



NOVA SCOTIA RISK SHARING POOL

DECEMBER 2017 OPERATIONAL REPORT

ACTUARIAL HIGHLIGHTS

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ACTUARIAL HIGHLIGHTS

RSP NOVA SCOTIA

OPERATIONAL REPORT

DECEMBER 2017

TABLE OF CONTENTS

1	Summary.....	3
1.1	Valuation Schedule (Fiscal Year 2018).....	3
1.2	Appointed Actuary and Hybrid Actuarial Services Model.....	3
1.3	Consideration of Recent Legal Decisions and Changes in Legislation / Regulation	3
1.4	Current Provision Summary	4
2	Activity During the Month of December 2017	5
2.1	Recorded Premium and Claims Activity	5
2.1.a	Actual vs. Projected (AvsP): Earned Premium.....	6
2.1.b	AvsP: Recorded Indemnity & Allowed Claims Expense	7
2.1.c	AvsP: Paid Indemnity & Allowed Claims Expense	9
2.2	Actuarial Provisions.....	11
3	Ultimate Loss Ratio Matching Method.....	13
4	Calendar Year-to-Date Results.....	13
5	Current Operational Report – Additional Exhibits	14
6	EXHIBITS	14

1 Summary

1.1 Valuation Schedule (Fiscal Year 2018)

The December 2017 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 2018.

NOVA SCOTIA RISK SHARING POOL FISCAL YEAR 2018 – SCHEDULE OF VALUATIONS			
Valuation Date	Discount Rate (per annum)	Operational Report	Description of Changes
Sep. 30, 2017 (completed)	1.73% mfad: 25 bp	Oct. 2017	updated valuation (roll forward): accident year 2017 loss ratio increased 1.1 points to 93.2%; discount rate increased by 56 basis points; no change to selected margins for adverse deviations
Dec. 31, 2017		Mar. 2018	update valuation:
Mar. 31, 2018		May 2018	update valuation (roll forward):
Jun. 30, 2018		Aug. 2018	update valuation:
Sep. 30, 2018		Oct. 2018	update valuation (roll forward):

Under the proposed schedule for fiscal year 2018, the “off-half” valuation quarters ending March 31, 2018 and September 30, 2018 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. There have been no significant changes in these descriptions since last month’s Highlights.

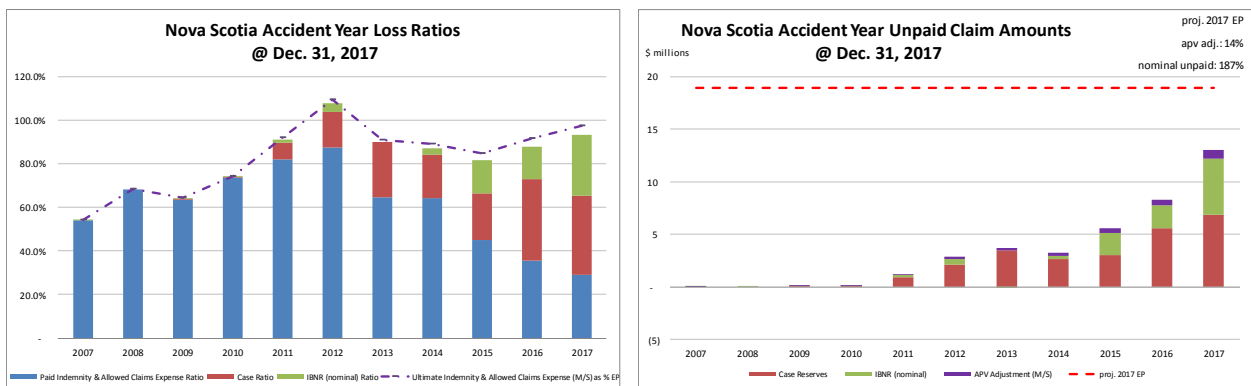
The **Supreme Court of Canada** rendered its judgment on **Saadati v Moorhead (2017 SCC 28, rendered on Jun 2, 2017)**. Saadati was involved in a collision in July of 2005 in British Columbia and sued the at-fault driver for damages. According to the Supreme Court decision, *“The trial judge found that 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, but we continue to review and consider the implications of the judgment.

