FACILITY Association

QUARTERLY VALUATION HIGHLIGHTS

RISK SHARING POOLS

as at March 31, 2019

Ontario
Alberta Grid and Alberta Non-Grid
New Brunswick and Nova Scotia

FA Actuarial

8/24/2019

Should you require any further information, please call:

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A. Executive Summary

We have completed a valuation for all (Ontario, Alberta Grid, Alberta Non-Grid, New Brunswick, and Nova Scotia) Risk Sharing Pools ("RSPs") as at March 31, 2019, with the results summarized in the table below[1]. The previous valuation was completed at December 31, 2018 and included all RSPs.

Valuation Summary (Nominal Basis) unfavourable / (favourable)

Risk Sharing Pool	2018 & Prior Beginning Indemnity Unpaid (000s)	2018 & Prior Accident Year Indemnity Change (000s)	% of Beginning Unpaid	2019 Indemnity Loss Ratio	Change from Prior Valuation	Change against 2019 Projected Earned Premium (000s)	2020 Indemnity Loss Ratio	Change from Prior Valuation	Change against 2020 Projected Earned Premium (000s)	Selected Discount Rate at Mar/19	Change in Discount Rate from Prior Valuation	Estimated $ Effect from sensitivity analysis (000s)
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]
Ontario	941,424	3,213	0.3%	127.6%	0.3%	1,077	130.0%	-	-	1.43%	-45 bps	14,272
Alberta Grid	305,388	34	0.0%	89.7%	0.7%	1,271	91.3%	-	-	1.44%	-49 bps	4,655
Alberta non-Grid	175,169	(285)	(0.2%)	108.7%	0.1%	127	110.4%	-	-	1.46%	-47 bps	2,641
New Brunswick	20,237	(99)	(0.5%)	76.5%	0.8%	139	77.5%	-	-	1.44%	-49 bps	328
Nova Scotia	44,169	1,125	2.5%	97.7%	1.1%	338	99.2%	-	-	1.43%	-50 bps	736
Total	**1,486,387**	**3,988**	**0.3%**			**2,952**			-			**22,632**

"Unpaid", "Claims" and "Loss" include indemnity & allowed claims expense

In total, the **unfavourable prior accident year** change of **$4.0 million** (column [2] in the table above) represents **0.3%** (column [3]) of the $1,486.4 million beginning unpaid (column [1])[2]. The impact of **"roll-forward valuation"**[3] updates tend to be less material since the impact of actual emerged experience from the last full valuation has not been incorporated into revised assumptions.

While completing the current valuation, FA management was advised that a **Member** had been **incorrectly reporting claims recovery** (salvage/subrogation) **transactions** (affecting the **Alberta Grid/Non-Grid RSPs**) primarily **impacting AY2018**, with an estimated **favourable impact of $1.2 million**. The Member is working with FA Member Services to submit correcting transactions and advised that all claims corrections would be submitted in May 2019. **No adjustment was included with the current valuation** to adjust for these incorrectly reported claims transactions.

Changes in selected loss ratios for **accident year 2019** (column [4] in the table above) were driven by Ontario and Alberta Grid **physical damage** (DCPD, collision, and comprehensive) **recorded claims experience** reported in the period. The impact of these changes, relative to projected *full year* 2019 earned premium, is favourable by $3.0 million (column [6]). There were no changes to the selected loss ratios for **accident year 2020** (column [7]) as the a priori loss ratio selections were carried forward from the December 31, 2018 valuation.

Claims payment emergence patterns were updated, and as indicated in columns [10] and [11] in the table above, and **discount rates were decreased** to reflect March 2019 Government of Canada yields, generating an initial **estimated $22.6 million unfavourable** impact due to the discount rate selection change (column [12]). The selected investment income (25 basis points) margin for adverse deviation (MfAD) and selected claims development MfADs at the jurisdiction, coverage, and accident year level were not changed with the current valuation.

The **Ontario RSP unfavourable prior accident year development** was **$3.2 million**, 0.3% of

[1] *The March 31, 2019 valuation result was implemented into the RSP Operational Results for the month of May 2019. The valuation implementation impact is discussed in the respective May 2019 Actuarial Highlights and associated Bulletins.*

[2] *The beginning unpaid is the sum of the case reserves and selected nominal IBNR as per the valuation completed as at December 31, 2018.*

[3] *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. Loss development factors as brought forward through this process are interpolated assuming linear emergence.*

beginning unpaid (as determined with the December 31, 2018 valuation), and was driven by **unfavourable accident benefits** driven by **older accident year** (AY2012-AY2015) large loss case reserve increases across multiple Members, partially offset by two favourable AY2016 Accident Benefits claims settlements reported in the quarter. The table immediately below shows historical changes in valuation selected ultimates on an annual fiscal-accident year basis on the left with changes in the most recent quarterly valuations on a calendar-accident year basis[4] on the right. We have observed reductions in the overall magnitude of change despite having significant favourable experience in 6 of the previous 8 prior fiscal year-ends.

Ontario RSP Changes in Prior Accident Year Selected Ultimates through time

	Change in Selected Ultimates from prior Sept 30th							Change in Selected Ultimates from Prior Quarter End				
	Sep-12	Sep-13	Sep-14	Sep-15	Sep-16	Sep-17	Sep-18	Dec-18	Mar-19	Jun-19	Sep-19	Dec-19
AY2008 & Prior	(28,122)	10,552	(6,347)	(1,326)	(8,542)	7,408	599	554	(733)	-	-	-
AY2009	(12,325)	8,326	5,510	(2,767)	(6,439)	(5,775)	(2,626)	149	(248)			
AY2010	(25,024)	15,929	(7,623)	(2,753)	(7,409)	(6,094)	(7,359)	(550)	(608)			
AY2011	(24,649)	(46,425)	(37,295)	(22,216)	(7,733)	(1,322)	1,332	(2,487)	(454)			
AY2012		(73,806)	(19,118)	(43,289)	(10,135)	(5,257)	1,056	(3,151)	593			
AY2013			(24,834)	(46,961)	(2,493)	(4,982)	(8,739)	(2,010)	1,936			
AY2014				(20,591)	(21,779)	(17,319)	5,428	393	872			
AY2015					525	(12,028)	(6,671)	629	695			
AY2016						1,078	(2,602)	2,629	(2,062)			
AY2017							(749)	(10,674)	16			
AY2018								-	3,205			
Total	(90,120)	(85,424)	(89,707)	(139,903)	(64,005)	(44,292)	(20,332)	(14,516)	3,213	-	-	-

Similar summaries for the **Alberta Grid** and **Alberta Non-Grid RSPs prior accident year development** are shown immediately below, with the prior accident year development driven by recorded claims activity reported in the quarter including the **unfavourable** impact of one Alberta Grid older accident year (AY2005) **accident benefits** case reserve increase of $2.6M (Saskatchewan extraterritorial claim) .

Alberta Grid RSP Changes in Prior Accident Year Selected Ultimates through time

	Change in Selected Ultimates from prior Sept 30th							Change in Selected Ultimates from Prior Quarter End				
	Sep-12	Sep-13	Sep-14	Sep-15	Sep-16	Sep-17	Sep-18	Dec-18	Mar-19	Jun-19	Sep-19	Dec-19
AY2008 & Prior	6,790	7,079	4,955	(2,794)	286	839	1,561	127	2,742	-	-	-
AY2009	2,593	4,055	(270)	(2,493)	(440)	(358)	(585)	249	(3)			
AY2010	(657)	3,484	2,791	(4,147)	2,137	681	(47)	(221)	(411)			
AY2011	(800)	5,494	2,075	(2,387)	788	(908)	995	(692)	(83)			
AY2012		3,048	9,558	(3,542)	3,669	(1,464)	(810)	(594)	(406)			
AY2013			11,012	857	5,339	(293)	(1,950)	(1,521)	(492)			
AY2014				13,602	9,649	(706)	(1,100)	(1,973)	(951)			
AY2015					21,131	5,832	1,434	(1,826)	(688)			
AY2016						18,993	1,537	(2,730)	(1,027)			
AY2017							3,289	(4,433)	2,174			
AY2018								-	(821)			
Total	7,925	23,160	30,121	(903)	42,559	22,616	4,324	(13,615)	34	-	-	-

Alberta Non-Grid RSP Changes in Prior Accident Year Selected Ultimates through time

	Change in Selected Ultimates from prior Sept 30th							Change in Selected Ultimates from Prior Quarter End				
	Sep-12	Sep-13	Sep-14	Sep-15	Sep-16	Sep-17	Sep-18	Dec-18	Mar-19	Jun-19	Sep-19	Dec-19
AY2008 & Prior	4,723	2,700	861	(1,102)	326	78	277	(232)	(30)	-	-	-
AY2009	1,795	2,414	(361)	(2,127)	200	352	369	122	(32)			
AY2010	438	6,029	(2,659)	(4,390)	(376)	(230)	(452)	210	(73)			
AY2011	(7,537)	(1,595)	2,299	(1,252)	(1,491)	161	(52)	204	545			
AY2012		4,518	1,329	(1,991)	1,231	(1,255)	819	134	(627)			
AY2013			4,462	317	(986)	(517)	(958)	239	259			
AY2014				5,967	3,532	(493)	(2,451)	(689)	(306)			
AY2015					1,168	2,349	(5,638)	(1,036)	(558)			
AY2016						5,415	(3,873)	(1,407)	(331)			
AY2017							(388)	(2,771)	779			
AY2018								-	88			
Total	(582)	14,066	5,932	(4,578)	3,603	5,860	(12,348)	(5,225)	(285)	-	-	-

Similar tables for the New Brunswick and Nova Scotia RSPs are included in their respective jurisdiction

[4]*Due to FA's October 31 year-end, the runoff table is shown on a fiscal accident year basis. However, valuations are treated on a calendar accident year basis. As a result, the "Change in Selected Ultimates from Prior Quarter End" will not necessarily sum to the annual view for the most recent "prior" accident year. The valuation change discussions focus on the calendar accident basis.*

exhibits included with this report. Caution must be exercised in reviewing the variances in the New Brunswick and Nova Scotia special purpose RSPs as volumes are low 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.

The remainder of this report consists of 9 sections. Sections C through G are the detailed sections related to each of the RSPs, including valuation highlights and a discussion of actual vs. projected activity. General information about this report can be found in section B. The final 4 sections are appendices: the valuation process is described in detail in section K (Appendix 4); a summary of changes to the process during this fiscal year is provided in section H (Appendix 1); a summary of regulatory changes is provided in section I (Appendix 2) and recent applicable court decisions is provided in section J (Appendix 3); and supporting exhibits are provided in section L (Appendix 5).

B. General Information

This report summarizes the results of the valuation of the following Risk Sharing Pools ("RSPs") as at March 31, 2019:

- Ontario;
- Alberta Grid;
- Alberta Non-Grid;
- New Brunswick; and
- Nova Scotia.

The results of this valuation were reflected for the first time in the May 2019 Operational Reports for the above RSPs.

The valuations have been prepared in accordance with Accepted Actuarial Practice and comply with the appropriate Standards of Practice of the Canadian Institute of Actuaries as well as applicable regulatory requirements. Accepted Actuarial Practice requires all policy liabilities recognize both the time value of money and provisions for adverse deviations.

Unless specifically noted in this document, no explicit provision has been made for causes of loss which are not already reflected in the historical data, nor for otherwise unforeseen changes to the legal or economic environment in which claims are settled, including changes in the interpretation of existing legislation or regulation on matters currently before the courts.

Automobile insurance product reforms occur from time to time and consideration is given to the associated impact, if any. Please see Section I for a discussion of recent product reforms and Section J for a discussion of recent court decisions considered for the purposes of this valuation.

For ease of reference, we will use the term "claims amount" in reference to the more proper and descriptive term "indemnity & allowed claims expense" and the terms "loss ratio", "claims ratio", or "claims amount ratio" in reference to the ratio of "claims amount" to "earned premium".

General information regarding the Facility Association and on the Risk Sharing Pools in particular can be found on its website:

www.facilityassociation.com

B.1 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.

B.2 Intended Audience and Use

This report is intended for the Members Companies of the Facility Association (Members) to provide additional information on the results of the most recent valuation of specific RSPs in relation to the results of prior such valuations. It is not intended, nor necessarily suitable, for any other purpose.

B.3 Data

Two primary data sets were used for the purposes of this valuation:

- RSP valuation data, which is aggregated premium and claim information primarily intended for valuation purposes; and
- industry AIX data, which is developed from detailed statistical records reported by insurers to the Insurance Bureau of Canada (IBC)[5] in accordance with the Automobile Statistical Plan.

B.3.1 RSP Valuation Data

Much of this analysis was based on RSP valuation data collected from Members and aggregated by IBC on behalf of Facility Association. The claims data excludes all loss adjustment expenses except certain specific reimbursed expenses ("allowed claims adjustment expenses"). The data is reconciled to information contained in Facility Association's Member Operational Reports, the results of which are reviewed by the Appointed Actuary for reasonableness. Procedures are in place to provide reasonable assurance that the data used is reliable and sufficient for the proper valuation of the liabilities.

The valuation data, for the purposes of the valuation, is aggregated to the level of:

- RSP
- kind-of-loss / coverage
- accident year and half-year
- development half-year[6]

Data elements captured include earned premium, claims[7] paid, case reserves, recorded claims (being the sum of claims paid and case reserves), and recorded claim counts.

For the purposes of the valuation described in this report, the valuation data is as at **March 31, 2019**.

B.3.2 Industry AIX Data

Although the RSP valuation data is the primary source of data for valuation purposes, the following "Industry AIX" data file prepared by IBC (on behalf of GISA) is used to supplement the RSP valuation data and is used in the determination of "loss cost trend structures", being models describing changes in

[5] *IBC is the statistical agent of the General Insurance Statistical Agency (GISA), with responsibility of managing the Automobile Statistical Plan reporting. In addition, Facility Association outsources its IT to IBC.*

[6] *Development quarter is also available for purposes of performing "roll forward" valuations in relation to valuation periods ending March 31 and September 30.*

[7] *For purposes of this report, the terms "claims" or "loss" will refer to "indemnity and allowed claims adjustment expenses" unless otherwise indicated.*

loss costs (average claim amount per exposure unit) over time, including the impacts of product reforms:

- industry experience (indemnity only) as per the 2018-H1 AIX Development Exhibits for Private Passenger Vehicles in the applicable jurisdictions, compiled as at June 30, 2018.

IBC (on behalf of GISA) assembles Industry AIX data from the submissions made under the Automobile Statistical Plan by each of the insurers writing automobile business in the applicable jurisdiction. As there are many insurers providing this information and due to remoteness from the individual data elements, it is not practical for IBC to directly put in place audit or audit-like procedures. However, IBC does perform various data edit checks which are designed to promote data integrity.

Industry AIX data is relied upon without the benefit of any independent audit and has been used without modification. Nonetheless, the data is deemed to be reliable and appropriate for the purposes of this valuation and the trend analysis completed in relation to the data.

B.3.3 Other Data

Reliance has also been placed on other quantitative and qualitative information supplied by Facility Association without audit or independent verification. Wherever possible, such information was reviewed for reasonableness and internal consistency by the Appointed Actuary.

B.4 Actual vs Projected (AvsP)

With each valuation, we project, by accident year, future claim activity (recorded and paid). Both projected recorded claim activity and projected paid claim activity is used as a means of providing feedback on our prior selections of ultimate. In addition, the paid projections are used directly as projected cash flows for claims in the determination of the discount rate selection for the policy liabilities.

The challenge in interpreting actual versus projected (AvsP) variances as a feedback mechanism is how much of the variance is attributed to:

- process variance (i.e. randomness) inherent in the activities themselves (i.e. recorded and paid activity);
- model selection (i.e. that our emergence model is not a good representation or predictor of future emergence even if we've correctly estimated ultimate);
- parameter selection within the model (i.e. that our emergence model can be a good representation of emergence, but we selected the "wrong" emergence factors);
- our selection of ultimate (i.e. that our emergence model and emergence factors selections are good, but we're applying the model and factors to the "wrong" ultimate); and
- changes to our model (i.e. changes made with the goal of improving its predictive capability).

Nonetheless, the AvsP exercise is an important validation process for us. Our discussion in each RSP's AvsP section will focus on our interpretation of feedback the variances provide to our prior selections of ultimate, and how this provides information in relation to our current selections of ultimate.

B.5 **Uncertainty**

The establishment of provisions for the unpaid, unrecorded, and/or unreported claims is based on numerical data and the interpretation of current and anticipated circumstances. It is a complex and dynamic process influenced by a large variety of factors. These factors include the experience of the respective RSPs and the experience of the voluntary market in the associated jurisdiction, claim frequency and severity, indemnity and allowed claims expense payment patterns, case reserving practices, and lags between when the event giving rise to the claim occurred, when the claim is reported to a Member, when the Member records claim information on their own system, and when that information is transmitted to Facility Association to be recorded. The process of determining the provisions necessarily involves uncertainty such that the actual results will deviate, perhaps substantially, from the best estimates made through the valuation process.

C. ONTARIO RSP

C.1 Valuation Highlights

A summary of the valuation results through time is available in the "A" exhibit (see section L for all exhibits), with detail related to the current valuation provided in the B.1.1 and B.1.2 exhibits.

The **change** in selected ultimate for **prior accident years** was **$3.2 million unfavourable** with this valuation (**0.3%** of the unpaid estimate as at last quarter). These changes are presented by accident year and government line in the tables below.

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

Accident Year	Third Party Liability	Accident Benefits	Other Coverages	Total
2014 & Prior	(148)	1,584	(80)	1,356
2015	(409)	1,113	(9)	695
2016	(315)	(1,832)	84	(2,063)
2017	137	(91)	(31)	15
2018	1,499	(278)	1,985	3,206
TOTAL	**764**	**496**	**1,949**	**3,209**

The unfavourable prior accident year development of $3.2 million was driven by **older accident year** (AY2012-AY2015) accident benefits large loss case reserve increases across multiple Members, partially offset by two favourable AY2016 accident benefits claims settlements reported in the quarter.

Over the past few "**roll-forward**" valuations (Q1, Q3), we've observed **slight unfavourable valuation nominal impacts** driven by recent accident year **physical damage** (DCPD, collision and comprehensive with the former in third party liability and the latter two in other coverages) **recorded claims experience.** This is in contrast to the "**full**" valuation updates (Q2, Q4), where we've observed **significant favourable valuation nominal impacts**, driven by the impact of updating assumptions (where there exists a significant difference between ELR/LR method estimates, particularly bodily injury).

The **selected loss ratio** for **accident year 2019** (current accident year, AY2019 up 0.3 points to 127.6%) **increased** while the selected loss ratio for **accident year 2020** remained unchanged (future accident year, AY2020 at 130.0%).

Summary descriptions of recent regulatory and legislative initiatives are available in section I.

