances in excess of a prior 24-month

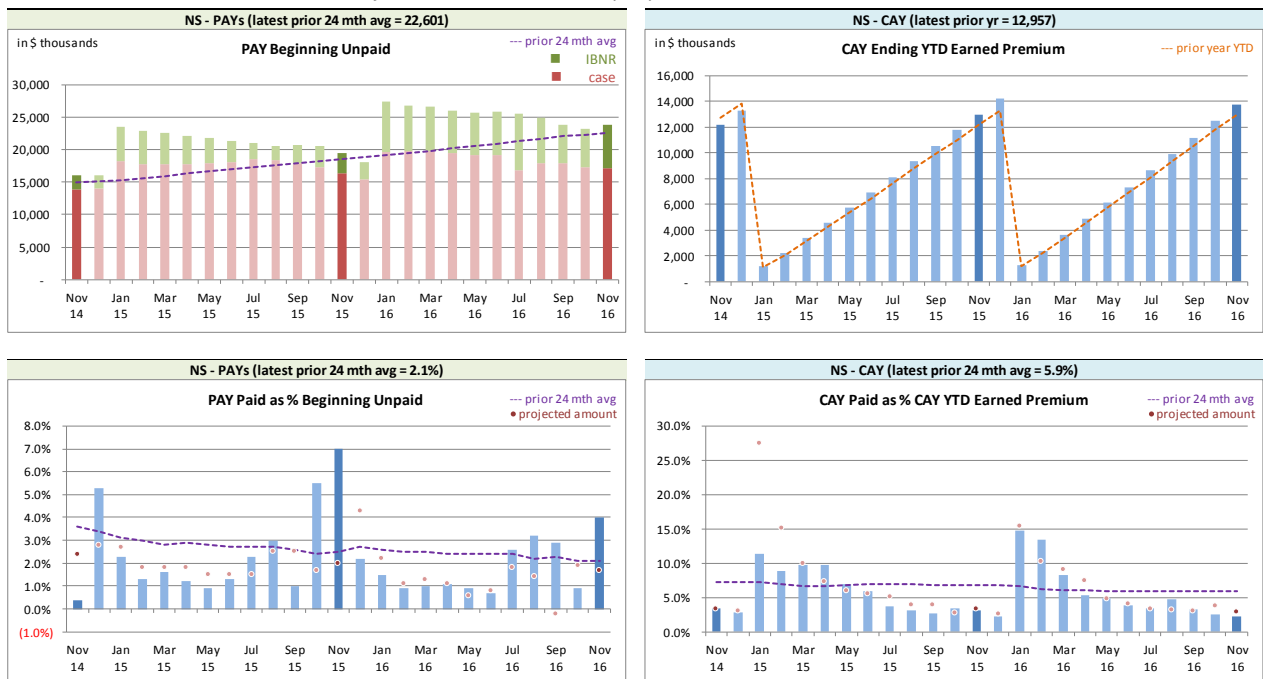
standard deviation (left chart at the bottom of the prior page), this suggests the projection process has performed not much better than one based simply on a 24-month average. We do not see evidence of bias in the projections.

This month’s PAY **paid** variance fell outside of the standard deviation band. Our investigation led to the conclusion that this was mainly due to a large payment for one Accident Year 2011 claim.

The current accident year (CAY) **paid** variances (right chart at the bottom of the previous page) do not appear to indicate bias. However, at 36%, the percentage of months with variances in excess of a prior 24-month standard deviation suggests the projection process performs worse than projections based simply on a 24-month average. We also note that actuals have been lower than projected for 11 of the last 17 months (and 4 of those months had a variance outside of a standard deviation). For these months, actuals have been lower than the corresponding months in the prior year, and we also note that the key ratio we use (**paid** to ytd **earned premium**) has also been “unusually” low. We continue to monitor and look for ways to improve projections.

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

Nova Scotia RSP Levels that influence⁶ 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:

⁶Our 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.

- 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 IBNR⁷, 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 the November 2016 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

Accident Year	IBNR		actuarial present value adjustments				IBNR + actuarial present value adjustments	
	Actual	Actual less Projected	Discount Amount		Provisions for Adverse Deviations		Actual	Actual less Projected
			Actual	Actual less Projected	Actual	Actual less Projected		
Prior	987	(19)	(126)	7	1,289	(64)	2,150	(76)
2014	1,137	43	(55)	-	590	3	1,672	46
2015	4,359	423	(105)	-	891	4	5,145	427
2016	6,071	269	(153)	-	1,216	-	7,134	269
TOTAL	12,554	716	(439)	7	3,986	(57)	16,101	666

The IBNR provision is \$0.7 million higher than projected last month, counterbalancing the recorded claims activity and adjusting for the earned premium variance impacts indicated in section 2.1, and due to the valuation implementation.