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 2017 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 (\$2.5 million – see table at the top of the next page) represents 14% of the earned premium projected for the full year 2017 (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

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.

operating result over future periods.

claim liabilities (\$000s)	amt	%
case	24,765	65.0%
ibnr	10,755	28.2%
M/S apv adjust.	2,554	6.7%
M/S total	38,074	100.0%

The table to the left breaks down the Member Statement (M/S) claim liabilities total into component parts, showing that the largest component of the claim liabilities for this pool is case reserves. Approximately 70% of the IBNR balance relates to accident years 2016 and 2017 (see Exhibit B). Approximately 89% of the M/S

total claim liabilities are related to accident years 2013-2017 inclusive (i.e. the most recent 5 accident years).

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

premium liabilities (\$000s)			policy liabilities (\$000s)		
	amt	%		amt	%
unearned prem	14,221	100.3%	claim	35,520	68.0%
prem def/(dpac)	(832)	(5.9%)	premium	13,389	25.6%
M/S apv adjust.	794	5.6%	M/S apv adjust.	3,348	6.4%
M/S total	14,183	100.0%	M/S total	52,257	100.0%

2 Activity During the Month of December 2017

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	-	-	551	192	(417)	(69)	133	122
2015	(0)	(0)	116	(147)	(102)	(9)	14	(156)
2016	0	0	110	(47)	57	167	167	120
2017	2,256	177	951	204	244	(727)	1,195	(523)
TOTAL	2,256	177	1,729	203	(219)	(639)	1,509	(436)

(Recorded transaction amounts exclude IBNR & other actuarial provisions)

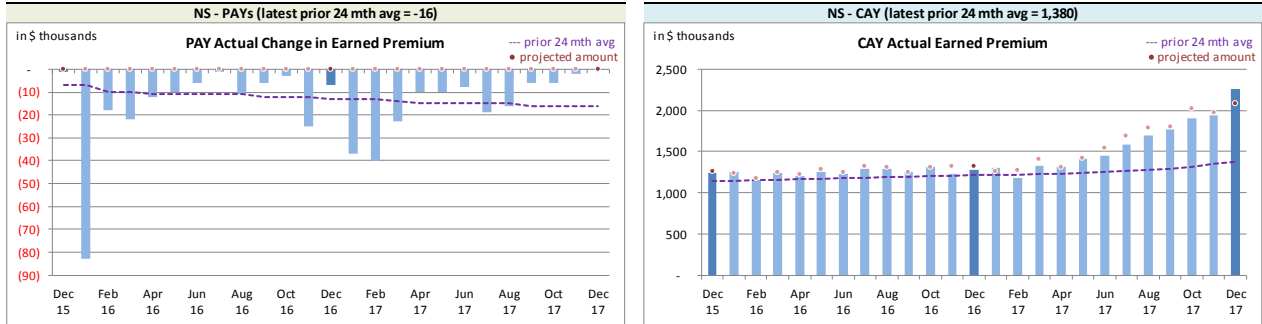
Claims transaction activity is generally volatile and changes from one month to the next are anticipated due to this natural "process variance" (i.e. random variation), and this is particularly true where volumes are low as found in this RSP. Each month, the projection variances are reviewed for signs 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.

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

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

The charts immediately below 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.

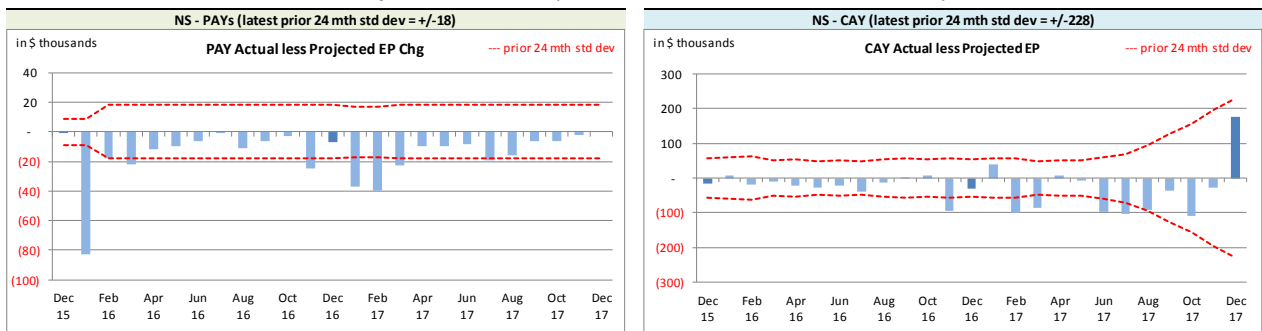
Nova Scotia RSP Actual Earned Premium by Calendar Month



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



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.