The valuation process is described in more detail in section K, and a summary of changes to the process during this fiscal year is provided in section H.

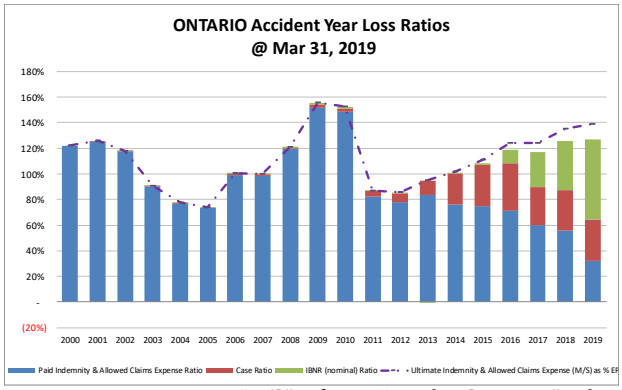
Policy liability projected cash flows and March 2019 government of Canada bond yields were used to determine the applicable discount rate. The selected investment income margin for adverse deviation ("MfAD") was maintained at 25 basis points with the current valuation.

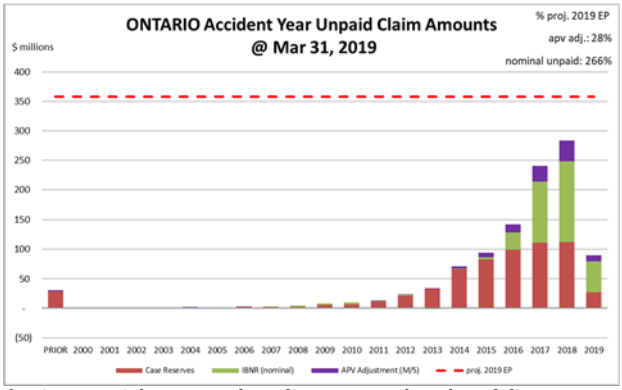
Selected claims development margins were carried forward from the prior valuation (see Exhibit D in section L for claims development margins)

C.2 Booked results for the prior valuation implementation

It is helpful to consider how the portfolio looked after the **prior valuation** was implemented. In this case, the **March 2019 booked results** were **based on** assumptions derived from **the prior (December 31, 2018) valuation** and were discussed in the associated monthly Actuarial Highlights.

The charts immediately below show the associated levels of claim liabilities[8] booked by accident year[9]. 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 then-current projected amount of 2019 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 tables immediately below show the associated Member Statement (M/S) policy liabilities.

claim liabilities ($000s)

	amt	%
case	614,053	58.4%
ibnr	337,867	32.1%
M/S apv adjust.	99,084	9.4%
M/S total	1,051,004	100.0%

premium liabilities ($000s)

	amt	%
unearned prem	164,022	71.8%
prem def/(dpac)	45,099	19.7%
M/S apv adjust.	19,361	8.5%
M/S total	228,482	100.0%

policy liabilities ($000s)

	amt	%
claim	951,920	74.4%
premium	209,121	16.3%
M/S apv adjust.	118,445	9.3%
M/S total	1,279,486	100.0%

C.3 Booked results for the current valuation implementation

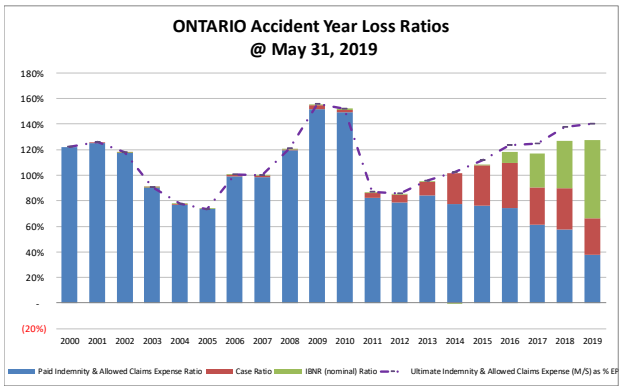
The **May 2019 booked results** were **based on** assumptions derived from **the current (March 31, 2019)**

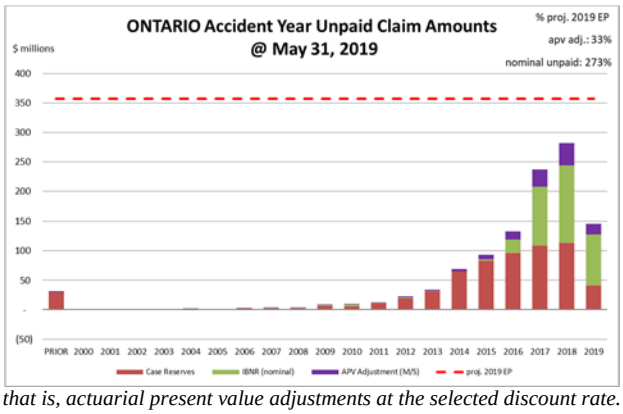
[8] *Claim liabilities refer to provision for unpaid indemnity and allowed claims expenses. Allowed claims expenses are first party legal and other expenses as listed in the RSP Claims Guide. Claims expenses paid through the Member expense allowance are NOT included in this discussion.*

[9] *The loss ratio chart has been limited to show the most recent 20 accident years; the unpaid provision chart has been limited to show the most recent 20 accident years, and show all accident years older than 20 years collectively as "PRIOR".*

valuation and are discussed in the associated monthly Actuarial Highlights.

The charts immediately below show the levels of claim liabilities booked by accident year[10] on that basis. The left chart displays life-to-date payments, case reserves, IBNR, and the total including actuarial present value adjustments against accident year earned premium. The right chart shows the associated dollar amounts for the components of the claim liabilities and the current projected amount of 2019 full year earned premium (the red hash-mark line) to provide some perspective.





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

The tables immediately below show the associated Member Statement (M/S) policy liabilities.

claim liabilities ($000s)

	amt	%
case	616,910	56.7%
ibnr	355,631	32.7%
M/S apv adjust.	116,267	10.7%
M/S total	1,088,808	100.0%

premium liabilities ($000s)

	amt	%
unearned prem	179,820	70.5%
prem def/(dpac)	50,848	19.9%
M/S apv adjust.	24,433	9.6%
M/S total	255,101	100.0%

policy liabilities ($000s)

	amt	%
claim	972,541	72.4%
premium	230,668	17.2%
M/S apv adjust.	140,700	10.5%
M/S total	1,343,909	100.0%

C.4 a priori loss ratios

The Ontario RSP a priori loss ratios were carried forward from the December 31, 2018 valuation, and are presented in the "B.1.4", "B.2.3", "B.3.3", and "B.4.3" exhibits in section L.

C.5 Actual vs Projected (AvsP)

Variances in projected recorded and paid emergence and the associated actual emergence is presented in the two following tables.

[10] *The loss ratio chart has been limited to show the most recent 20 accident years; the unpaid provision chart has been limited to show the most recent 20 accident years, and show all accident years older than 20 years collectively as "PRIOR".*

Recorded Emergence

Ontario RSP

	Third Party Liability			Accident Benefits			Other Coverages			Total		
	Projected Recorded Claims in 2019-Q1	Actual Recorded Claims in 2019-Q1	Actual Less Projected	Projected Recorded Claims in 2019-Q1	Actual Recorded Claims in 2019-Q1	Actual Less Projected	Projected Recorded Claims in 2019-Q1	Actual Recorded Claims in 2019-Q1	Actual Less Projected	Projected Recorded Claims in 2019-Q1	Actual Recorded Claims in 2019-Q1	Actual Less Projected
Accident Year	[1]	[2]	[3] =[2]-[1]	[4]	[5]	[6] =[5]-[4]	[7]	[8]	[9] =[8]-[7]	[10] =[1]+[4]+[7]	[11] =[2]+[5]+[8]	[12] =[11]-[10]
2014 & Prior	(186)	(809)	(623)	1,082	3,069	1,987	(292)	(404)	(112)	604	1,856	1,252
2015	(89)	(93)	(4)	2,243	2,880	637	(6)	(9)	(3)	2,148	2,778	630
2016	3,028	1,637	(1,391)	4,654	2,105	(2,549)	(71)	66	137	7,611	3,808	(3,803)
2017	9,196	4,622	(4,574)	8,982	4,422	(4,560)	93	118	25	18,271	9,162	(9,109)
2018	13,077	11,390	(1,687)	17,445	12,269	(5,176)	3,610	3,086	(524)	34,132	26,745	(7,387)
2019	20,484	19,833	(651)	11,073	8,730	(2,343)	22,617	25,459	2,842	54,174	54,022	(152)
Total	**45,510**	**36,580**	**(8,930)**	**45,479**	**33,475**	**(12,004)**	**25,951**	**28,316**	**2,365**	**116,940**	**98,371**	**(18,569)**
2018 & prior	25,026	16,747	(8,279)	34,406	24,745	(9,661)	3,334	2,857	(477)	62,766	44,349	(18,417)

*projected recorded claims based on Recorded to Ultimate emergence model as at 2018-Q4

As indicated above, total recorded emergence at $98.4 million was $18.6 million (15.9%) less than the $116.9 million projected. Similar to last quarter and as evidenced above, the favourable overall experience for third party liability and accident benefits was partially offset by unfavourable experience in other coverages.

There was a **-$0.3 million case reserve correction transaction** (other coverages – collision, AY2008) reported in the quarter. This correction transaction was **consistent with** the valuation IBNR **adjustment included with the prior valuation**.

Paid Emergence

Ontario RSP

	Third Party Liability			Accident Benefits			Other Coverages			Total		
	Projected Paid Claims in 2019-Q1	Actual Paid Claims in 2019-Q1	Actual Less Projected	Projected Paid Claims in 2019-Q1	Actual Paid Claims in 2019-Q1	Actual Less Projected	Projected Paid Claims in 2019-Q1	Actual Paid Claims in 2019-Q1	Actual Less Projected	Projected Paid Claims in 2019-Q1	Actual Paid Claims in 2019-Q1	Actual Less Projected
Accident Year	[13]	[14]	[15] =[14]-[13]	[16]	[17]	[18] =[17]-[16]	[19]	[20]	[21] =[20]-[19]	[22] =[13]+[16]+[19]	[23] =[14]+[17]+[20]	[24] =[23]-[22]
2014 & Prior	6,716	5,935	(781)	12,593	6,469	(6,124)	165	21	(144)	19,474	12,425	(7,049)
2015	2,999	4,097	1,098	3,646	3,053	(593)	68	126	58	6,713	7,276	563
2016	3,971	3,238	(733)	4,664	5,463	799	70	83	13	8,705	8,784	79
2017	3,115	2,034	(1,081)	6,688	6,597	(91)	448	148	(300)	10,251	8,779	(1,472)
2018	8,953	9,650	697	8,833	8,239	(594)	12,592	12,206	(386)	30,378	30,095	(283)
2019	10,302	9,978	(324)	363	251	(112)	15,142	16,769	1,627	25,807	26,998	1,191
Total	**36,056**	**34,932**	**(1,124)**	**36,787**	**30,072**	**(6,715)**	**28,485**	**29,353**	**868**	**101,328**	**94,357**	**(6,971)**
2018 & prior	25,754	24,954	(800)	36,424	29,821	(6,603)	13,343	12,584	(759)	75,521	67,359	(8,162)

*projected paid claims based on Paid to Ultimate emergence model as at 2018-Q4

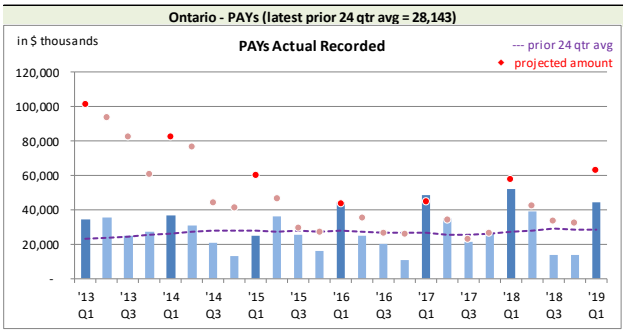
As indicated above, total paid emergence at $94.4 million was $7.0 million (6.8%) less than the $101.3 million projected. Similar to recorded activity (but to a lesser extent), and similar to the previous valuation, favourable third party liability emergence was partially offset by unfavourable other coverage paid emergence.

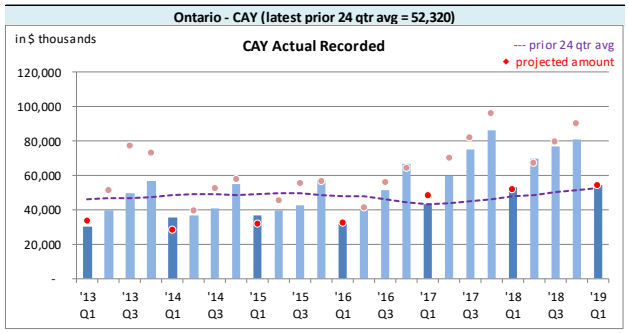
Additional detail and summary charts akin to those found in the monthly Actuarial Highlights are presented in the sections that follow.

C.5.1 AvsP: Recorded Indemnity & Allowed Claims Expense

Actual **recorded** activity (**paid** and case reserve changes) over the last 25-calendar quarters is shown in the charts at the top of the next page, including the "prior 24 quarter average" level.

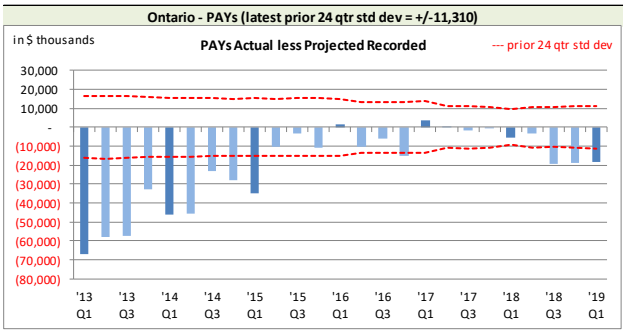
*Ontario RSP Actual **Recorded** by Calendar Quarter*

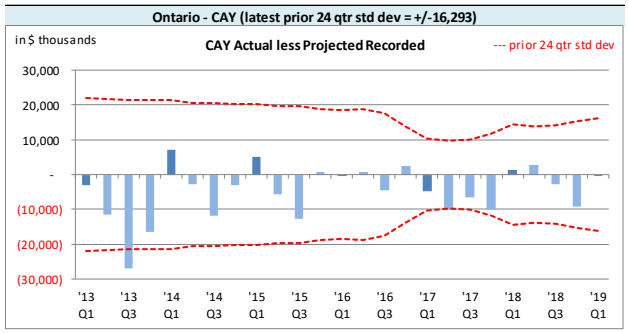




Recorded activity variances from the previous quarter's projections are shown in the charts below, including the "prior 24-quarter standard deviation" levels.

*Ontario RSP Actual vs Projected Summary: **Recorded** Variances by Calendar Quarter*





On Latest $ thousands		
Recorded	PAYs	CAY
Actual less Projected Recorded	28,143	52,320
std dev	11,310	16,293
A-P <> std dev	13	2
% <> std dev	52.0%	8.0%
norm <> std dev	31.7%	31.7%

With respect to **recorded** indemnity & allowed claims expense, the prior accident years' (PAYs) variances (left chart at the bottom of the previous page) indicate bias[11] in the projection process (such that projections tend to be too high in retrospect, where projections are available, with only 3 times in the past 25 quarters where actuals were higher than our projections for the PAYs **recorded** amount), and while the magnitude of the variances remain high, improvements in the variance magnitude are clear, notwithstanding the more recent variances. That being said, 52% of variances related to the available projections were outside of one standard deviation, suggesting the projection process has performed worse than simply projecting the prior 24-quarter average amount. Given the significant reductions in ultimate estimates in valuations since the 2010 reforms, it is difficult to determine at this point how much of the poor projection result is due to the various causes as discussed in Section B.4. However, our current view is that the current AvsP variances support the view that the historical valuation ultimate selections, in hindsight, were redundant to some degree (hence our reduced ultimate selections).

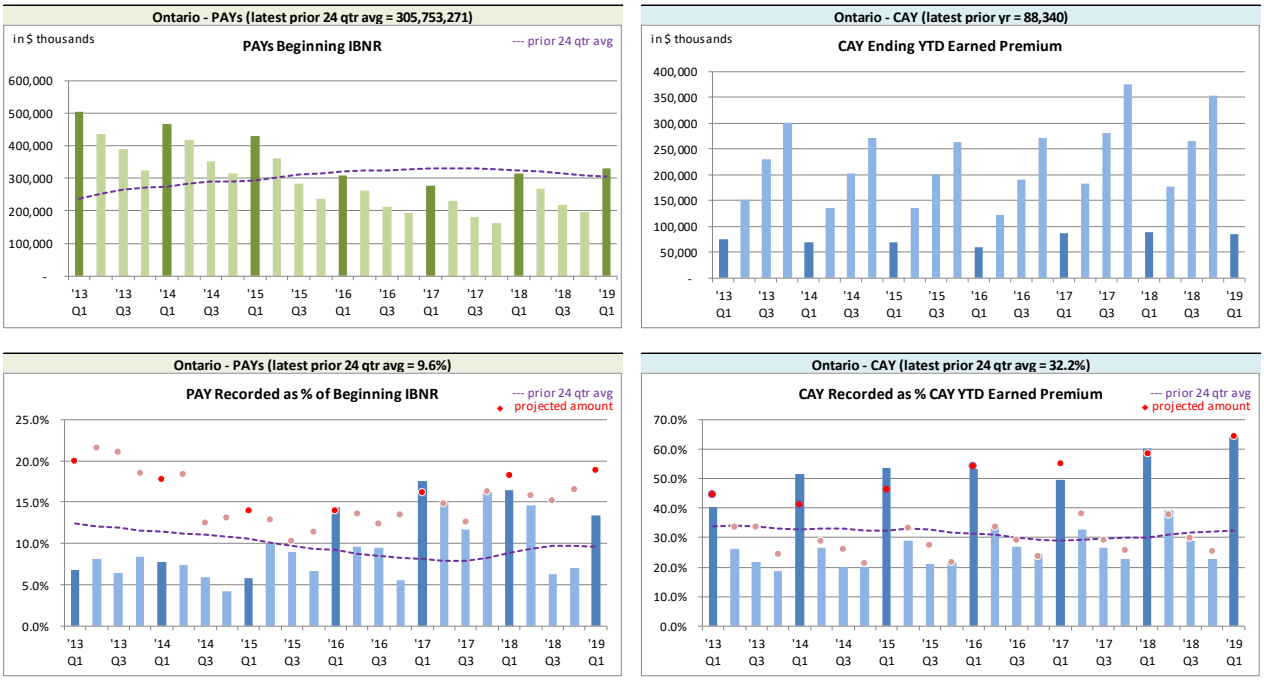
[11] *For the binomial distribution with 25 trials and an assumed 50% success probability, the 95% confidence range is 8 to 17. That is, for the 25 quarters presented, if the recorded projection was unbiased, with a 95% confidence, we would expect between 8 to 17 variances above 0. Less than 8 variances above 0 would indicate that our projections are biased high, and greater than 17 variances would indicate that our projections are biased low.*

The PAYs **recorded** variance fell outside of the one standard deviation band during the latest quarter. The PAYs **recorded** claims activity in the quarter was reviewed and confirmed, with the remaining variance attributed to process variance. However, we note that this would be the third quarter in a row where the PAYs **recorded** variance was favourable and outside of the one standard deviation band. This may be signaling that our ultimates are too high, our emergence model is not correctly parameterized, or a combination of both.