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.

⁷For ease of discussion, “IBNR” is used in place of “provisions for incurred but not recorded (IBNR) and development”.

The table below summarizes the variances in the provisions for premium deficiency liability / (deferred policy acquisition cost asset) included in the November 2016 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) before 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 expected future policy obligations (costs) associated with the unearned premium and cause the write down of the asset value and the creation of the liability. The variances indicated are mainly due to 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:	(97)	0	807	(91)	710	(91)
balance as % unearned premium:	(1.1%)	(0.1%)	9.6%	-	8.4%	(0.1%)
actual unearned premium:	8,432					
less projected:	(961)					

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 loss⁸ 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 expenses⁹, 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 96.2% rather than 94.8% (the valuation ultimate ratio for accident year 2016), as the calendar year-to-date earned premium includes prior accident

⁸“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).

⁹Allowed 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.

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.)

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	446	3.3%	(1,009)	(7.5%)	(563)	(4.2%)	(119)	(0.6%)
CAY	13,007	96.2%	1,063	7.9%	14,070	104.0%	1,258	-
TOTAL	13,453	99.5%	54	0.4%	13,507	99.9%	1,139	(0.5%)

(“% EP” based on 2016 calendar year-to-date earned premium; ratios may not total due to rounding)

The prior accident years (PAYs) changes from last month are due to the release of the actuarial present value adjustments with claims payments. The loss ratio change year-to-date 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, changes in the year-to-date total reflects the additional month’s exposure and regular changes to actuarial present value adjustments as the year ages.

5 Current Operational Report – Additional Exhibits

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

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

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

The ultimate loss ratios detailed in section 6, Exhibit B, refer to the estimates derived on the basis of various actuarial methodologies applied to the experience of the Nova Scotia Risk Sharing Pool for the purposes of the most recent quarterly valuation. As discussed in section 3, IBNR reflected in the current month’s Operational Report was derived as the difference between the estimated ultimate for the claims amount (i.e. earned premium x ultimate loss ratio) and the associated current recorded amounts (life-to-date payments plus current case reserves).

6 EXHIBITS

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

- EXHIBIT A IBNR for Member Sharing – includes Actuarial Present Value Adjustments
- EXHIBIT B IBNR
- EXHIBIT C Premium Liabilities
- EXHIBIT D Projected Year-end Policy Liabilities
- EXHIBIT E Discount Rate & Margins for Adverse Deviations
- EXHIBIT F Interest Rate Sensitivity
- EXHIBIT G Components of IBNR Change During Month

EXHIBIT A

IBNR for Member Sharing – includes Actuarial Present Value Adjustments

TABLE EXHIBIT A

		Amounts in \$000s				
IBNR + M/S actuarial present value adjustments	Accident Year	Actual Oct. 2016	Actual Nov. 2016	Projected Dec. 2016	Projected Jan. 2017	Projected Dec. 2017
	2007	5	5	5	5	5
	2008	155	154	150	148	123
	2009	19	19	18	18	17
	2010	27	20	20	20	18
discount rate	2011	237	379	363	360	303
0.51%	2012	847	766	730	719	609
	2013	1,031	807	778	767	668
interest rate margin	2014	1,730	1,672	1,558	1,533	1,262
25 basis pts	2015	5,168	5,145	4,646	4,540	3,402
	2016	6,571	7,134	7,806	7,510	4,270
	2017	-	-	-	715	6,304
	TOTAL	15,790	16,101	16,074	16,335	16,981
	Change		311	(27)	261	

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 Oct. 2016	Actual Nov. 2016	Projected Dec. 2016	Projected Jan. 2017	Projected Dec. 2017
	54.3%	2007	1	1	1	1	1
	69.8%	2008	133	132	129	126	103
	64.2%	2009	7	7	7	7	7
	74.1%	2010	2	(5)	(5)	(5)	(5)
	92.6%	2011	30	223	210	206	165
	106.3%	2012	464	410	381	373	300
	88.9%	2013	441	219	201	197	158
	87.3%	2014	1,189	1,137	1,035	1,014	812
	86.9%	2015	4,373	4,359	3,880	3,764	2,806
	94.8%	2016	5,602	6,071	6,643	6,377	3,587
	97.5%	2017	-	-	-	590	4,613
		TOTAL	12,242	12,554	12,482	12,650	12,547
		Change		312	(72)	168	