On Latest \$ thousands		
Earned Premium	PAYs	CAY
Mthly Avg EP Chg (prior 24 mths)	(16)	1,380
std dev	18	228
A-P <> std dev	7	5
% <> std dev	28.0%	20.0%
norm <> std dev	31.7%	31.7%

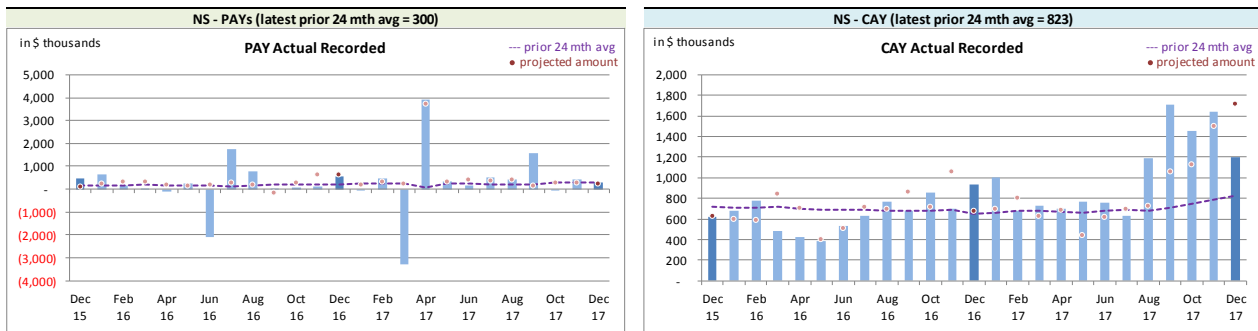
We project **earned premium** changes from known unearned premium and projected written premium levels, but upload the total projections as current accident year (CAY). This process has generated prior accident years’ (PAYs) bias⁴, with actuals generally lower than projected. However, the magnitude is not high relative to monthly

premium, and the variances are within the prior 24-month standard deviation slightly more often than indicated by a normal distribution (see left table above). In addition to the PAYs’ bias, the CAY has also shown bias, 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. Projection variances have also been exacerbated by written premium variances, where our projections, based on information provided by larger RSP users, have been proven to be too high (this month it was too low). Notwithstanding the projection misses, readers will also note the significant widening of the CAY standard deviation band, reflecting the recent and sustained 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.

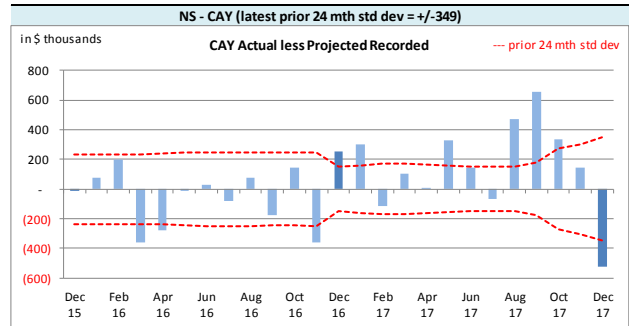
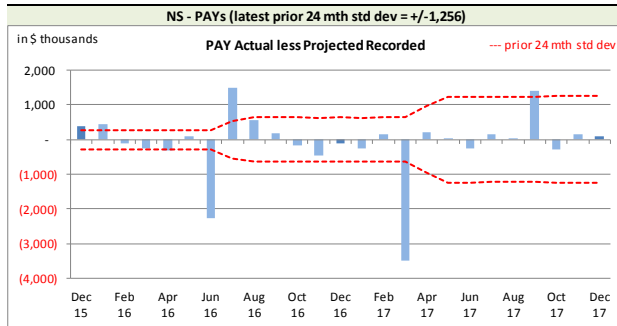
Nova Scotia RSP Actual Recorded by Calendar Month



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.

⁴The PAYs’ variances will show bias as the projection upload forces all earned premium projections to be attributed to the CAY.