The current accident year ("CAY") **recorded** variances (right chart at the bottom of the previous page) fell outside of one standard deviation 8% of the time, suggesting that the projection process has performed better than simply projecting the prior 24-quarter average amount, but this is, admittedly, not a difficult hurdle to overcome (as the 24-quarter average does not take into account the obvious and expected CAY pattern of recorded activity increases as the CAY moves from Q1 to Q4). Unlike the PAYs discussion, bias in the projections has not been indicated at the 95% confidence level on a lagging 25-quarter basis, with 7 of the actuals higher than the associated projection.

We have included, for reference, additional charts immediately below related to levels influencing **recorded** activity.

*Ontario RSP Levels that influence[12] **Recorded** activity by Calendar Quarter*



We track beginning prior accident years' IBNR as **recorded** activity "comes out of" IBNR. Changes in the prior accident years' beginning IBNR (see upper 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);

[12] *Our recorded activity projections are based on selected ratios of life-to-date recorded activity to ultimate, converted to a "recorded to beginning IBNR" ratio, where ratio selection is based on our review of historical results. We find it helpful to show CAY emergence relative to earned premium for the purposes of the AvsP discussion.*

and

- IBNR levels potentially change with each new valuation.

The lower left chart above shows that from 2013-Q1 to 2015-Q4 inclusive, prior accident year recorded activity had been consistently below 10% of beginning IBNR, although the emergence model projections prior to our 2014 Q3 model refinement was projecting recorded at more than 15%. With the benefit of hindsight, it may be that what now appears to be redundancy in our previous IBNR selections may have played a part in these inaccurate projections, as may have the previous practice (up to valuation 2014 Q2) of projecting emergence at a government line level.

While our refinements to our parameterization of the emergence model appeared to have been successful for the period 2017 Q1 through to 2018 Q2, we have significantly over estimated the PAYs **recorded** ratio (i.e. the ratio of PAYs **recorded** to beginning nominal IBNR) when projecting recorded emergence for the most recent 3 valuations. This may suggest that the emergence for 2017 Q1 to 2018 Q2 were anomalies, and we were, in effect, simply lucky, rather than skilled in our modeling.

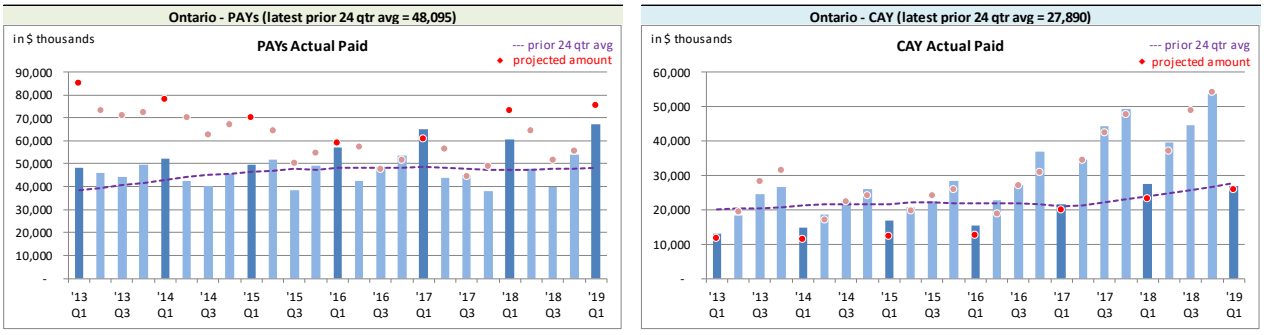
All of this continues to make it difficult to assess whether changes in the PAYs **recorded** ratios are being driven by increases in recorded activity/changes in case reserving practices, the significant reductions in IBNR over the prior valuations, or changes in payment emergence patterns.

CAY **recorded** activity relative to year-to-date earned premium (bottom right chart on the previous page) may be showing a potential (deteriorating) trend in relation to Q1 and Q2 **recorded** activity (similar trends for Q3 and Q4 are not quite as clear at this point). These deteriorations may reflect reductions in earned rate levels or, alternatively, increases in loss costs that are not being offset by earned rate changes. At this point, we are not able to draw definitive conclusions, other than this seems to support the selected accident year a priori loss ratios showing similar deterioration (both are deteriorating 4-5% per year).

C.5.2 AvsP: Paid Indemnity & Allowed Claims Expense

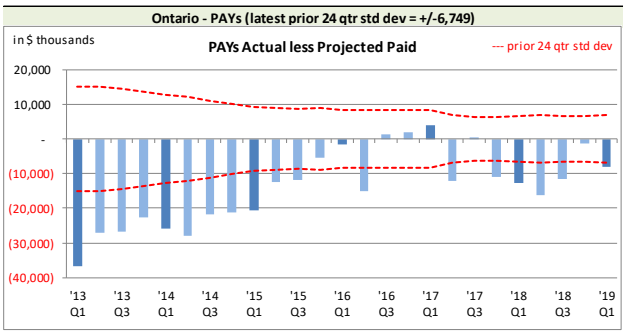
The charts immediately below show actual **paid** activity in each of the most recent 25 calendar quarters, along with a "prior 24-quarter average" to show how each quarter's actual compares with the average amount of the preceding 24 calendar quarters.

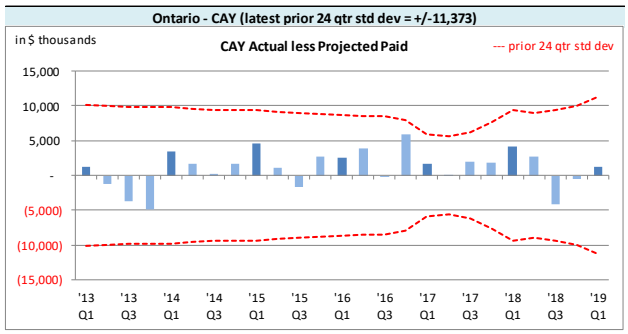
*Ontario RSP Actual **Paid** activity by Calendar Quarter*



The charts at the top of the next page show the actual less projected **paid** variances for the last 25 calendar quarters, along with bands for the "prior 24-quarter standard deviations" to show how the variances from projection compare with historical standard deviations.

*Ontario RSP Actual vs Projected Summary: **Paid** Variances by Calendar Quarter*





On Latest $ thousands		
Paid	PAYs	CAY
Qtrly Avg Paid (prior 24 qtrs)	48,095	27,890
std dev	6,749	11,373
A-P <> std dev	18	-
% <> std dev	72.0%	0.0%
norm <> std dev	31.7%	31.7%

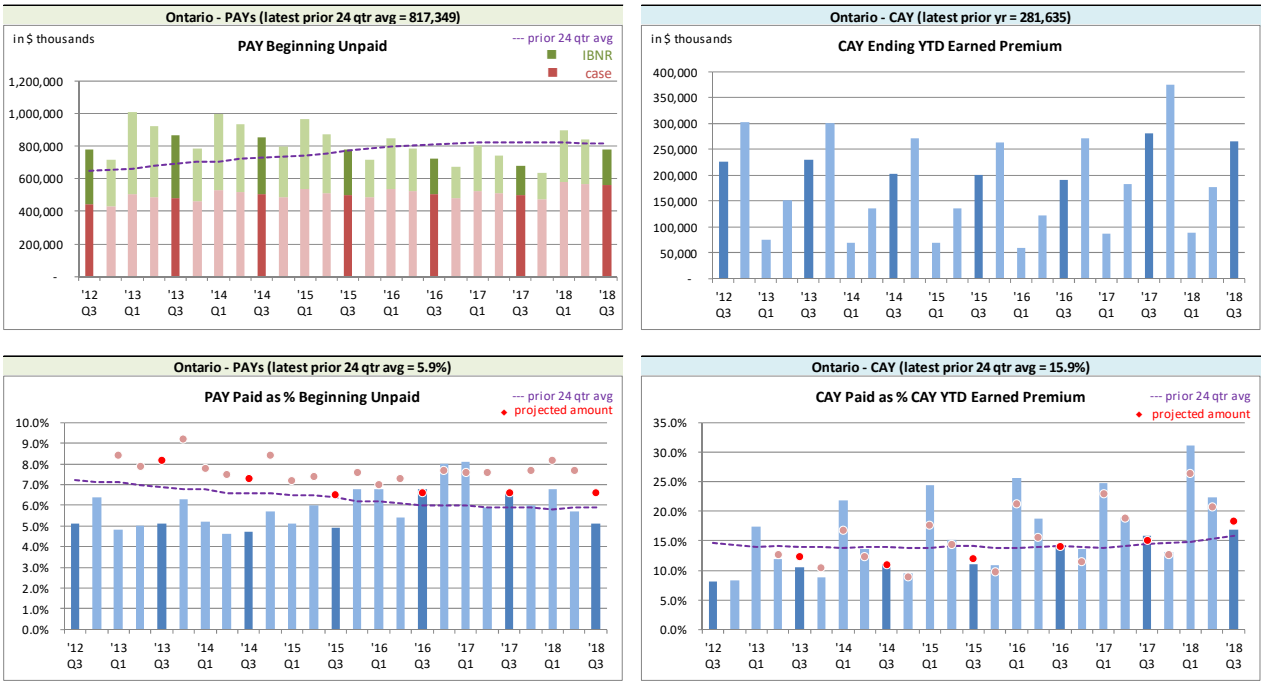
With respect to **paid** indemnity & allowed claims expense prior accident years' (PAYs) variances (left chart above), 72% of the variances have fallen outside of one standard deviation, suggesting the projection process has performed worse than projecting simply based on the preceding 24-quarter average. The variances suggest that the projection process is biased (with only 4 times in the past 25 quarters where actuals were higher than our projections for the PAYs **paid** amount), although there was evidence of improvement up until 2017-Q3. A similar change is not as evident with the PAYs **recorded** amount at 2017-Q3, perhaps suggesting a change in claims payment emergence patterns. As a result, we continue to review and monitor, particularly with respect to potential changes in claims payment and case reserve levels in relation to increased accident benefits large loss claims reporting.

The PAYs **paid** variance fell outside of the one standard deviation band during the latest quarter. The activity was reviewed and confirmed, with the variance attributed to process variance.

In contrast, the current accident year (CAY) **paid** variances (right chart above) tend to show actuals higher than projected (although not by much). While the CAY **paid** variances fell outside of one standard deviation 0% of the time suggesting the projection process has performed better than projecting simply based on the preceding 24-quarter average, bias has been indicated at a 95% confidence level on a lagging 25-quarter basis, with 18 times in the past 25 quarters where actuals were higher than our projections for the **CAY paid** amount.

We have included, for reference, additional charts at the top of the next page related to levels influencing **paid** activity.

Ontario RSP Levels that influence[13] ***Paid*** *activity by Calendar Quarter*



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
- IBNR levels potentially change with each new valuation.

Similar to our comments related to current accident year **recorded** activity as a percentage of year-to-date earned premium, there appears to be a deterioration in the current accident year **paid** ratios to earned premium that supports our selections of a priori loss ratios (deteriorating at about 4-5% per accident year).

C.6 Current valuation IBNR selections

Exhibit B.1.1 (see section L for all exhibits) summarizes the overall change in ultimate with this valuation and B.1.2 shows selected loss ratios over the most recent 4 valuations for comparison purposes on an "all coverages basis". The "B.2" exhibits provide information for third party liability, "B.3" exhibits for accident benefits, and "B.4" exhibits for the "other" government line.

[13]*Our paid projections are based on selected ratios of life-to-date paid activity to ultimate, converted to a "paid to beginning unpaid" ratio, where ratio selection is based on our review of historical results. We find it helpful to show CAY emergence relative to earned premium for the purposes of the AvsP discussion.*

C.7 Premium Liabilities / Future Accident Years

In order to provide a basis for estimating the full premium liability level for monthly statements (i.e. the level of premium deficiency liability / deferred policy acquisition cost asset to carry) we leverage the a priori loss ratios for the accident year underlying the unearned premium levels.

The test of recoverability leverages assumptions set by the Appointed Actuary. These include the Member expense allowances (taking into account the Board approved allowances) and policy administration / maintenance expense assumptions.

C.8 Actuarial Present Value Adjustments

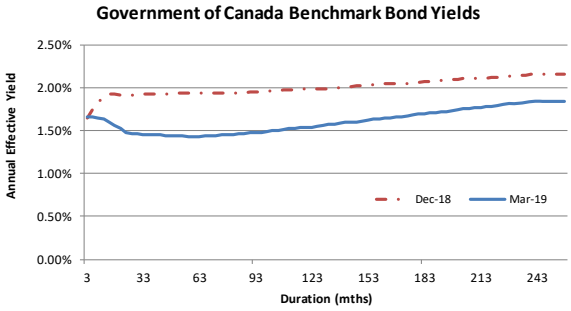
C.8.1 Selected Claims Payment Patterns

Payment patterns are selected through the emergence models (the same used for projecting future claims paid and recorded activity for the AvsP process), leveraging a "paid to ultimate" metric.

C.8.2 Selected Discount Rate

The projected future claims paid cash flows are matched to a simulated portfolio of Government of Canada benchmark monthly bonds (yields anchored to the valuation date), and 15 basis point investment expense is assumed.

A **discount rate of 1.43%** per annum was selected for the valuation of the claim liabilities and premium liabilities at March 31, 2019, **down from 1.88%** selected with the December 31, 2018 valuation. The chart to the right shows the Government of Canada benchmark bond yield curves at December 2018 and March 2019.



Sensitivity to the discount rate assumption is presented in Exhibit C (see section L).

C.8.3 Selected Margins for Adverse Deviations

The **margin for adverse deviation** ("MfADs") **for investment income** was **maintained at 25 basis points** with the current valuation.

There were **no changes to selected claims development margins** from the prior valuation and these are summarized in Exhibit D (see section L).

C.9 Special IBNR Provisions / Adjustments

During the prior (as at December 31, 2018) valuation, we carried a -$0.3 million IBNR adjustment to offset an incorrectly reported AY2008 other coverages – collision case reserve correction. The claim reserve correction transaction was submitted by the Member in March 2019 and reviewed by FA management and the associated IBNR adjustment was removed.

There were no special IBNR provisions or adjustments included with the current (as at March 31, 2019) valuation.

D. ALBERTA GRID RSP

D.1 Valuation Highlights

A summary of the valuation results through time is available in the "A" exhibit (see section L for all exhibits), with details related to the current valuation provided in the B.1.1 and B.1.2 exhibits.

While completing the current valuation (in April 2019), FA management was advised that a **Member** had been **incorrectly reporting claims recovery** (salvage/subrogation) **transactions** (affecting the **Alberta Grid/Non-Grid RSPs**) primarily **impacting AY2018**, with an estimated **favourable impact of $0.2 million** for the **Alberta Grid RSP**. The Member is working with FA Member Services to submit correcting transactions and has advised that all claims corrections would be submitted in May 2019. **No adjustment was included with the current valuation** to adjust for these incorrectly reported claims transactions.

The **change** in selected ultimate for **prior accident years** was **$38 thousand favourable** with this valuation (**0.0%** of the unpaid estimate as at last quarter). These changes are presented by accident year and government line in the table below.

Alberta Grid RSP - valuation changes in selected ultimate (favourable) / unfavourable **during Quarter**

Accident Year	Third Party Liability	Accident Benefits	Other Coverages	Total
2014 & Prior	(2,164)	2,581	(19)	398
2015	(679)	(15)	8	(686)
2016	(993)	(20)	(15)	(1,028)
2017	2,203	86	(115)	2,174
2018	(314)	(135)	(371)	(820)
TOTAL	(1,947)	2,497	(512)	38

During the current valuation, the prior accident year development was driven by bodily injury (third party liability) and accident benefits reported claims activity in the quarter, in particular driven by one older accident year (AY2005) **unfavourable accident benefits** case reserve increase of $2.6 million (related to a Saskatchewan extraterritorial claim).

The **selected loss ratio** for **accident year 2019** (current accident year, AY2019) is up 0.7 points to 89.7% with changes driven by recorded claims activity, while the selected loss ratio for **accident year 2020** remained unchanged (future accident year, AY2020 at 91.3%).

Summary descriptions of recent regulatory and legislative initiatives are available in section I.

The valuation process is described in more detail in section K, and a summary of changes to the process during this fiscal year is provided in section H.

Policy liability projected cash flows and March 2019 government of Canada bond yields were used to determine the applicable discount rate. The selected investment income margin for adverse deviation ("MfAD") was maintained at 25 basis points with the current valuation.

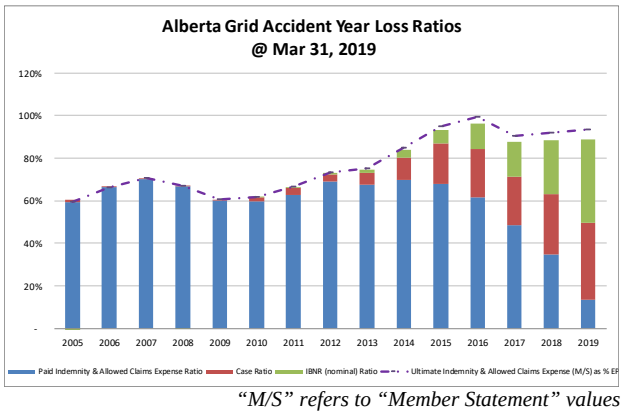
Selected claims development margins were carried forward from the prior valuation (see Exhibit D in section L for claims development margins).

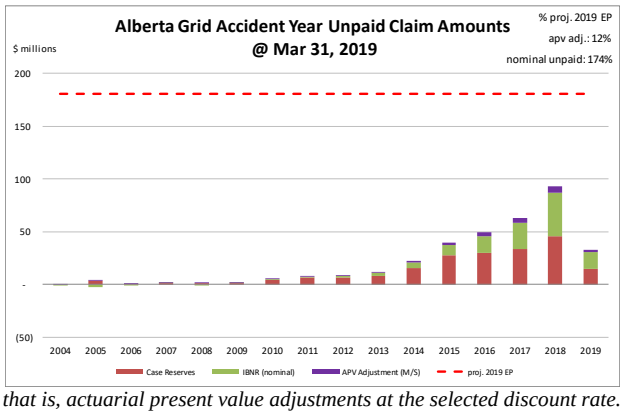
D.2 Booked results for the prior valuation implementation

It is helpful to consider how the portfolio looked after the **prior valuation** was implemented. In this

case, the **March 2019 booked results** were **based on** assumptions derived from **the prior (December 31, 2018) valuation** and were discussed in the associated monthly Actuarial Highlights.