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

EXHIBIT C

Discount Rate & Margins for Adverse Deviations

TABLE EXHIBIT C

	Amounts in \$000s				
	Actual Oct. 2016	Actual Nov. 2016	Projected Dec. 2016	Projected Jan. 2017	Projected Dec. 2017
Premium Liabilities					
(1) unearned premium (UP)	8,843	8,432	8,530	8,708	15,097
FOR MEMBER SHARING					
(2) expected future costs ratio {% of (1)}	108.0%	108.4%	109.0%	108.9%	111.6%
(3) expected future costs {(1) x (2)}	9,552	9,142	9,294	9,481	16,848
(4) premium deficiency / (deferred policy acquisition cost)	709	710	764	773	1,751
Excluding Actuarial Present Value Adjustments					
(5) expected future costs ratio {% of (1)}	98.5%	98.9%	99.3%	99.3%	101.7%
(6) expected future costs {(1) x (5)}	8,711	8,335	8,474	8,644	15,360
(7) premium deficiency / (deferred policy acquisition cost)	(132)	(97)	(56)	(64)	263

EXHIBIT D

Projected Year-end Policy Liabilities

The table below presents the projected policy liabilities as at December 31, 2016, broken down by component.

Nova Scotia ending 2016		Projected Balances as at Dec. 31, 2016 (\$000s)							
		nominal values			actuarial present value adjustments (apvs)				TOTAL
Acc Yr	Case	IBNR	Total Unpaid	discount	investment PfAD	development PfAD	Total apvs	TOTAL	
2007	36	1	37	-	-	4	4	41	
2008	94	129	223	(1)	-	22	21	244	
2009	116	7	123	(1)	-	12	11	134	
2010	271	(5)	266	(3)	1	27	25	291	
2011	1,444	210	1,654	(18)	8	163	153	1,807	
2012	3,382	381	3,763	(45)	23	371	349	4,112	
2013	4,746	201	4,947	(54)	25	606	577	5,524	
2014	3,461	1,035	4,496	(54)	27	550	523	5,019	
2015	2,955	3,880	6,835	(103)	48	821	766	7,601	
PAYs (sub-total):	16,505	5,839	22,344	(279)	132	2,576	2,429	24,773	
CAY (2016)	3,820	6,643	10,463	(167)	84	1,246	1,163	11,626	
claims liabilities:	20,325	12,482	32,807	(446)	216	3,822	3,592	36,399	
	Unearned Premium	Premium Deficiency / (DPAC)	Total Provision	discount	investment PfAD	development PfAD	Total apvs	TOTAL*	
premium liabilities:	8,530	(56)	8,474	(116)	58	878	820	9,294	
*Total may not be sum of parts, as apvs apply to future costs within UPR									
policy liabilities:			41,281	(562)	274	4,700	4,412	45,693	

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, 2016 from the valuation), followed by the selected discount rate and the associated margin for investment income.

Accident Year	Selected Claims Development MfADs (Sep. 30, 2016)			Total
	Third Party Liability	Accident Benefits	Other Coverages	
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	12.5%	10.0%	11.5%	12.4%
2014	12.5%	10.0%	12.5%	12.4%
2015	12.5%	10.0%	8.9%	12.2%
2016	12.4%	10.0%	8.9%	12.1%
2017	12.5%	10.0%	12.5%	12.5%
prem liab	12.0%	10.0%	5.2%	10.7%