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



On Latest \$ thousands			
	Recorded	PAYS	CAY
Mthly Avg Recorded (prior 24 mths)		300	823
std dev		1,256	349
A-P <> std dev		7	10
% <> std dev		28.0%	40.0%
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, for prior accident years’ (PAYS) **recorded** variances (left chart above), 28% of variances in excess of one standard deviation suggests the projection process has performed no better than simply projecting based on a 24-month average.

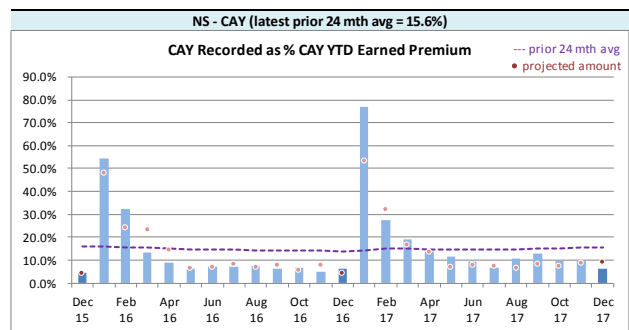
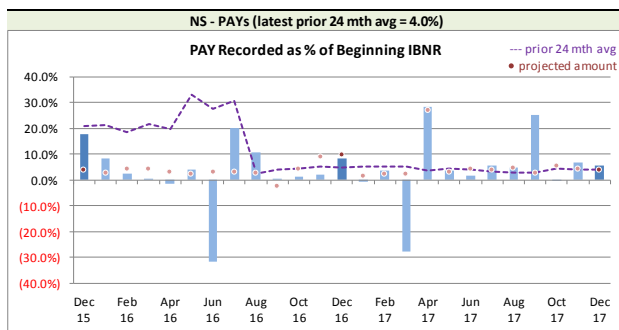
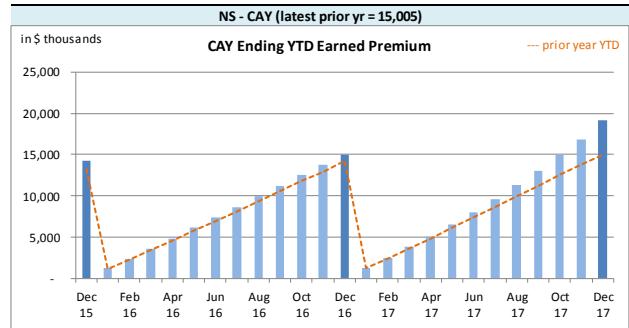
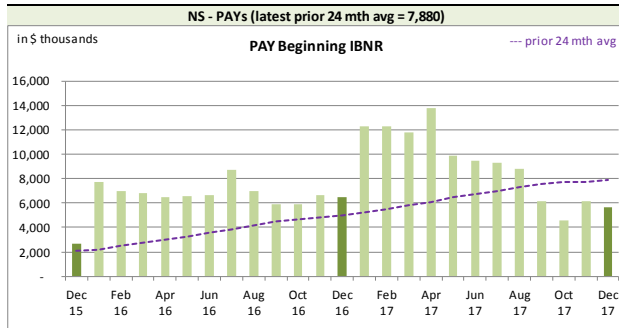
The current accident year (CAY) **recorded** variances (right chart above) have resulted in 40% of the last 24 months generating variances in excess of a 24-month standard deviation, suggesting the projection process has performed worse than simply projecting based on a 24-month average. We are considering ways to improve our projection process as a result.

The CAY **recorded** variance 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 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:

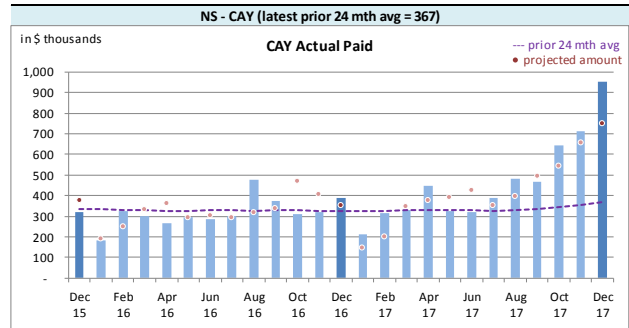
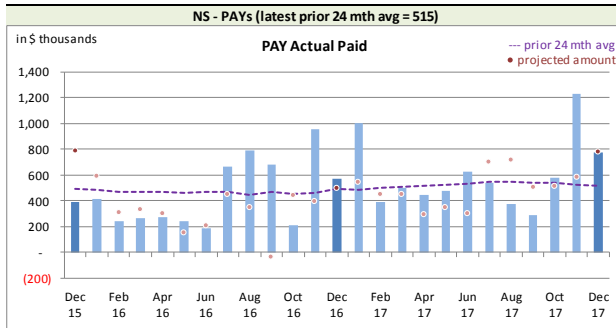
- to offset actual **recorded** activity (through loss ratio matching);
- the annual switchover as a current accident year becomes a prior accident year (occurs in January); and
- when a new valuation is implemented, where the valuation resulted in changes to the selection of prior accident years’ ultimate (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.