The charts immediately below show the associated levels of claim liabilities[14] booked by accident year[15]. 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 then-current projected amount of 2019 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 tables immediately below show the associated Member Statement (M/S) policy liabilities.

claim liabilities ($000s)

	amt	%
case	199,006	59.3%
ibnr	114,846	34.2%
M/S apv adjust.	21,629	6.4%
M/S total	335,481	100.0%

premium liabilities ($000s)

	amt	%
unearned prem	84,144	106.2%
prem def/(dpac)	(9,024)	(11.4%)
M/S apv adjust.	4,102	5.2%
M/S total	79,222	100.0%

policy liabilities ($000s)

	amt	%
claim	313,852	75.7%
premium	75,120	18.1%
M/S apv adjust.	25,731	6.2%
M/S total	414,703	100.0%

D.3 Booked results for the current valuation implementation

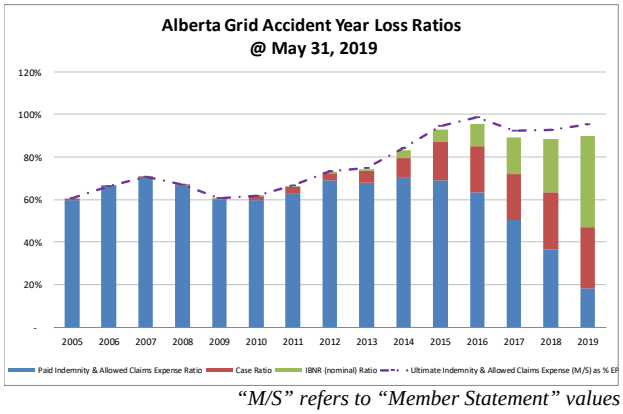
The **May 2019 booked results** were **based on** assumptions derived from **the current (March 30, 2019) valuation** and are discussed in the associated monthly Actuarial Highlights.

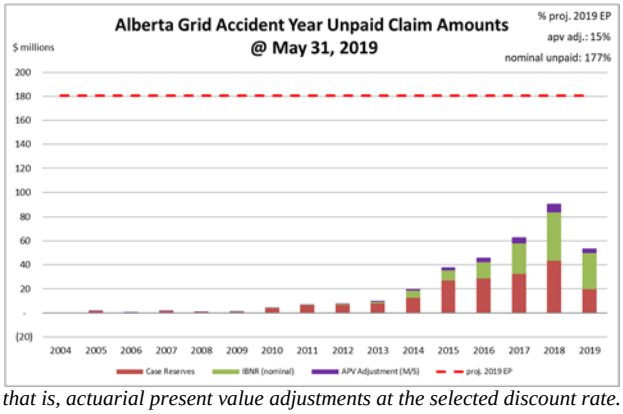
The charts at the top of the next page show the levels of claim liabilities booked by accident year on that basis. The left chart displays life-to-date payments, case reserves, IBNR, and the total including actuarial

[14] *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 expense allowance are NOT included in this discussion.*

[15] *Accident year 2004 was an incomplete year and therefore has been excluded from the loss ratio chart.*

present value adjustments against accident year earned premium. The right chart shows the associated dollar amounts for the components of the claim liabilities and the current projected amount of 2019 full year earned premium (the red hash-mark line) to provide some perspective.





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

The tables immediately below show the associated Member Statement (M/S) policy liabilities.

claim liabilities ($000s)

	amt	%
case	192,780	55.8%
ibnr	126,348	36.6%
M/S apv adjust.	26,223	7.6%
M/S total	345,351	100.0%

premium liabilities ($000s)

	amt	%
unearned prem	92,371	103.7%
prem def/(dpac)	(8,928)	(10.0%)
M/S apv adjust.	5,657	6.3%
M/S total	89,100	100.0%

policy liabilities ($000s)

	amt	%
claim	319,128	73.5%
premium	83,443	19.2%
M/S apv adjust.	31,880	7.3%
M/S total	434,451	100.0%

D.4 a priori loss ratios

The Alberta Grid RSP a priori loss ratios were carried forward from the December 31, 2018 valuation, and are presented in the "B.1.4", "B.2.3", "B.3.3", and B.4.3" exhibits in section L.

D.5 Actual vs Projected (AvsP)

Variances in projected recorded and paid emergence and the associated actual emergence are presented in the two following tables.

Recorded Emergence

Alberta Grid RSP

	Third Party Liability			Accident Benefits			Other Coverages			Total		
	Projected Recorded Claims in 2019-Q1	Actual Recorded Claims in 2019-Q1	Actual Less Projected	Projected Recorded Claims in 2019-Q1	Actual Recorded Claims in 2019-Q1	Actual Less Projected	Projected Recorded Claims in 2019-Q1	Actual Recorded Claims in 2019-Q1	Actual Less Projected	Projected Recorded Claims in 2019-Q1	Actual Recorded Claims in 2019-Q1	Actual Less Projected
Accident Year	[1]	[2]	[3] =[2]-[1]	[4]	[5]	[6] =[5]-[4]	[7]	[8]	[9] =[8]-[7]	[10] =[1]+[4]+[7]	[11] =[2]+[5]+[8]	[12] =[11]-[10]
2014 & Prior	1,159	(734)	(1,893)	1	2,585	2,584	7	(10)	(17)	1,167	1,841	674
2015	1,036	515	(521)	4	(7)	(11)	(12)	(10)	2	1,028	498	(530)
2016	1,825	510	(1,315)	4	(12)	(16)	(4)	(1)	3	1,825	497	(1,328)
2017	4,362	4,850	488	6	140	134	(181)	(254)	(73)	4,187	4,736	549
2018	10,158	8,762	(1,396)	218	52	(166)	(1,798)	(2,244)	(446)	8,578	6,570	(2,008)
2019	9,760	10,323	563	1,185	1,358	173	10,362	8,599	(1,763)	21,307	20,280	(1,027)
Total	**28,300**	**24,226**	**(4,074)**	**1,418**	**4,116**	**2,698**	**8,374**	**6,080**	**(2,294)**	**38,092**	**34,422**	**(3,670)**
2018 & prior	18,540	13,903	(4,637)	233	2,758	2,525	(1,988)	(2,519)	(531)	16,785	14,142	(2,643)

*projected recorded claims based on Recorded to Ultimate emergence model as at 2018-Q4

As indicated above, total recorded emergence at $34.4 million was $3.7 million (9.6%) less than the $38.1 million projected.

Favourable older accident year third party liability driven by AY2010-AY2016 favourable bodily injury large loss claims settlements and case reserve reductions across multiple Members, partially offset by unfavourable older accident year accident benefits driven by one AY2005 case reserve increase of $2.6M (SK extraterritorial claim).

Paid Emergence

Alberta Grid RSP

	Third Party Liability			Accident Benefits			Other Coverages			Total		
	Projected Paid Claims in 2019-Q1	Actual Paid Claims in 2019-Q1	Actual Less Projected	Projected Paid Claims in 2019-Q1	Actual Paid Claims in 2019-Q1	Actual Less Projected	Projected Paid Claims in 2019-Q1	Actual Paid Claims in 2019-Q1	Actual Less Projected	Projected Paid Claims in 2019-Q1	Actual Paid Claims in 2019-Q1	Actual Less Projected
Accident Year	[13]	[14]	[15] =[14]-[13]	[16]	[17]	[18] =[17]-[16]	[19]	[20]	[21] =[20]-[19]	[22] =[13]+[16]+[19]	[23] =[14]+[17]+[20]	[24] =[23]-[22]
2014 & Prior	5,840	3,957	(1,883)	20	(3)	(23)	97	(1)	(98)	5,957	3,953	(2,004)
2015	2,283	1,940	(343)	35	35	-	21	(12)	(33)	2,339	1,963	(376)
2016	1,999	2,049	50	138	41	(97)	4	(27)	(31)	2,141	2,063	(78)
2017	3,154	2,929	(225)	246	338	92	(36)	(81)	(45)	3,364	3,186	(178)
2018	6,849	5,888	(961)	1,009	951	(58)	3,414	3,221	(193)	11,272	10,060	(1,212)
2019	916	1,078	162	143	160	17	4,916	4,193	(723)	5,975	5,431	(544)
Total	**21,041**	**17,841**	**(3,200)**	**1,591**	**1,522**	**(69)**	**8,416**	**7,293**	**(1,123)**	**31,048**	**26,656**	**(4,392)**
2018 & prior	20,125	16,763	(3,362)	1,448	1,362	(86)	3,500	3,100	(400)	25,073	21,225	(3,848)

*projected paid claims based on Paid to Ultimate emergence model as at 2018-Q4

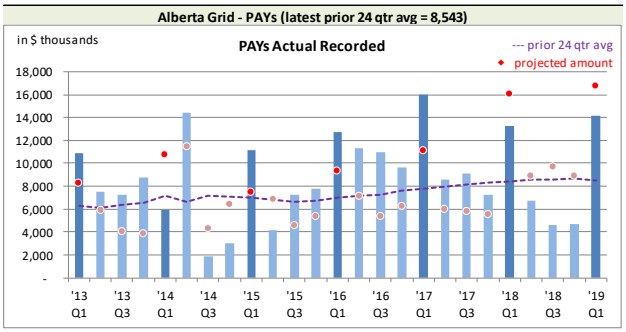
As indicated above, total paid emergence at $26.7 million was $4.4 million (14.1%) less than the $31.0 million projected.

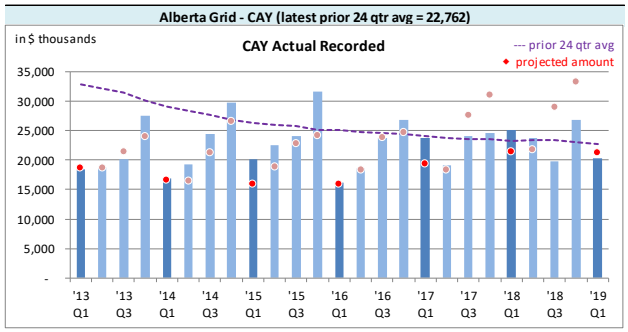
Additional detail and summary charts akin to those found in the monthly Actuarial Highlights are presented in the sections that follow.

D.5.1 AvsP: Recorded Indemnity & Allowed Claims Expense

Actual **recorded** activity (**paid** and case reserve changes) over the last 25-calendar quarters is shown in the charts at the top of the next page, including the "prior 24 quarter average" level.

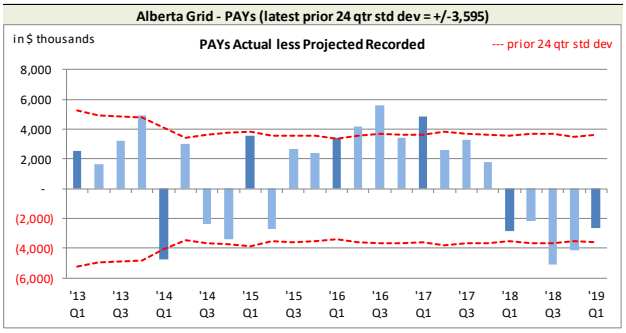
*Alberta Grid RSP Actual **Recorded** by Calendar Quarter*

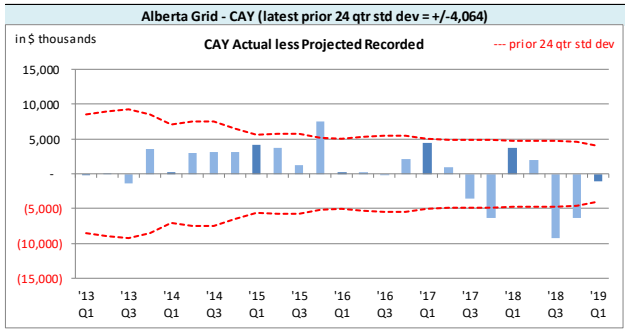




Recorded activity variances from the previous quarter's projections are shown in the charts immediately below, including the "prior 24-quarter standard deviation" levels.

*Alberta Grid RSP Actual vs Projected Summary: **Recorded** Variances by Calendar Quarter*





On Latest $ thousands		
Recorded	PAYs	CAY
Actual less Projected Recorded	8,543	22,762
std dev	3,595	4,064
A-P <> std dev	8	4
% <> std dev	32.0%	16.0%
norm <> std dev	31.7%	31.7%

With respect to **recorded** indemnity & allowed claims expense, the prior accident years' (PAYs) variances (left chart above) fell outside of one standard deviation 32% of the time, suggesting the projection process has performed no better than projecting the prior 24-quarter average amount. The variances show that actuals have been generally higher than projected for the available projections but the magnitude of the variances have not necessarily been extremely high and bias[16] has not been indicated at the 95% confidence level on a lagging 25-quarter basis, with 16 times in the past 25 quarters where actuals were higher than our projections for the PAYs **recorded** amount. While there may be various causes for this as outlined in Section B.4, we believe the main driver of these variances is that the prior valuation selections of ultimate have proven, in hindsight, to be deficient to some degree.

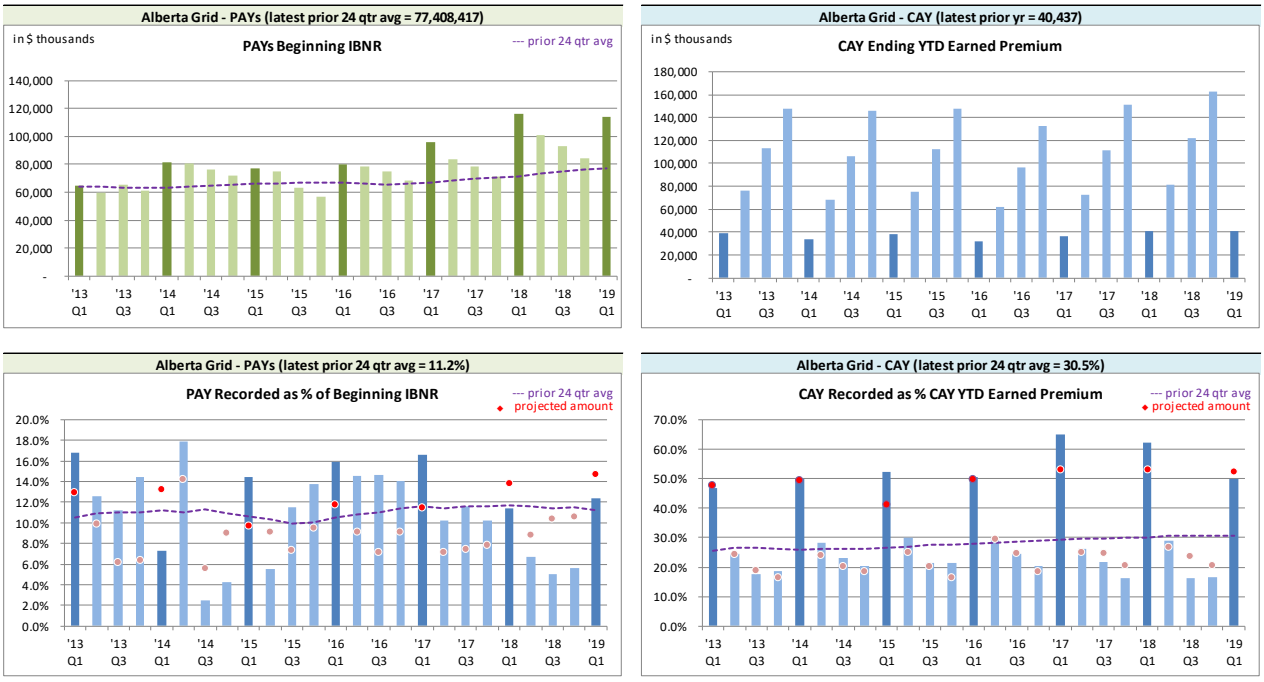
The current accident year ("CAY") **recorded** variances (right chart above) fell outside of one standard deviation 16% of the time, suggesting that the projection process has performed better than simply projecting the prior 24-quarter average amount. However, there does appear to be evidence of bias in the

[16] *For the binomial distribution with 25 trials and an assumed 50% success probability, the 95% confidence range is 8 to 17. That is, for the 25 quarters presented, if the recorded projection was unbiased, with a 95% confidence, we would expect between 8 to 17 variances above 0. Less than 8 variances above 0 would indicate that our projections are biased high, and greater than 17 variances would indicate that our projections are biased low.*

projection process (as actuals were higher than projections 17 times in the past 25 quarters). This result would support the view that our historical selections of ultimate, in hindsight, were deficient to some degree.

We have included, for reference, additional charts immediately below related to levels influencing **recorded** activity.

*Alberta Grid RSP Levels that influence[17] **Recorded** activity by Calendar Quarter*



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

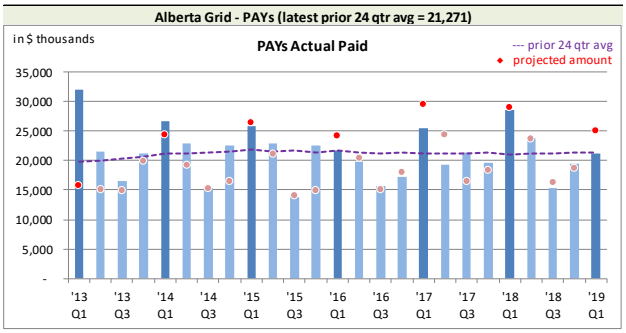
- to offset actual **recorded** activity (through loss ratio matching);
- the annual switchover as a current accident year becomes a prior accident year (occurs in January); and
- IBNR levels potentially change with each new valuation.