discount rate:	0.51%
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, 2016 from the latest valuation date (projections in exhibits A to D are to Dec. 31, 2016 and based on more up-to-date information). We have included both the current valuation selection (0.51%), the prior valuation assumption (0.56%) and the prior fiscal year end valuation assumption (0.70%) 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, 2016 projected Unpaid								
AY	0.01%	0.51%	1.01%	1.51%	2.01%	2.51%	0.56%	0.70%
2007	31	31	31	31	31	30	31	31
2008	202	201	200	199	198	197	201	201
2009	122	121	121	120	119	118	121	121
2010	282	280	278	275	273	270	280	279
2011	2,310	2,295	2,270	2,245	2,221	2,197	2,293	2,285
2012	3,958	3,932	3,888	3,845	3,803	3,762	3,928	3,916
2013	5,210	5,178	5,123	5,068	5,016	4,965	5,173	5,157
2014	5,073	5,039	4,979	4,921	4,865	4,810	5,033	5,016
2015	7,596	7,532	7,423	7,315	7,212	7,111	7,522	7,491
2016	11,090	10,988	10,813	10,641	10,476	10,316	10,970	10,921
Total	35,874	35,597	35,126	34,660	34,214	33,776	35,552	35,418
	curr - 50 bp	curr val assumption	curr + 50bp	curr + 100bp	curr + 150bp	curr + 200bp	prior val assumption	prior fyr end assumption

Dollar Impact Relative to Valuation Assumption								
AY	0.01%	0.51%	1.01%	1.51%	2.01%	2.51%	0.56%	0.70%
Total	277	-	(471)	(937)	(1,383)	(1,821)	(45)	(179)
	curr - 50 bp	curr val assumption	curr + 50bp	curr + 100bp	curr + 150bp	curr + 200bp	prior val assumption	prior fyr end assumption

Percentage Impact Relative to Valuation Assumption								
AY	0.01%	0.51%	1.01%	1.51%	2.01%	2.51%	0.56%	0.70%
2007	-	-	-	-	-	(3.2%)	-	-
2008	0.5%	-	(0.5%)	(1.0%)	(1.5%)	(2.0%)	-	-
2009	0.8%	-	-	(0.8%)	(1.7%)	(2.5%)	-	-
2010	0.7%	-	(0.7%)	(1.8%)	(2.5%)	(3.6%)	-	(0.4%)
2011	0.7%	-	(1.1%)	(2.2%)	(3.2%)	(4.3%)	(0.1%)	(0.4%)
2012	0.7%	-	(1.1%)	(2.2%)	(3.3%)	(4.3%)	(0.1%)	(0.4%)
2013	0.6%	-	(1.1%)	(2.1%)	(3.1%)	(4.1%)	(0.1%)	(0.4%)
2014	0.7%	-	(1.2%)	(2.3%)	(3.5%)	(4.5%)	(0.1%)	(0.5%)
2015	0.8%	-	(1.4%)	(2.9%)	(4.2%)	(5.6%)	(0.1%)	(0.5%)
2016	0.9%	-	(1.6%)	(3.2%)	(4.7%)	(6.1%)	(0.2%)	(0.6%)
Total	0.8%	-	(1.3%)	(2.6%)	(3.9%)	(5.1%)	(0.1%)	(0.5%)
	curr - 50 bp	curr val assumption	curr + 50bp	curr + 100bp	curr + 150bp	curr + 200bp	prior val assumption	prior fyr end assumption

6.1.a.1 EXHIBIT G

Page 1 of 2

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

RSP Nova Scotia
AccountCode Desc IBNR - Discour

M/S IBNR - in \$000s

AccYear	Values			Sum of Change Due to Valuation Implementation	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				
2007	5	-	-	-	-	-	5
2008	155	(4)	3	-	(1)	(0.6%)	154
2009	19	(1)	1	-	-	-	19
2010	27	-	(7)	-	(7)	(25.9%)	20
2011	237	(6)	148	-	142	59.9%	379
2012	847	(41)	(40)	-	(81)	(9.6%)	766
2013	1,031	(43)	(181)	-	(224)	(21.7%)	807
2014	1,730	(104)	46	-	(58)	(3.4%)	1,672
2015	5,168	(450)	427	-	(23)	(0.4%)	5,145
2016	6,571	294	269	-	563	8.6%	7,134
Grand Total	15,790	(355)	666	-	311	2.0%	16,101

6.1.a.2 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 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	133	(3)	2	-	(1)	(0.8%)	132
2009	7	-	-	-	-	-	7
2010	2	-	(7)	-	(7)	(350.0%)	(5)
2011	30	(2)	195	-	193	643.3%	223
2012	464	(32)	(22)	-	(54)	(11.6%)	410
2013	441	(35)	(187)	-	(222)	(50.3%)	219
2014	1,189	(95)	43	-	(52)	(4.4%)	1,137
2015	4,373	(437)	423	-	(14)	(0.3%)	4,359
2016	5,602	200	269	-	469	8.4%	6,071
Grand Total	12,242	(404)	716	-	312	2.5%	12,554