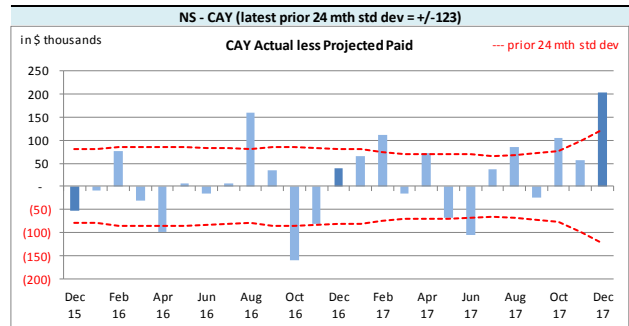
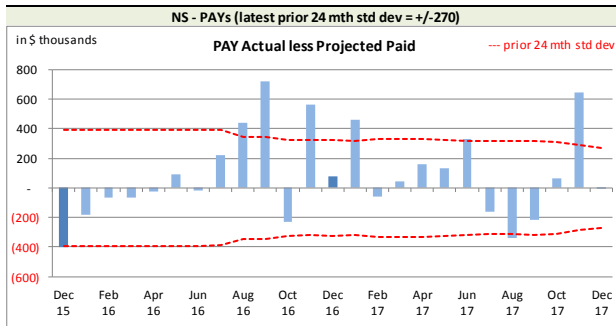
⁵Our recorded activity projections for the prior accident years are based on selected ratios of recorded activity to beginning unpaid balances, whereas the current accident year projections are based on selected ratios of year-to-date IBNR to year-to-date selected ultimate (i.e. selected LR x earned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

*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)		515	367
std dev		270	123
A-P <> std dev		8	9
% <> std dev		32.0%	36.0%
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.

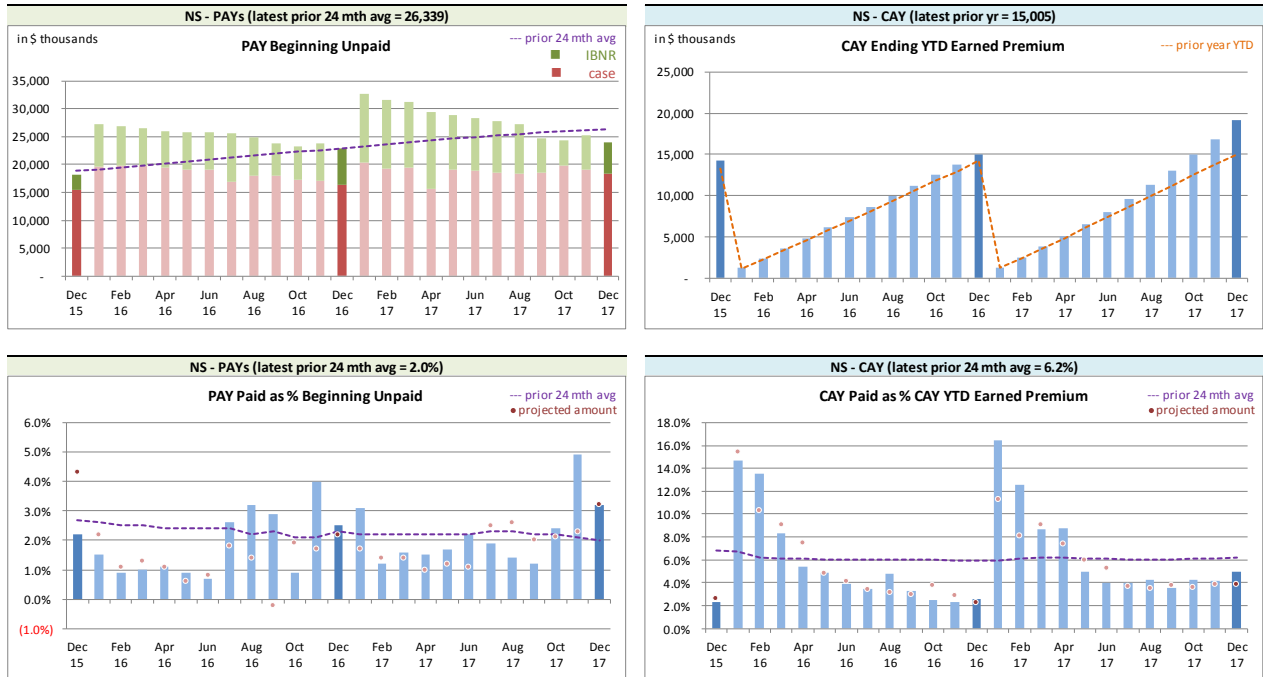
32% of months with prior accident years (PAYs) **paid** variances were in excess of a prior 24-month standard deviation (see table above), suggesting the projection process has performed no better than simply projecting based on the previous 24-month average. We do not see evidence of bias in the projections.