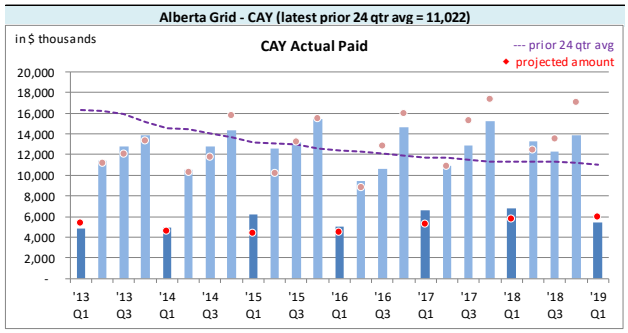
D.5.2 AvsP: Paid Indemnity & Allowed Claims Expense

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

[17] *Our recorded activity projections are based on selected ratios of life-to-date recorded activity to ultimate, converted to a "recorded to beginning IBNR" ratio, where ratio selection is based on our review of historical results. We find it helpful to show CAY emergence relative to earned premium for the purposes of the AvsP discussion.*

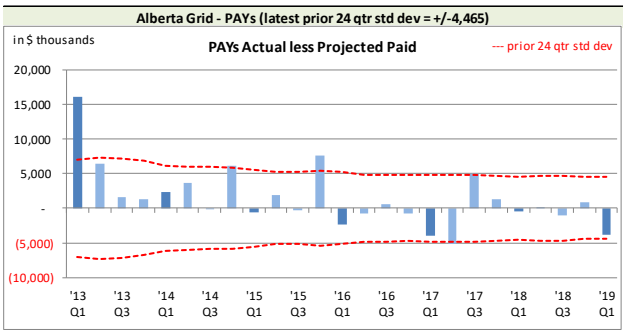
*Alberta Grid RSP Actual **Paid** activity by Calendar Quarter*

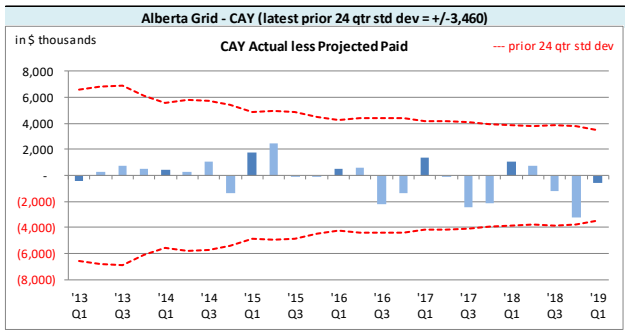




The charts immediately below show the actual less projected **paid** variances for the last 25 calendar quarters, along with bands for the "prior 24-quarter standard deviations" to show how the variances from projection compare with historical standard deviations.

*Alberta Grid RSP Actual vs Projected Summary: **Paid** Variances by Calendar Quarter*





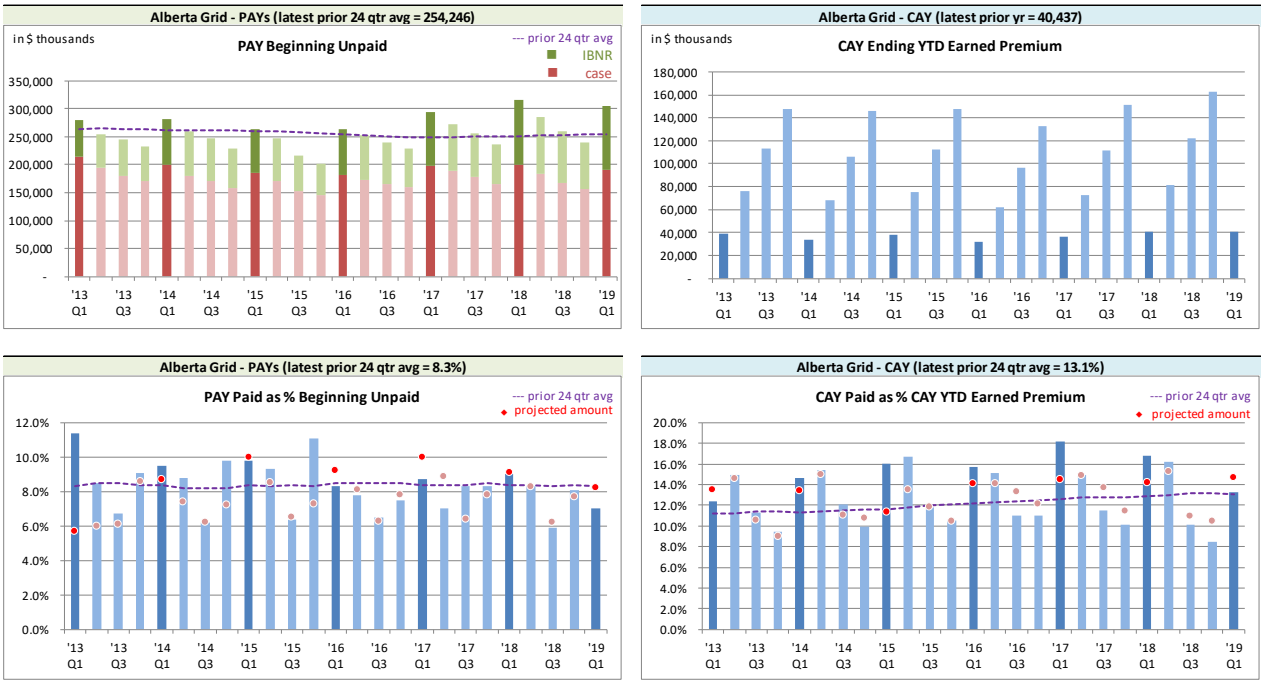
On Latest $ thousands		
Paid	PAYs	CAY
Qtrly Avg Paid (prior 24 qtrs)	21,271	11,022
std dev	4,465	3,460
A-P <> std dev	5	-
% <> std dev	20.0%	0.0%
norm <> std dev	31.7%	31.7%

With respect to **paid** indemnity & allowed claims expense prior accident years' (PAYs) variances (left chart above), 20% of the variances (where projections are available) have fallen outside of one standard deviation, suggesting the projection process has performed better than projecting simply based on the preceding 24-month average. With 14 times of the past 25 quarters where actuals were higher than projected, there does not appear to be evidence of bias in the projection process, in particular no bias over the more recent periods.

The current accident year (CAY) **paid** variances (right chart above) have not fallen outside of one standard deviation, suggesting that the projection process has performed better than simply projecting the prior 24-quarter average amount. There does not appear to be evidence of bias in the projection process over the more recent periods, with 13 times of the past 25 quarters actuals being higher than projected.

We have included, for reference, additional charts at the top of the next page related to levels influencing **paid** activity.

Alberta Grid RSP Levels that influence[18] ***Paid*** *activity by Calendar Quarter*



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
- IBNR levels potentially change with each new valuation.

D.6 Current valuation IBNR selections

Exhibit B.1.1 (see section L for all exhibits) summarizes the overall change in ultimate with this valuation and B.1.2 shows selected loss ratios over the most recent 4 valuations for comparison purposes on an "all coverages basis". The "B.2" exhibits provide information for third party liability, "B.3" exhibits for accident benefits, and "B.4" exhibits for the "other" government line.

D.7 Premium Liabilities / Future Accident Years

In order to provide a basis for estimating the full premium liability level for monthly statements (i.e. the level of premium deficiency liability / deferred policy acquisition cost asset to carry) we leverage the a priori loss ratios for the accident year underlying the unearned premium levels.

[18] *Our paid projections are based on selected ratios of life-to-date paid activity to ultimate, converted to a "paid to beginning unpaid" ratio, where ratio selection is based on our review of historical results. We find it helpful to show CAY emergence relative to earned premium for the purposes of the AvsP discussion.*

The test of recoverability leverages assumptions set by the Appointed Actuary. These include the Member expense allowances (taking into account the Board approved allowances) and policy administration / maintenance expense assumptions.

D.8 Actuarial Present Value Adjustments

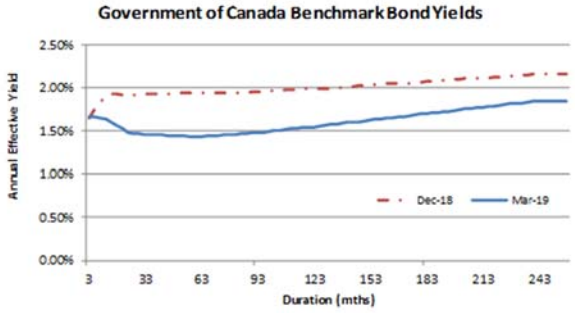
D.8.1 Selected Claims Payment Patterns

Payment patterns are selected through the emergence models (the same used for projecting future claims paid and recorded activity for the AvsP process), leveraging a "paid to ultimate" metric.

D.8.2 Selected Discount Rate

The projected future claims paid cash flow are matched to a simulated portfolio of Government of Canada benchmark monthly bonds (yields anchored to the valuation date), and 15 basis point investment expense is assumed.

A **discount rate of 1.44%** per annum was selected for the valuation of the claim liabilities and premium liabilities at March 31, 2019, **down from 1.93%** selected with the December 31, 2018 valuation. The chart to the right shows the Government of Canada benchmark bond yield curves at December 2018 and March 2019.



Sensitivity to the discount rate assumption is presented in Exhibit C (see section L).

D.8.3 Selected Margins for Adverse Deviations

The **margin for adverse deviation** ("MfADs") **for investment income** was **maintained at 25 basis points** with the current valuation.

There were **no changes to selected claims development margins** from the prior valuation and these are summarized in Exhibit D (see section L).

D.9 Special IBNR Provisions / Adjustments

There were no special IBNR provisions or adjustments included with the current (as at March 31, 2019) or prior (as at December 31, 2018) valuation.

E. ALBERTA NON-GRID RSP

E.1 Valuation Highlights

A summary of the valuation results through time is available in the "A" exhibit (see section L for all exhibits), with detail related to the current valuation provided in the B.1.1 and B.1.2 exhibits.

While completing the current valuation (in April 2019), FA management was advised that a **Member** had been **incorrectly reporting claims recovery** (salvage/subrogation) **transactions** (affecting the **Alberta Grid/Non-Grid RSPs**) primarily **impacting AY2018**, with an estimated **favourable impact of $1.0 million** for the **Alberta non-Grid RSP**. The Member is working with FA Member Services to submit correcting transactions and has advised that all claims corrections would be submitted in May 2019. **No adjustment was included with the current valuation** to adjust for these incorrectly reported claims transactions.

The **change** in selected ultimate for **prior accident years** was **$0.3 million favourable** with this valuation (**0.2%** of the unpaid estimate as at last quarter). These changes are presented by accident year and government line in the table below.

Alberta Non-Grid RSP - valuation changes in selected ultimate (favourable) / unfavourable **during Quarter**

Accident Year	Third Party Liability	Accident Benefits	Other Coverages	Total
2014 & Prior	(225)	(6)	(33)	(264)
2015	(523)	(9)	(25)	(557)
2016	(297)	(33)	(2)	(332)
2017	773	(116)	122	779
2018	(212)	(433)	734	89
TOTAL	(484)	(597)	796	(285)

During the current valuation, the prior accident year development was driven by favourable bodily injury (third party liability) recorded claims activity partially offset by unfavourable AY2018 other coverages (comprehensive) recorded claims activity reported in the quarter

The **selected loss ratio** for **accident year 2019** (AY2019, current accident year) increased 0.1 points to 108.7%, while the selected loss ratio for **accident year 2020** remained unchanged (future accident year, AY2020 at 110.4%).

Summary descriptions of recent regulatory and legislative initiatives are available in section I.

The valuation process is described in more detail in section K, and a summary of changes to the process during this fiscal year is provided in section H.

Policy liability projected cash flows and March 2019 government of Canada bond yields were used to determine the applicable discount rate. The selected investment income margin for adverse deviation ("MfAD") was maintained at 25 basis points with the current valuation.

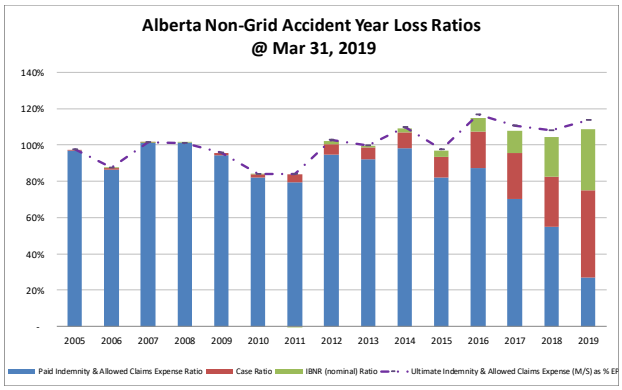
Selected claims development margins were carried forward from the prior valuation (see Exhibit D in section L for claims development margins).

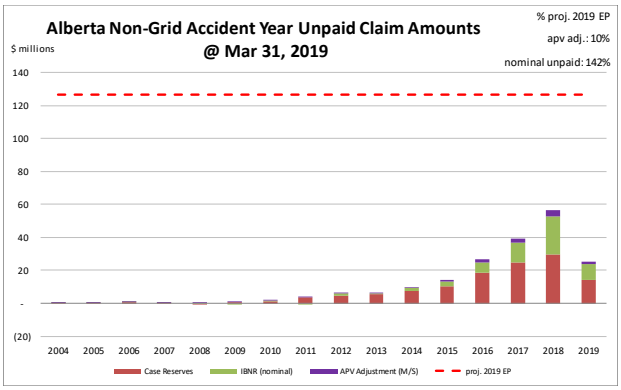
E.2 Booked results for the prior valuation implementation

It is helpful to consider how the portfolio looked after the **prior valuation** was implemented. In this case, the **March 2019 booked results** were **based on** assumptions derived from **the prior**

(December 31, 2018) valuation and were discussed in the associated monthly Actuarial Highlights.

The charts immediately below show the associated levels of claim liabilities[19] booked by accident year[20]. 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 then-current projected amount of 2019 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 tables immediately below show the associated Member Statement (M/S) policy liabilities.

claim liabilities ($000s)

	amt	%
case	121,092	63.2%
ibnr	58,447	30.5%
M/S apv adjust.	12,212	6.4%
M/S total	191,751	100.0%

premium liabilities ($000s)

	amt	%
unearned prem	57,977	86.8%
prem def/(dpac)	5,298	7.9%
M/S apv adjust.	3,540	5.3%
M/S total	66,815	100.0%

policy liabilities ($000s)

	amt	%
claim	179,539	69.4%
premium	63,275	24.5%
M/S apv adjust.	15,752	6.1%
M/S total	258,566	100.0%

E.3 **Booked results for the <u>current</u> valuation implementation**

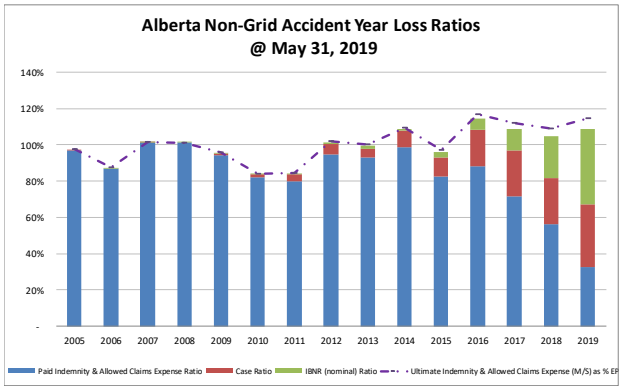
The **May 2019 booked results** were **based on** assumptions derived from **the current (March 31, 2019) valuation** and are discussed in the associated monthly Actuarial Highlights.

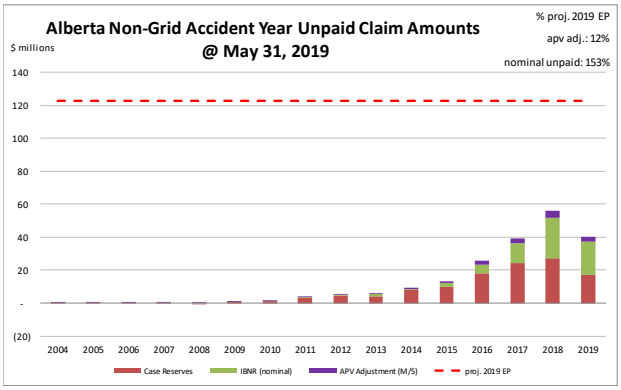
The charts at the top of the next page show the levels of claim liabilities booked by accident year on that basis. The left chart displays life-to-date payments, case reserves, IBNR, and the total including actuarial present value adjustments against accident year earned premium. The right chart shows the associated

[19] *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 expense allowance are NOT included in this discussion.*

[20] *Accident year 2004 was an incomplete year and therefore has been excluded from the loss ratio chart.*

dollar amounts for the components of the claim liabilities and the current projected amount of 2019 full year earned premium (the red hash-mark line) to provide some perspective.





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

The tables immediately below show the associated Member Statement (M/S) policy liabilities.

claim liabilities ($000s)

	amt	%
case	118,535	58.6%
ibnr	68,681	33.9%
M/S apv adjust.	15,231	7.5%
M/S total	202,447	100.0%

premium liabilities ($000s)

	amt	%
unearned prem	59,598	85.7%
prem def/(dpac)	5,680	8.2%
M/S apv adjust.	4,237	6.1%
M/S total	69,515	100.0%

policy liabilities ($000s)

	amt	%
claim	187,216	68.8%
premium	65,278	24.0%
M/S apv adjust.	19,468	7.2%
M/S total	271,962	100.0%

E.4 a priori loss ratios

The Alberta Non-Grid RSP a priori loss ratios were carried forward from the December 31, 2018 valuation, and are presented in the "B.1.4", "B.2.3", "B.3.3", and "B.4.3" exhibits in section L.

E.5 Actual vs Projected (AvsP)

Variances in projected recorded and paid emergence and the associated actual emergence is presented in the two following tables.

Recorded Emergence

Alberta Non-Grid RSP

	Third Party Liability			Accident Benefits			Other Coverages			Total		
	Projected Recorded Claims in 2019-Q1	Actual Recorded Claims in 2019-Q1	Actual Less Projected	Projected Recorded Claims in 2019-Q1	Actual Recorded Claims in 2019-Q1	Actual Less Projected	Projected Recorded Claims in 2019-Q1	Actual Recorded Claims in 2019-Q1	Actual Less Projected	Projected Recorded Claims in 2019-Q1	Actual Recorded Claims in 2019-Q1	Actual Less Projected
Accident Year	[1]	[2]	[3] =[2]-[1]	[4]	[5]	[6] =[5]-[4]	[7]	[8]	[9] =[8]-[7]	[10] =[1]+[4]+[7]	[11] =[2]+[5]+[8]	[12] =[11]-[10]
2014 & Prior	330	201	(129)	1	(2)	(3)	11	(6)	(17)	342	193	(149)
2015	409	(146)	(555)	3	(3)	(6)	5	(38)	(43)	417	(187)	(604)
2016	904	752	(152)	4	(26)	(30)	19	44	25	927	770	(157)
2017	2,194	2,910	716	7	(66)	(73)	(390)	(152)	238	1,811	2,692	881
2018	6,546	3,314	(3,232)	410	(21)	(431)	(1,404)	(1,479)	(75)	5,552	1,814	(3,738)
2019	7,671	6,443	(1,228)	1,591	1,687	96	14,717	13,728	(989)	23,979	21,858	(2,121)
Total	**18,054**	**13,474**	**(4,580)**	**2,016**	**1,569**	**(447)**	**12,958**	**12,097**	**(861)**	**33,028**	**27,140**	**(5,888)**
2018 & prior	10,383	7,031	(3,352)	425	(118)	(543)	(1,759)	(1,631)	128	9,049	5,282	(3,767)

*projected recorded claims based on Recorded to Ultimate emergence model as at 2018-Q4

As indicated above, total recorded emergence at $27.1 million was $5.9 million (17.8%) less than the $33.0 million projected.