The current accident year (CAY) **paid** variances (see right chart above), do not appear to indicate bias. At 36% of projections outside of one standard deviation (see table above), the projection process has performed no better than simply projecting based on the previous 24-month average.

The CAYs **paid** 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.

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 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:

- 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 at the top of the next page summarizes variances in provisions included in the

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.

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

December 2017 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	1,081	(122)	(371)	7	1,124	(20)	1,834	(135)
2015	2,110	157	(216)	(6)	633	19	2,527	170
2016	2,194	(120)	(380)	(2)	947	6	2,761	(116)
2017	5,370	687	(649)	2	1,466	(5)	6,187	684
TOTAL	10,755	602	(1,616)	1	4,170	-	13,309	603

The IBNR provision is \$0.6 million higher than projected from last month, counterbalancing the recorded claims activity and adjusting for the earned premium variance impacts indicated in section 2.1.

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

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

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

The table at the top of the next page summarizes the variances in the provisions for premium deficiency liability / (deferred policy acquisition cost asset) included in the December 2017 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 and 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 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:	(832)	(9)	794	8	(38)	(1)
balance as % unearned premium:	(5.8%)	0.1%	5.6%	(0.1%)	(0.3%)	-
actual unearned premium:	14,221					
less projected:	164					

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 94.1% rather than 93.2% (the valuation ultimate ratio for accident year 2017), 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.)

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.

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	(2,137)	(11.3%)	(1,836)	(9.7%)	(3,973)	(20.9%)	(55)	2.5%
CAY	17,837	94.1%	817	4.3%	18,654	98.4%	2,179	(0.2%)
TOTAL	15,701	82.8%	(1,019)	(5.4%)	14,682	77.4%	2,124	2.2%

(“% EP” based on 2017 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 (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

		Amounts in \$000s				
IBNR + M/S actuarial present value adjustments	Accident Year	Actual Nov. 2017	Actual Dec. 2017	Projected Jan. 2018	Projected Feb. 2018	Projected Dec. 2018
	2007	2	9	9	9	5
	2008	2	2	2	2	1
	2009	57	57	56	56	33
	2010	19	19	20	20	12
	2011	284	284	284	279	169
discount rate	2012	708	718	732	722	424
1.73%	2013	252	138	137	134	148
	2014	683	607	579	574	369
interest rate margin	2015	2,549	2,527	2,530	2,421	1,715
25 basis pts	2016	2,935	2,761	2,785	2,758	1,939
	2017	5,203	6,187	5,937	5,769	4,676
	2018	-	-	773	1,476	9,130
	TOTAL	12,694	13,309	13,844	14,220	18,621
	Change		615	535	376	

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 Nov. 2017	Actual Dec. 2017	Projected Jan. 2018	Projected Feb. 2018	Projected Dec. 2018
	54.3%	2007	1	8	8	8	4
	68.3%	2008	2	2	2	2	1
	64.1%	2009	47	47	47	47	25
	74.1%	2010	14	14	14	14	7
	91.1%	2011	201	201	199	197	95
	107.9%	2012	534	545	540	535	259
	89.2%	2013	11	(79)	(78)	(77)	(37)
	86.9%	2014	404	343	322	319	169
	81.6%	2015	2,123	2,110	2,089	1,985	1,331
	87.6%	2016	2,361	2,194	2,172	2,150	1,411
	93.2%	2017	4,463	5,370	5,101	4,948	3,956
	92.4%	2018	-	-	658	1,263	7,834
		TOTAL	10,161	10,755	11,074	11,391	15,055
		Change		594	319	317	