Paid Emergence

Alberta Non-Grid RSP

	Third Party Liability			Accident Benefits			Other Coverages			Total		
	Projected Paid Claims in 2019-Q1	Actual Paid Claims in 2019-Q1	Actual Less Projected	Projected Paid Claims in 2019-Q1	Actual Paid Claims in 2019-Q1	Actual Less Projected	Projected Paid Claims in 2019-Q1	Actual Paid Claims in 2019-Q1	Actual Less Projected	Projected Paid Claims in 2019-Q1	Actual Paid Claims in 2019-Q1	Actual Less Projected
Accident Year	[13]	[14]	[15] =[14]-[13]	[16]	[17]	[18] =[17]-[16]	[19]	[20]	[21] =[20]-[19]	[22] =[13]+[16]+[19]	[23] =[14]+[17]+[20]	[24] =[23]-[22]
2014 & Prior	2,388	4,547	2,159	213	2	(211)	148	(9)	(157)	2,749	4,540	1,791
2015	950	1,000	50	3	(1)	(4)	45	8	(37)	998	1,007	9
2016	1,124	2,048	924	19	7	(12)	41	(124)	(165)	1,184	1,931	747
2017	2,835	2,506	(329)	190	298	108	(184)	(21)	163	2,841	2,783	(58)
2018	4,271	3,464	(807)	1,267	1,039	(228)	3,126	4,712	1,586	8,664	9,215	551
2019	648	689	41	171	165	(6)	7,258	7,027	(231)	8,077	7,881	(196)
Total	**12,216**	**14,254**	**2,038**	**1,863**	**1,510**	**(353)**	**10,434**	**11,593**	**1,159**	**24,513**	**27,357**	**2,844**
2018 & prior	11,568	13,565	1,997	1,692	1,345	(347)	3,176	4,566	1,390	16,436	19,476	3,040

*projected paid claims based on Paid to Ultimate emergence model as at 2018-Q4

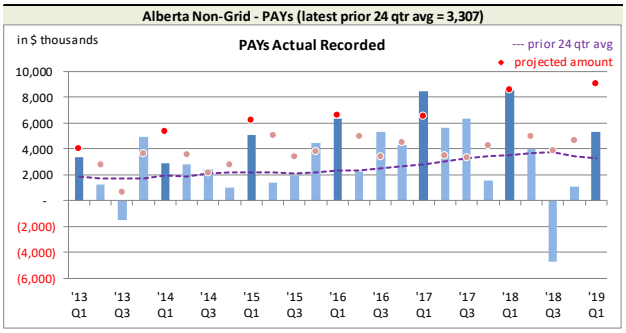
As indicated above, total paid emergence at $27.4 million was $2.8 million (11.6%) more than the $24.5 million projected.

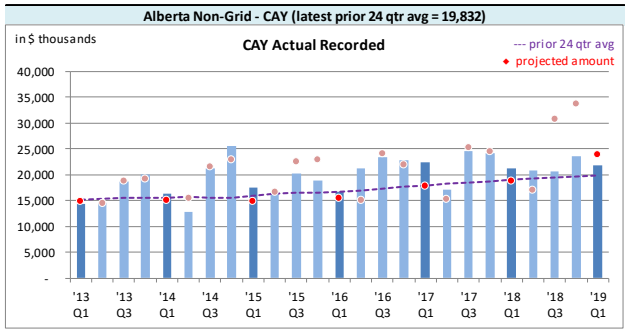
Additional detail and summary charts akin to those found in the monthly Actuarial Highlights are presented in the sections that follow.

E.5.1 AvsP: Recorded Indemnity & Allowed Claims Expense

Actual **recorded** activity (**paid** and case reserve changes) over the last 25-calendar quarters is shown in the charts immediately below, including the "prior 24 quarter average" level.

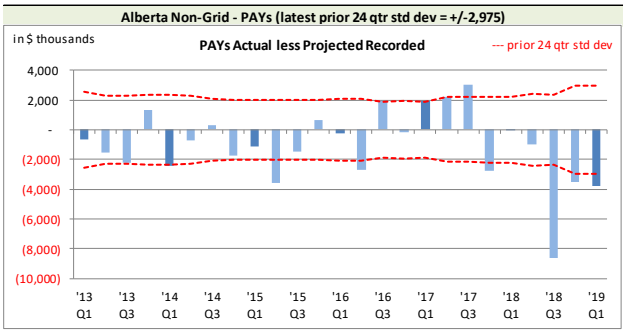
*Alberta Non-Grid RSP Actual **Recorded** by Calendar Quarter*

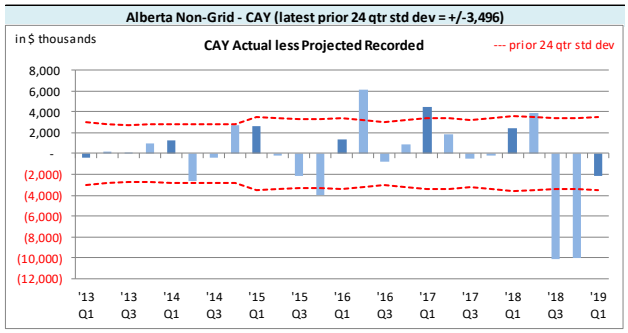




Recorded activity variances from the previous quarter's projections are shown in the charts at the top of the next page, including the "prior 24-quarter standard deviation" levels.

*Alberta Non-Grid RSP Actual vs Projected Summary: **Recorded** Variances by Calendar Quarter*





On Latest $ thousands		
Recorded	PAYs	CAY
Actual less Projected Recorded	3,307	19,832
std dev	2,975	3,496
A-P <> std dev	11	6
% <> std dev	44.0%	24.0%
norm <> std dev	31.7%	31.7%

With respect to **recorded** indemnity & allowed claims expense, the prior accident years' (PAYs) variances (left chart above) fell outside of one standard deviation 44% of the time, suggesting the projection process has performed worse than projecting the prior 24-quarter average amount. Bias[21] has not been indicated at the 95% confidence level on a lagging 25-quarter basis, with 7 times in the past 25 quarters where actuals were higher than our projections for the PAYs **recorded** amount, however, with the latest 6 periods all showing favourable variance, bias may be indicated.

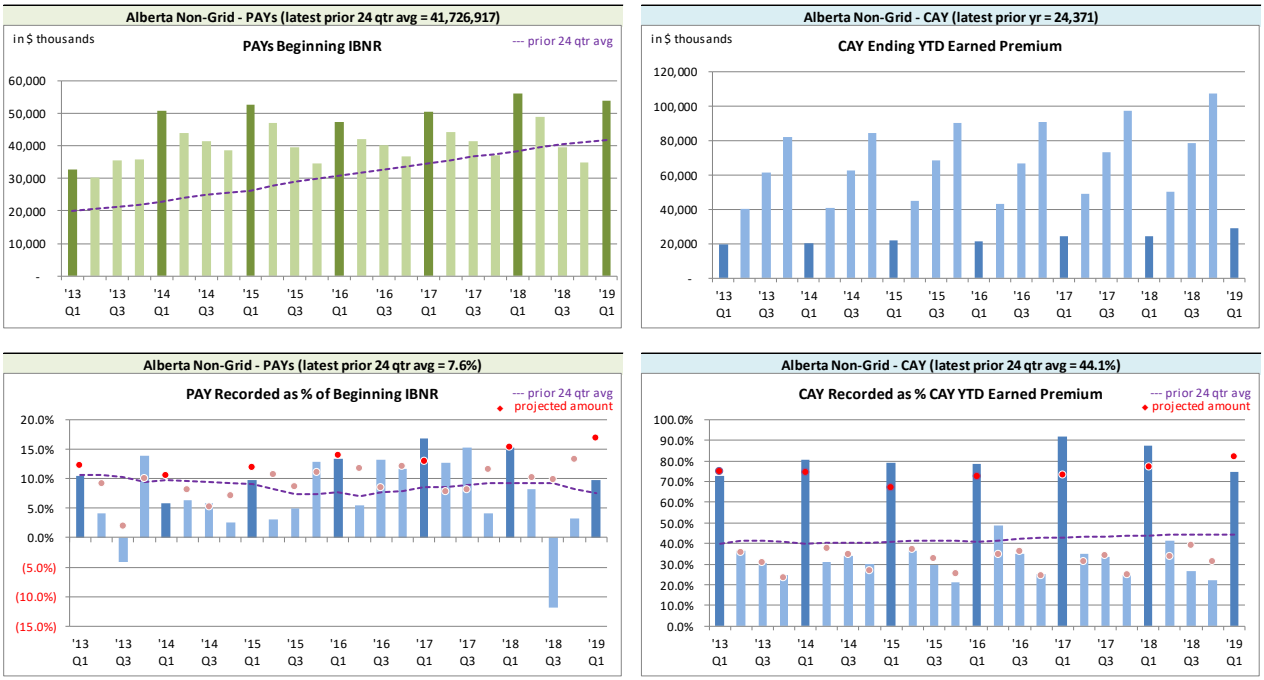
The PAYs **recorded** variance fell outside of the one standard deviation band during the latest quarter. The PAYs recorded claims activity in the quarter was reviewed and confirmed, but we are investigating the result in light of continued variances that may indicate recent bias.

The current accident year (CAY) **recorded** variances (right chart above) fell outside of one standard deviation 24% of the time suggesting that the projection process has performed better than simply projecting the prior 24-quarter average amount. As well, there does not appear to be evidence of bias in the projection process.

We have included, for reference, additional charts at the top of the next page related to levels influencing **recorded** activity.

[21] *For the binomial distribution with 25 trials and an assumed 50% success probability, the 95% confidence range is 8 to 17. That is, for the 25 quarters presented, if the recorded projection was unbiased, with a 95% confidence, we would expect between 8 to 17 variances above 0. Less than 8 variances above 0 would indicate that our projections are biased high, and greater than 17 variances would indicate that our projections are biased low.*

Alberta Non-Grid RSP Levels that influence[22] ***Recorded*** *activity by Calendar Quarter*



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

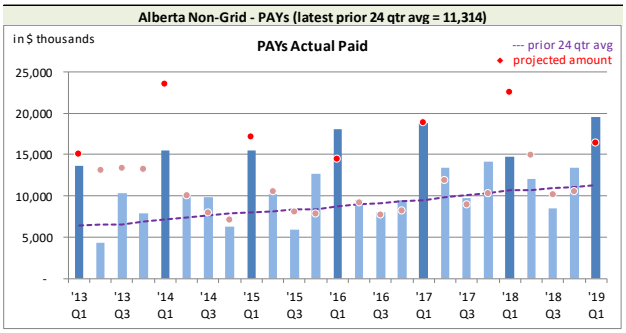
- to offset actual **recorded** activity (through loss ratio matching);
- the annual switchover as a current accident year becomes a prior accident year (occurs in January); and
- IBNR levels potentially change with each new valuation.

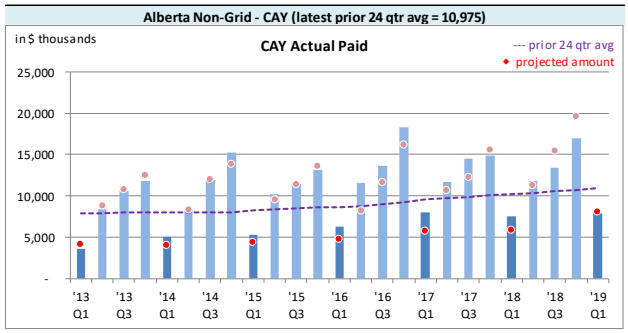
E.5.2 AvsP: Paid Indemnity & Allowed Claims Expense

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

[22] *Our recorded activity projections are based on selected ratios of life-to-date recorded activity to ultimate, converted to a "recorded to beginning IBNR" ratio, where ratio selection is based on our review of historical results. We find it helpful to show CAY emergence relative to earned premium for the purposes of the AvsP discussion.*

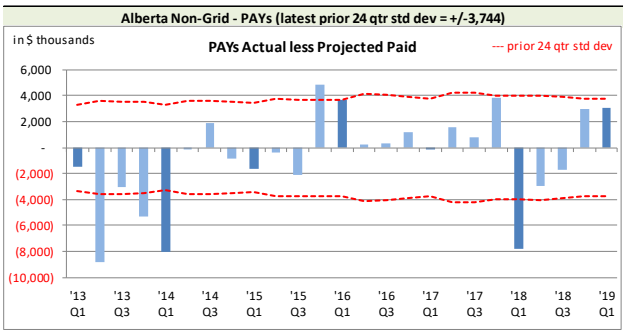
*Alberta Non-Grid RSP Actual **Paid** activity by Calendar Quarter*

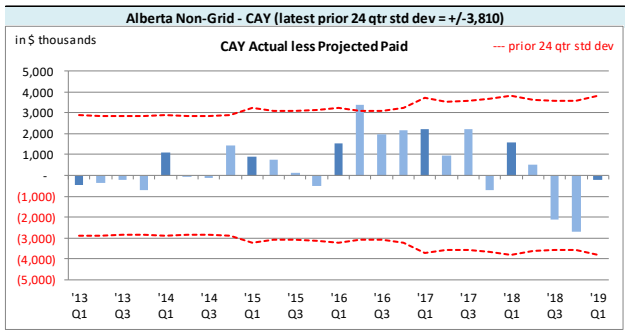




The charts immediately below show the actual less projected **paid** variances for the last 25 calendar quarters, along with bands for the "prior 24-quarter standard deviations" to show how the variances from projection compare with historical standard deviations.

*Alberta Non-Grid RSP Actual vs Projected Summary: **Paid** Variances by Calendar Quarter*





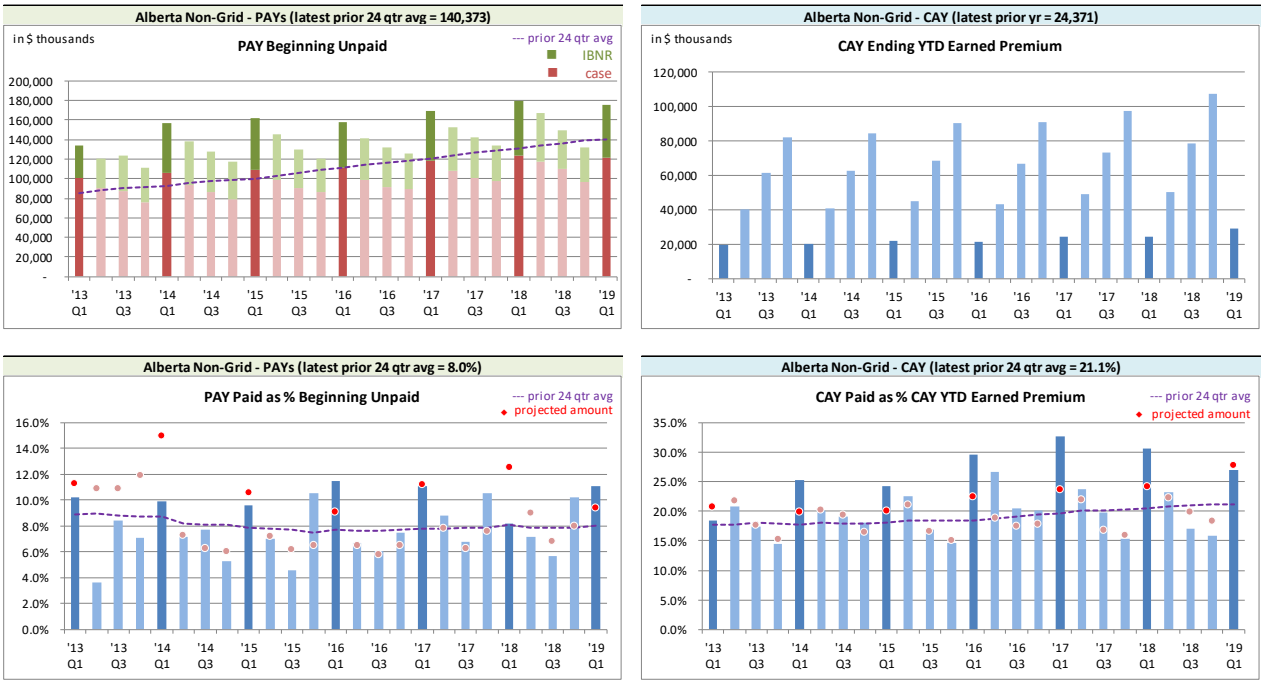
On Latest $ thousands		
Paid	PAYs	CAY
Qtrly Avg Paid (prior 24 qtrs)	11,314	10,975
std dev	3,744	3,810
A-P <> std dev	5	1
% <> std dev	20.0%	4.0%
norm <> std dev	31.7%	31.7%

With respect to **paid** indemnity & allowed claims expense prior accident years' (PAYs) variances (left chart above), 20% of the variances have fallen outside of one standard deviation, suggesting the projection process has performed better than projecting simply based on the preceding 24-month average. With 11 times of the past 25 quarters where actuals were higher than projected, there does not appear to be evidence of bias in the projection process.

The current accident year (CAY) **paid** projection variances related to the available projections had 4% outside of one standard deviation, suggesting the projection process has performed better than simply projecting the prior 24-quarter average amount. That said, up until 2017-Q4, there may have been some projection bias (actuals tending to be higher than projections), which may suggest the CAY selections have been deficient.

We have included, for reference, additional charts at the top of the next page related to levels influencing **paid** activity.

Alberta Non-Grid RSP Levels that influence[23] ***Paid*** *activity by Calendar Quarter*



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
- IBNR levels potentially change with each new valuation.

We do not believe we can draw consistent conclusions from metrics provided in the charts above at this time.

E.6 Current valuation IBNR selections

Exhibit B.1.1 (see section L for all exhibits) summarizes the overall change in ultimate with this valuation and B.1.2 shows selected loss ratios over the most recent 4 valuations for comparison purposes on an "all coverages basis". The "B.2" exhibits provide information for third party liability, "B.3" exhibits for accident benefits, and "B.4" exhibits for the "other" government line.

E.7 Premium Liabilities / Future Accident Years

In order to provide a basis for estimating the full premium liability level for monthly statements (i.e. the

[23] *Our paid projections are based on selected ratios of life-to-date paid activity to ultimate, converted to a "paid to beginning unpaid" ratio, ratio selection is based on our review of historical results. We find it helpful to show CAY emergence relative to earned premium for the purposes of the AvsP discussion.*

level of premium deficiency liability / deferred policy acquisition cost asset to carry) we leverage the a priori loss ratios for the accident year underlying the unearned premium levels.

The test of recoverability leverages assumptions that are set by the Appointed Actuary. These include the Member expense allowances (taking into account the Board approved allowances) and policy administration / maintenance expense assumptions.

E.8 Actuarial Present Value Adjustments

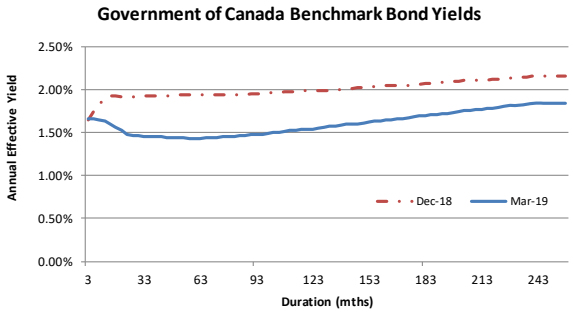
E.8.1 Selected Claims Payment Patterns

Payment patterns are selected through the emergence models (the same used for projecting future claims paid and recorded activity for the AvsP process), leveraging a "paid to ultimate" metric.

E.8.2 Selected Discount Rate

The projected future claims paid cash flow are matched to a simulated portfolio of Government of Canada benchmark monthly bonds (yields anchored to the valuation date), and 15 basis point investment expense is assumed.

A **discount rate of 1.46%** per annum was selected for the valuation of the claim liabilities and premium liabilities at March 31, 2019, **down from 1.93%** selected with the December 31, 2018 valuation. The chart to the right shows the Government of Canada benchmark bond yield curves at December 2018 and March 2019.



Sensitivity to the discount rate assumption is presented in Exhibit C (see section L).

E.8.3 Selected Margins for Adverse Deviations

The **margin for adverse deviation** ("MfADs") **for investment income** was **maintained at 25 basis points** with the current valuation.

There were **no changes to selected claims development margins** from the prior valuation and these are summarized in Exhibit D (see section L).

E.9 Special IBNR Provisions / Adjustments

There were no special IBNR provisions or adjustments included with the current (as at March 31, 2019) or prior (as at December 31, 2018) valuation.

F. NEW BRUNSWICK RSP

F.1 Valuation Highlights

A summary of the valuation results through time is available in the "A" exhibit (see section L for all exhibits), with detail related to the current valuation provided in the B.1.1 and B.1.2 exhibits.

The **change** in selected ultimate for **prior accident years** was **$0.1 million favourable** with this valuation (**0.5%** of the unpaid estimate as at last quarter). These changes are presented by accident year and government line in the table below.

New Brunswick RSP - valuation changes in selected ultimate (favourable) / unfavourable **during Quarter**

Accident Year	Third Party Liability	Accident Benefits	Other Coverages	Total
2014 & Prior	25	(353)	175	(153)
2015	(28)	(1)	-	(29)
2016	52	2	(7)	47
2017	-	(3)	(5)	(8)
2018	(80)	146	(23)	43
TOTAL	(31)	(209)	140	(100)

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 overall.

The **selected loss ratio** for **accident year 2019** (current accident year, AY2019) increased 0.8 points to 76.5%, while the selected loss ratio for **accident year 2020** remained unchanged (future accident year, AY2020 at 77.5%).

Summary descriptions of recent regulatory and legislative initiatives are available in section I.

The valuation process is described in more detail in section K, and a summary of changes to the process during this fiscal year is provided in section H.

Policy liability projected cash flows and March 2019 government of Canada bond yields were used to determine the applicable discount rate. The selected investment income margin for adverse deviation ("MfAD") was maintained at 25 basis points with the current valuation.

Selected claims development margins were carried forward from the prior valuation (see Exhibit D in section L for selected margins).

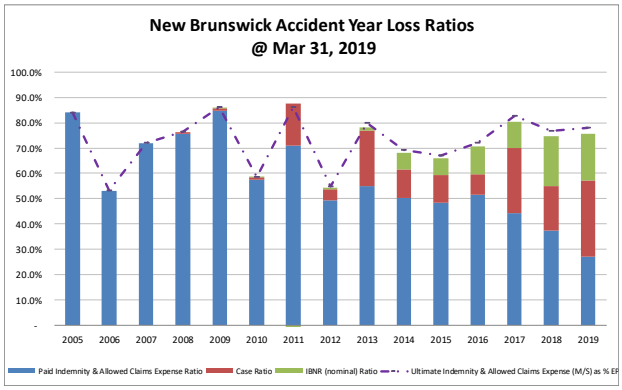
F.2 Booked results for the prior valuation implementation

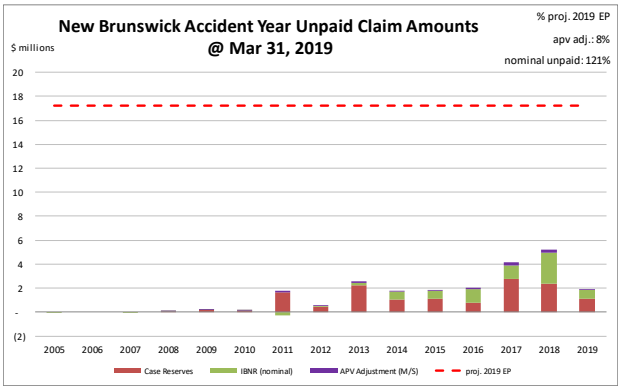
It is helpful to consider how the portfolio looked after the **prior valuation** was implemented. In this case, the **March 2019 booked results** were **based on** assumptions derived from **the prior (December 31, 2018) valuation** and were discussed in the associated monthly Actuarial Highlights.

The charts at the top of the next page show the associated levels of claim liabilities[24] 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

[24] *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 expense allowance are NOT included in this discussion.*

dollar amounts for the components of the claim liabilities and the then-current projected amount of 2019 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 tables immediately below show the associated Member Statement (M/S) policy liabilities.

claim liabilities ($000s)

	amt	%
case	13,928	63.1%
ibnr	6,828	30.9%
M/S apv adjust.	1,329	6.0%
M/S total	22,085	100.0%

premium liabilities ($000s)

	amt	%
unearned prem	7,651	121.9%
prem def/(dpac)	(1,667)	(26.6%)
M/S apv adjust.	295	4.7%
M/S total	6,279	100.0%

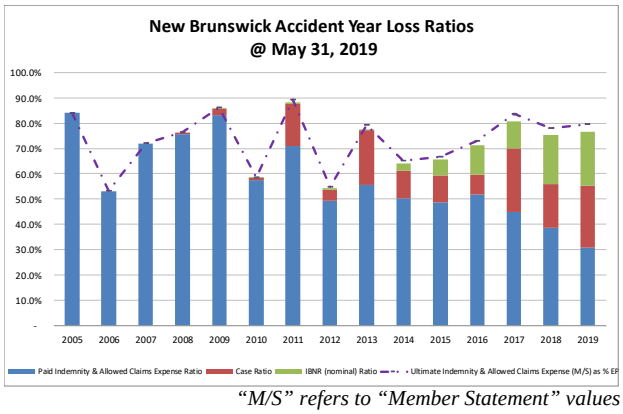
policy liabilities ($000s)

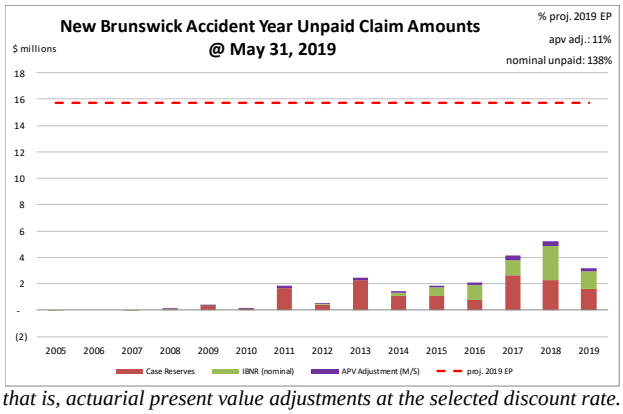
	amt	%
claim	20,756	73.2%
premium	5,984	21.1%
M/S apv adjust.	1,624	5.7%
M/S total	28,364	100.0%

F.3 **Booked results for the <u>current</u> valuation implementation**

The **May 2019 booked results** were **based on** assumptions derived from **the current (March 31, 2019) valuation** and are discussed in the associated monthly Actuarial Highlights.

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





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

The tables immediately below show the associated Member Statement (M/S) policy liabilities.

claim liabilities ($000s)

	amt	%
case	14,302	61.4%
ibnr	7,334	31.5%
M/S apv adjust.	1,664	7.1%
M/S total	23,300	100.0%

premium liabilities ($000s)

	amt	%
unearned prem	8,114	118.9%
prem def/(dpac)	(1,681)	(24.6%)
M/S apv adjust.	390	5.7%
M/S total	6,823	100.0%

policy liabilities ($000s)

	amt	%
claim	21,636	71.8%
premium	6,433	21.4%
M/S apv adjust.	2,054	6.8%
M/S total	30,123	100.0%

F.4 a priori loss ratios

The New Brunswick RSP a priori loss ratios were carried forward from the December 31, 2018 valuation, and are presented in the "B.1.4", "B.2.3", "B.3.3", and "B.4.3" exhibits in section L

F.5 Actual vs Projected (AvsP)

Variances in projected recorded and paid emergence and the associated actual emergence is presented in the two following tables.

Recorded Emergence

New Brunswick RSP

	Third Party Liability			Accident Benefits			Other Coverages			Total		
	Projected Recorded Claims in 2019-Q1	Actual Recorded Claims in 2019-Q1	Actual Less Projected	Projected Recorded Claims in 2019-Q1	Actual Recorded Claims in 2019-Q1	Actual Less Projected	Projected Recorded Claims in 2019-Q1	Actual Recorded Claims in 2019-Q1	Actual Less Projected	Projected Recorded Claims in 2019-Q1	Actual Recorded Claims in 2019-Q1	Actual Less Projected
Accident Year	[1]	[2]	[3] =[2]-[1]	[4]	[5]	[6] =[5]-[4]	[7]	[8]	[9] =[8]-[7]	[10] =[1]+[4]+[7]	[11] =[2]+[5]+[8]	[12] =[11]-[10]
2014 & Prior	180	122	(58)	35	(333)	(368)	-	165	165	215	(46)	(261)
2015	84	42	(42)	4	16	12	1	-	(1)	89	58	(31)
2016	76	112	36	11	10	(1)	1	(7)	(8)	88	115	27
2017	88	127	39	13	14	1	1	(10)	(11)	102	131	29
2018	162	181	19	15	49	34	15	(36)	(51)	192	194	2
2019	1,193	798	(395)	358	293	(65)	1,003	1,079	76	2,554	2,170	(384)
Total	**1,783**	**1,382**	**(401)**	**436**	**49**	**(387)**	**1,021**	**1,191**	**170**	**3,240**	**2,622**	**(618)**
2018 & prior	590	584	(6)	78	(244)	(322)	18	112	94	686	452	(234)

*projected recorded claims based on Recorded to Ultimate emergence model as at 2018-Q4

As indicated on the prior page, total recorded emergence at $2.6 million was $0.6 million (19.1%) less than the $3.2 million projected.

Prior accident year favourable experience was impacted by favourable older accident year accident benefits recorded activity driven by two AY2013 and AY2014 favourable claims settlements.

Paid Emergence

New Brunswick RSP

	Third Party Liability			Accident Benefits			Other Coverages			Total		
	Projected Paid Claims in 2019-Q1	Actual Paid Claims in 2019-Q1	Actual Less Projected	Projected Paid Claims in 2019-Q1	Actual Paid Claims in 2019-Q1	Actual Less Projected	Projected Paid Claims in 2019-Q1	Actual Paid Claims in 2019-Q1	Actual Less Projected	Projected Paid Claims in 2019-Q1	Actual Paid Claims in 2019-Q1	Actual Less Projected
Accident Year	[13]	[14]	[15] =[14]-[13]	[16]	[17]	[18] =[17]-[16]	[19]	[20]	[21] =[20]-[19]	[22] =[13]+[16]+[19]	[23] =[14]+[17]+[20]	[24] =[23]-[22]
2014 & Prior	549	137	(412)	194	254	60	2	-	(2)	745	391	(354)
2015	57	6	(51)	79	8	(71)	-	-	-	136	14	(122)
2016	63	10	(53)	24	10	(14)	1	(7)	(8)	88	13	(75)
2017	125	121	(4)	22	24	2	4	(6)	(10)	151	139	(12)
2018	287	213	(74)	77	26	(51)	385	424	39	749	663	(86)
2019	344	344	-	10	3	(7)	693	684	(9)	1,047	1,031	(16)
Total	**1,425**	**831**	**(594)**	**406**	**325**	**(81)**	**1,085**	**1,095**	**10**	**2,916**	**2,251**	**(665)**
2018 & prior	1,081	487	(594)	396	322	(74)	392	411	19	1,869	1,220	(649)

*projected paid claims based on Paid to Ultimate emergence model as at 2018-Q4

As indicated above, total paid emergence at $2.3 million was $0.7 million (22.8%) less than the $2.9 million projected.

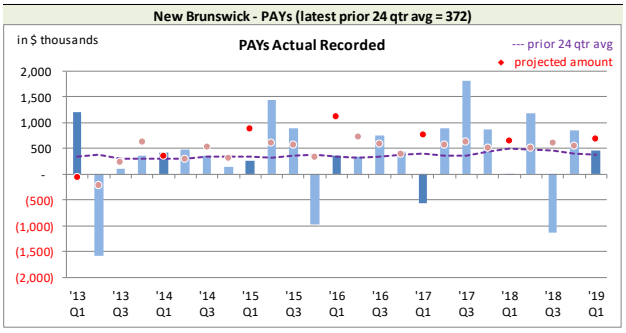
Claims transaction activity is generally volatile and differences between actual and projected claims emergence are anticipated due to this natural "process variance" (this is particularly true where volumes are low), caution must be exercised in reviewing the variances as this is a small pool and single 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 overall.

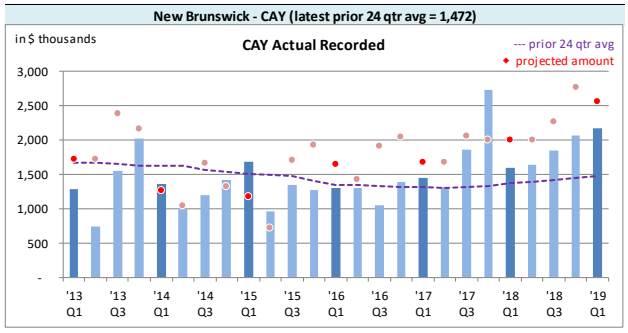
Additional detail and summary charts akin to those found in the monthly Actuarial Highlights are presented in the sections that follow.

F.5.1 AvsP: Recorded Indemnity & Allowed Claims Expense

Actual **recorded** activity (**paid** and case reserve changes) over the last 25-calendar quarters is shown in the charts below, including the "prior 24 quarter average" level.

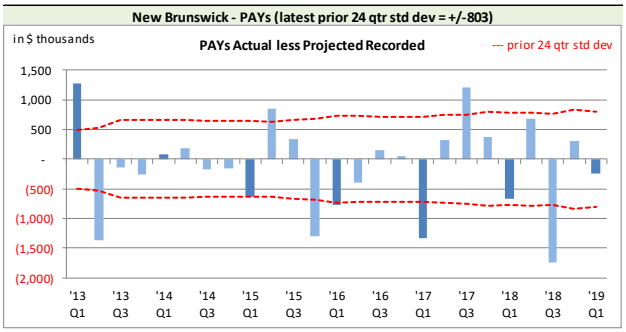
*New Brunswick RSP Actual **Recorded** by Calendar Quarter*

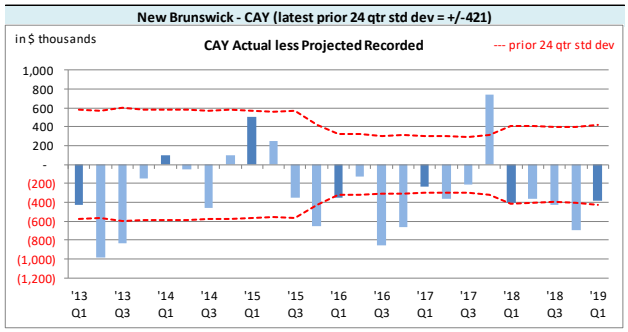




Recorded activity variances from the previous quarter's projections are shown in the charts at the top of the next page, including the "prior 24-quarter standard deviation" levels.

*New Brunswick RSP Actual vs Projected Summary: **Recorded** Variances by Calendar Quarter*





On Latest $ thousands		
Recorded	PAYs	CAY
Actual less Projected Recorded	372	1,472
std dev	803	421
A-P <> std dev	8	10
% <> std dev	32.0%	40.0%
norm <> std dev	31.7%	31.7%

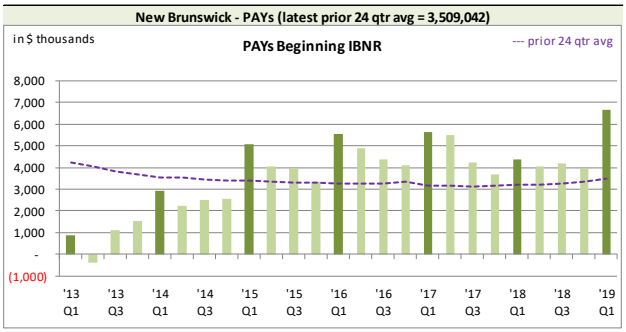
With respect to **recorded** indemnity & allowed claims expense activity, the prior accident years' (PAYs) variances (left chart above) do not appear to indicate a projection bias[25]. With 32% of variances related to the available projections outside of one standard deviation, the results suggest that the projection process has performed no better than simply projecting the prior 24-quarter average amount. At the current time, we do not believe the variances provide much in the way of feedback to the selections of ultimate.

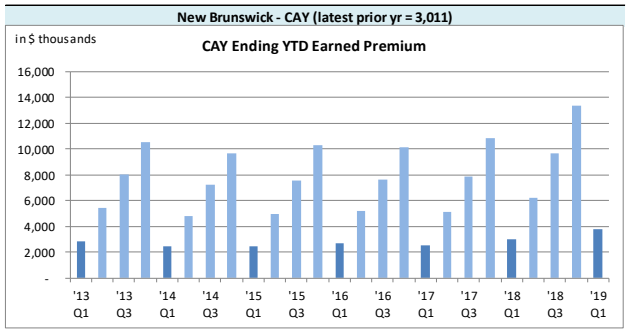
The current accident year (CAY) **recorded** variances (right chart above) fell outside of one standard deviation 40% of the time, suggesting that the projection process has performed no better than simply projecting the prior 24-quarter average amount. In addition, bias is evident on a 25-quarter lag basis, as only 5 quarters have had actual recorded indemnity higher than projected which is outside of a 95% confidence range, although the magnitude of the variances have not necessarily been extremely high. The high projected recorded to ytd-earned-premium ratios (bottom right chart on the next page) compared to historical ratios suggest some shortcoming of the emergence model currently used which appears to project too high on CAY recorded activities.