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

EXHIBIT C

Premium Liabilities

TABLE EXHIBIT C

	Amounts in \$000s				
	Actual Nov. 2017	Actual Dec. 2017	Projected Jan. 2018	Projected Feb. 2018	Projected Dec. 2018
Premium Liabilities					
(1) unearned premium (UP)	14,499	14,221	13,942	13,632	18,912
FOR MEMBER SHARING					
(2) expected future costs ratio {% of (1)}	99.8%	99.7%	99.7%	99.8%	102.4%
(3) expected future costs {(1) x (2)}	14,477	14,183	13,906	13,601	19,364
(4) premium deficiency / (deferred policy acquisition cost)	(22)	(38)	(36)	(31)	452
Excluding Actuarial Present Value Adjustments					
(5) expected future costs ratio {% of (1)}	94.3%	94.2%	94.2%	94.2%	96.6%
(6) expected future costs {(1) x (5)}	13,667	13,389	13,127	12,840	18,278
(7) premium deficiency / (deferred policy acquisition cost)	(832)	(832)	(815)	(792)	(634)

EXHIBIT D

Projected Year-end Policy Liabilities

The table below presents the projected policy liabilities as at December 31, 2018, broken down by component.

Nova Scotia ending 2018		Projected Balances as at Dec. 31, 2018 (\$000s)									
Acc Yr	nominal values			actuarial present value adjustments (apvs)						TOTAL	
	Case	IBNR	Total Unpaid	discount	investment PfAD	nominal development PfAD	development PfAD discount	development PfAD	Total apvs		
2007	4	4	8	-	-	1	-	1	1	9	
2008	1	1	2	-	-	-	-	-	-	2	
2009	74	25	99	(2)	-	10	-	10	8	107	
2010	51	7	58	(1)	-	6	-	6	5	63	
2011	873	95	968	(24)	3	97	(2)	95	74	1,042	
2012	2,029	259	2,288	(66)	9	229	(7)	222	165	2,453	
2013	2,914	(37)	2,877	(109)	17	288	(11)	277	185	3,062	
2014	2,130	169	2,299	(85)	11	285	(11)	274	200	2,499	
2015	3,092	1,331	4,423	(159)	22	540	(19)	521	384	4,807	
2016	5,192	1,411	6,603	(277)	40	799	(34)	765	528	7,131	
2017	6,150	3,956	10,106	(495)	71	1,203	(59)	1,144	720	10,826	
PAYs (sub-total):	22,510	7,221	29,731	(1,218)	173	3,458	(143)	3,315	2,270	32,001	
CAY (2018)	11,607	7,834	19,441	(1,030)	136	2,313	(123)	2,190	1,296	20,737	
claims liabilities:	34,117	15,055	49,172	(2,248)	309	5,771	(266)	5,505	3,566	52,738	
	Unearned Premium	Premium Deficiency / (DPAC)	Total Provision	discount	investment PfAD	nominal development PfAD	development PfAD discount	development PfAD	Total apvs	TOTAL*	
premium liabilities:	18,912	(634)	18,278	(789)	107	1,849	(81)	1,768	1,086	19,364	
policy liabilities:			67,450	(3,037)	416	7,620	(347)	7,273	4,652	72,102	

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

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, 2017 from the valuation), followed by the selected discount rate and the associated margin for investment income.

Selected Claims Development MfADs (Sep. 30, 2017)

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	12.5%	10.0%	8.4%	12.4%
2015	12.4%	10.0%	6.8%	12.2%
2016	12.4%	10.0%	6.8%	12.1%
2017	12.4%	10.0%	5.8%	11.9%
2018	12.0%	10.0%	5.1%	10.3%
prem liab	12.0%	10.0%	5.1%	10.3%

discount rate: 1.73%
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, 2017 from the latest valuation date (projections in exhibits A to D are to Dec. 31, 2018, and are based on more up-to-date information). We have included the most recent valuation selection (1.73%), the prior valuation assumption (1.17%) and the prior fiscal year end valuation assumption (0.51%) 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, 2017 projected Unpaid								
AY	0.73%	1.23%	1.73%	2.23%	2.73%	3.23%	1.17%	0.51%
2007	38	37	37	37	36	36	37	38
2008	10	10	10	10	10	10	10	10
2009	94	94	93	93	93	92	94	94
2010	135	134	133	132	131	130	134	135
2011	1,140	1,130	1,121	1,111	1,102	1,093	1,131	1,144
2012	3,419	3,382	3,344	3,308	3,273	3,238	3,386	3,436
2013	3,816	3,774	3,734	3,695	3,656	3,619	3,779	3,834
2014	3,485	3,449	3,413	3,377	3,343	3,309	3,453	3,502
2016	8,131	8,012	7,898	7,786	7,677	7,571	8,027	8,184
2017	13,925	13,704	13,492	13,284	13,083	12,886	13,731	14,024
Total	39,987	39,450	38,929	38,421	37,926	37,442	39,514	40,227
	curr - 100 bp	curr - 50 bp	curr val assumption	curr + 50bp	curr + 100bp	curr + 150bp	prior val assumption	prior fyr end assumption

Dollar Impact Relative to Valuation Assumption								
AY	0.73%	1.23%	1.73%	2.23%	2.73%	3.23%	1.17%	0.51%
Total	1,058	521	-	(508)	(1,003)	(1,487)	585	1,298
	curr - 100 bp	curr - 50 bp	curr val assumption	curr + 50bp	curr + 100bp	curr + 150bp	prior val assumption	prior fyr end assumption

Percentage Impact Relative to Valuation Assumption								
AY	0.73%	1.23%	1.73%	2.23%	2.73%	3.23%	1.17%	0.51%
2007	2.7%	-	-	-	(2.7%)	(2.7%)	-	2.7%
2008	-	-	-	-	-	-	-	-
2009	1.1%	1.1%	-	-	-	(1.1%)	1.1%	1.1%
2010	1.5%	0.8%	-	(0.8%)	(1.5%)	(2.3%)	0.8%	1.5%
2011	1.7%	0.8%	-	(0.9%)	(1.7%)	(2.5%)	0.9%	2.1%
2012	2.2%	1.1%	-	(1.1%)	(2.1%)	(3.2%)	1.3%	2.8%
2013	2.2%	1.1%	-	(1.0%)	(2.1%)	(3.1%)	1.2%	2.7%
2014	2.1%	1.1%	-	(1.1%)	(2.1%)	(3.0%)	1.2%	2.6%
2016	3.0%	1.4%	-	(1.4%)	(2.8%)	(4.1%)	1.6%	3.6%
2017	3.2%	1.6%	-	(1.5%)	(3.0%)	(4.5%)	1.8%	3.9%
Total	2.7%	1.3%	-	(1.3%)	(2.6%)	(3.8%)	1.5%	3.3%
	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 - Discou

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	2	-	7	-	7	350.0%	9
2008	2	-	-	-	-	-	2
2009	57	(1)	1	-	-	-	57
2010	19	-	-	-	-	-	19
2011	284	(3)	3	-	-	-	284
2012	708	(7)	17	-	10	1.4%	718
2013	252	(14)	(100)	-	(114)	(45.2%)	138
2014	683	(13)	(63)	-	(76)	(11.1%)	607
2015	2,549	(192)	170	-	(22)	(0.9%)	2,527
2016	2,935	(58)	(116)	-	(174)	(5.9%)	2,761
2017	5,203	300	684	-	984	18.9%	6,187
Grand Total	12,694	12	603	-	615	4.8%	13,309

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	-	7	-	7	700.0%	8
2008	2	-	-	-	-	-	2
2009	47	-	-	-	-	-	47
2010	14	-	-	-	-	-	14
2011	201	(2)	2	-	-	-	201
2012	534	(5)	16	-	11	2.1%	545
2013	11	-	(90)	-	(90)	(818.2%)	(79)
2014	404	(4)	(57)	-	(61)	(15.1%)	343
2015	2,123	(170)	157	-	(13)	(0.6%)	2,110
2016	2,361	(47)	(120)	-	(167)	(7.1%)	2,194
2017	4,463	220	687	-	907	20.3%	5,370
Grand Total	10,161	(8)	602	-	594	5.8%	10,755