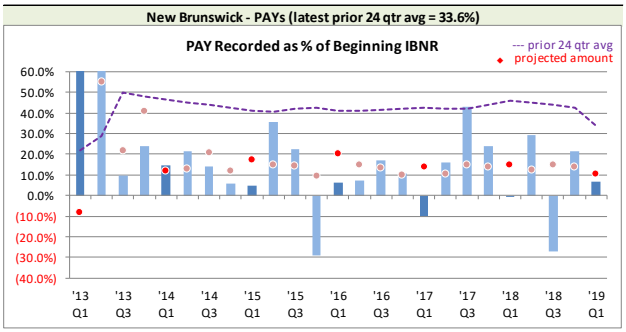
We have included, for reference, additional charts at the top of the next page related to levels influencing **recorded** activity.

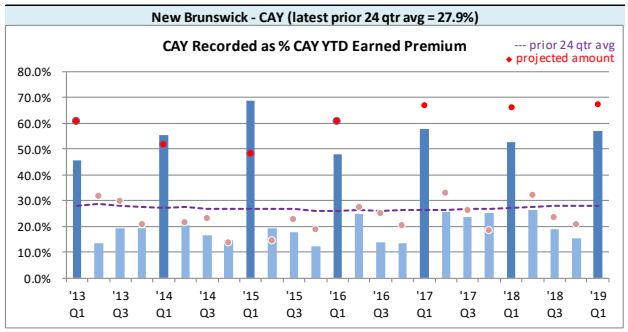
[25]*For the binomial distribution with 25 trials and an assumed 50% success probability, the 95% confidence range is 8 to 17. That is, for the 25 quarters presented, if the recorded projection was unbiased, with a 95% confidence, we would expect between 8 to 17 variances above 0. Less than 8 variances above 0 would indicate that our projections are biased high, and greater than 17 variances would indicate that our projections are biased low.*

New Brunswick RSP Levels that influence[26] ***Recorded*** *activity by Calendar Quarter*









(Note: The PAYs ratio relative to beginning IBNR is overwhelmed by the 2013 quarters where the recorded activity was multiples of the IBNR level; the axis in the left chart above was limited to focus the discussion)

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

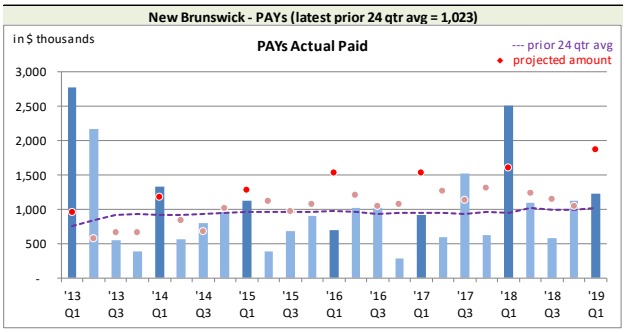
- to offset actual **recorded** activity (through loss ratio matching);
- the annual switchover as a current accident year becomes a prior accident year (occurs in January); and
- IBNR levels potentially change with each new valuation.

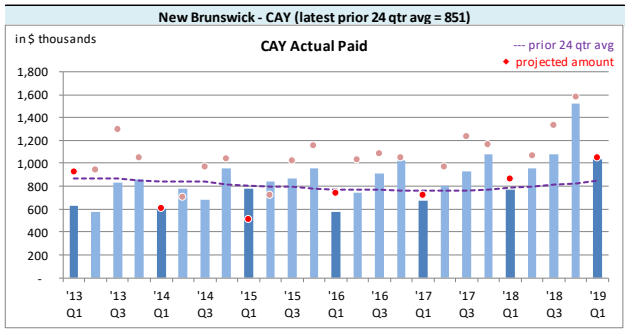
F.5.2 AvsP: Paid Indemnity & Allowed Claims Expense

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

[26] *Our recorded activity projections are based on selected ratios of life-to-date recorded activity to ultimate, converted to a "recorded to beginning IBNR" ratio, where ratio selection is based on our review of historical results. We find it helpful to show CAY emergence relative to earned premium for the purposes of the AvsP discussion.*

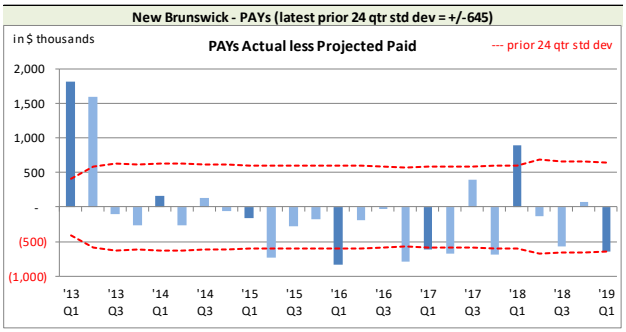
*New Brunswick RSP Actual **Paid** activity by Calendar Quarter*

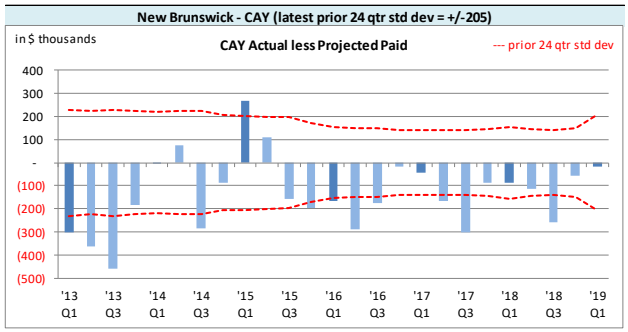




The charts immediately below show the actual less projected **paid** variances for the last 25 calendar quarters, along with bands for the "prior 24-quarter standard deviations" to show how the variances from projection compare with historical standard deviations.

*New Brunswick RSP Actual vs Projected Summary: **Paid** Variances by Calendar Quarter*





On Latest $ thousands		
Paid	PAYs	CAY
Qtrly Avg Paid (prior 24 qtrs)	1,023	851
std dev	645	205
A-P <> std dev	10	12
% <> std dev	40.0%	48.0%
norm <> std dev	31.7%	31.7%

With respect to **paid** indemnity & allowed claims expense prior accident years' (PAYs) variances (left chart above), 40% of the variances have fallen outside of one standard deviation, suggesting the projection process has performed no better than simply projecting the preceding 24-quarter average. In addition, actuals have tended to be lower than projections, and with only 7 times in the past 25 quarters where actuals were higher than our projections for the PAYs **paid** amount, bias[27] has been indicated at a 95% confidence level on a lagging 25-quarter basis. We are looking into ways to improve the projections.

The PAYs **paid** variance fell outside of the one standard deviation band during the latest quarter. The variance was reviewed and confirmed, with the variance attributed to a process variance, although our projection bias indication suggests work needs to be done on recalibrating our emergence model.

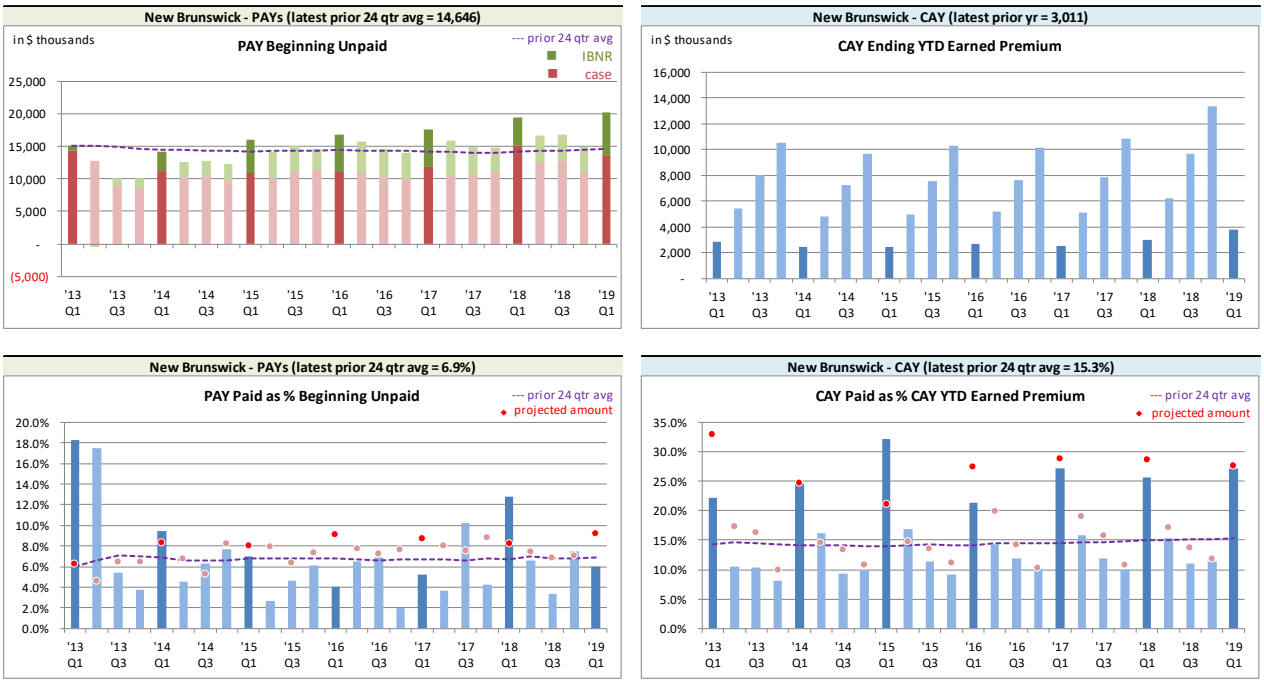
The current accident year (CAY) **paid** variances (right chart above) indicates evidence of bias in the projection process (with only 3 times in the past 25 quarters where actuals were higher than our

[27] *For the binomial distribution with 25 trials and an assumed 50% success probability, the 95% confidence range is 8 to 17. That is, for the 25 quarters presented, if the paid projection was unbiased, with a 95% confidence, we would expect between 8 to 17 variances above 0. Less than 8 variances above 0 would indicate that our projections are biased high, and greater than 17 variances would indicate that our projections are biased low.*

projections) and as 48% of the variances fall outside one standard deviation, the projection process has performed worse than projecting simply based on the preceding 24-quarter average. The high projected paid to ytd-earned-premium ratios (bottom right chart below) compared to historical ratios suggest some shortcoming of the emergence model currently used which appears to project too high on CAY **paid** activities.

We have included, for reference, additional charts immediately below related to levels influencing **paid** activity.

*New Brunswick RSP Levels that influence[28] **Paid** activity by Calendar Quarter*



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
- IBNR levels potentially change with each new valuation.

F.6 Current valuation IBNR selections

Exhibit B.1.1 (see section L for all exhibits) summarizes the overall change in ultimate with this valuation and B.1.2 shows selected loss ratios over the most recent 4 valuations for comparison purposes

[28] *Our paid projections are based on selected ratios of life-to-date paid activity to ultimate, converted to a "paid to beginning unpaid" ratio, where ratio selection is based on our review of historical results. We find it helpful to show CAY emergence relative to earned premium for the purposes of the AvsP discussion.*

on an "all coverages basis". The "B.2" exhibits provide information for third party liability, "B.3" exhibits for accident benefits, and "B.4" exhibits for the "other" government line.

F.7 Premium Liabilities / Future Accident Years

In order to provide a basis for estimating the full premium liability level for monthly statements (i.e. the level of premium deficiency liability / deferred policy acquisition cost asset to carry) we leverage the a priori loss ratios for the accident year underlying the unearned premium levels.

The test of recoverability leverages assumptions set by the Appointed Actuary. These include the Member expense allowances (taking into account the Board approved allowances) and policy administration / maintenance expense assumptions.

F.8 Actuarial Present Value Adjustments

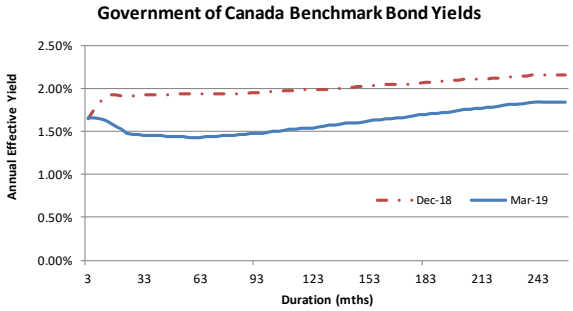
F.8.1 Selected Claims Payment Patterns

Payment patterns are selected through the emergence models (the same used for projecting future claims paid and recorded activity for the AvsP process), leveraging a "paid to ultimate" metric.

F.8.2 Selected Discount Rate

The projected future claims paid cash flow are matched to a simulated portfolio of Government of Canada benchmark monthly bonds (yields anchored to the valuation date), and 15 basis point investment expense is assumed.

A **discount rate of 1.44%** per annum was selected for the valuation of the claim liabilities and premium liabilities at March 31, 2019, **down from 1.93%** selected with the December 31, 2018 valuation. The chart to the right shows the Government of Canada benchmark bond yield curves at December 2018 and March 2019.



Sensitivity to the discount rate assumption is presented in Exhibit C (see section L).

F.8.3 Selected Margins for Adverse Deviations

The **margin for adverse deviation** ("MfADs") **for investment income** was **maintained at 25 basis points** with the current valuation.

There were **no changes to selected claims development margins** from the prior valuation and these are summarized in Exhibit D (see section L).

F.9 Special IBNR Provisions / Adjustments

There were no special IBNR provisions or adjustments included with the current (as at March 31, 2019) or prior (as at December 31, 2018) valuation.

G. NOVA SCOTIA RSP

G.1 Valuation Highlights

A summary of the valuation results through time is available in the "A" exhibit (see section L for all exhibits), with detail related to the current valuation provided in the B.1.1 and B.1.2 exhibits.

The **change** in selected ultimate for **prior accident years** was **$1.1 million unfavourable** with this valuation (**2.5%** of the unpaid estimate as at last quarter). These changes are presented by accident year and government line in the table below.

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

Accident Year	Third Party Liability	Accident Benefits	Other Coverages	Total
2014 & Prior	115	7	-	122
2015	(8)	(9)	-	(17)
2016	200	(105)	1	96
2017	119	(50)	(13)	56
2018	329	(16)	555	868
TOTAL	**755**	**(173)**	**543**	**1,125**

The Nova Scotia RSP unfavourable prior accident year development was driven by unfavourable PAYs physical damage (Third Party Liability – DCPD; Other Coverages – Collision and Comprehensive) reported claims experience.

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.

The **selected loss ratio** for **accident year 2019** (current accident year, AY2019) increased 1.1 points to 97.7%, while the selected loss ratio for **accident year 2020** remained unchanged (future accident year, AY2020 at 99.2%).

Summary descriptions of recent regulatory and legislative initiatives are available in section I.

The valuation process is described in more detail in section K, and a summary of changes to the process during this fiscal year is provided in section H.

Policy liability projected cash flows and March 2019 government of Canada bond yields were used to determine the applicable discount rate. The selected investment income margin for adverse deviation was maintained at 25 basis points with the current valuation.

Selected claims development margins were carried forward from the prior valuation (see Exhibit D in section L for selected margins).

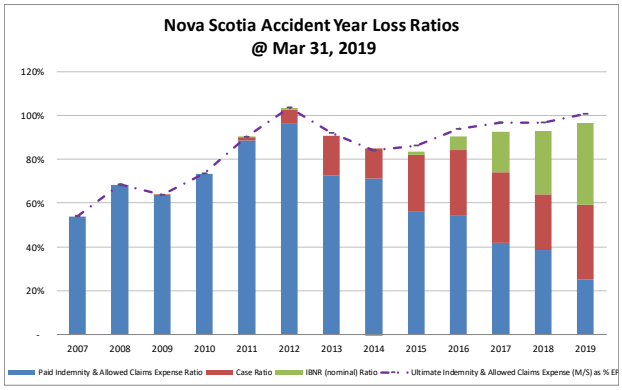
G.2 Booked results for the prior valuation implementation

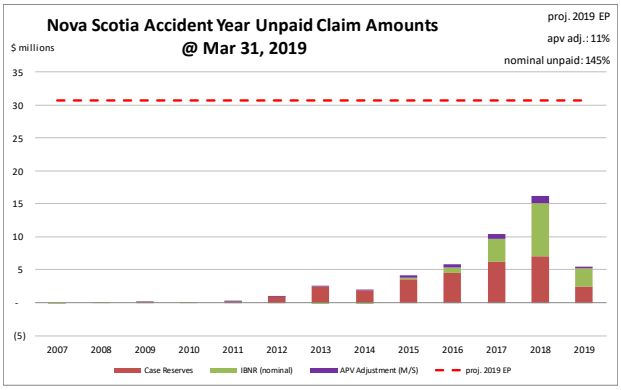
It is helpful to consider how the portfolio looked after the **prior valuation** was implemented. In this case, the **March 2019 booked results** were **based on** assumptions derived from **the prior (December 31, 2018) valuation** and were discussed in the associated monthly Actuarial Highlights.

The charts at the top of the next page show the associated levels of claim liabilities[29] booked by accident

[29] *Claim liabilities refer to provision for unpaid indemnity and allowed claims expenses. Allowed claims expenses are first party legal and*

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 then-current projected amount of 2019 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 tables immediately below show the associated Member Statement (M/S) policy liabilities.

claim liabilities ($000s)

	amt	%
case	29,097	60.9%
ibnr	15,327	32.1%
M/S apv adjust.	3,376	7.1%
M/S total	47,800	100.0%

premium liabilities ($000s)

	amt	%
unearned prem	14,526	96.7%
prem def/(dpac)	(281)	(1.9%)
M/S apv adjust.	775	5.2%
M/S total	15,020	100.0%

policy liabilities ($000s)

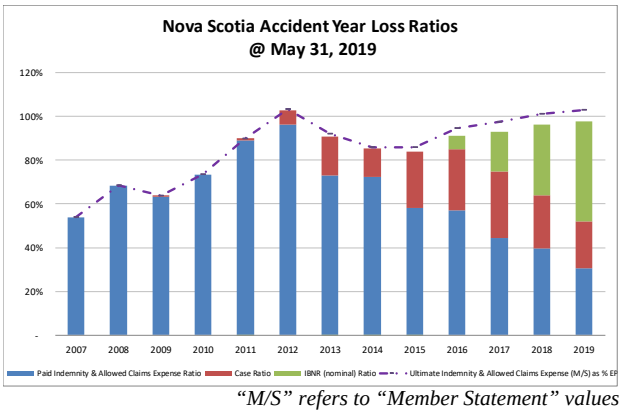
	amt	%
claim	44,424	70.7%
premium	14,245	22.7%
M/S apv adjust.	4,151	6.6%
M/S total	62,820	100.0%

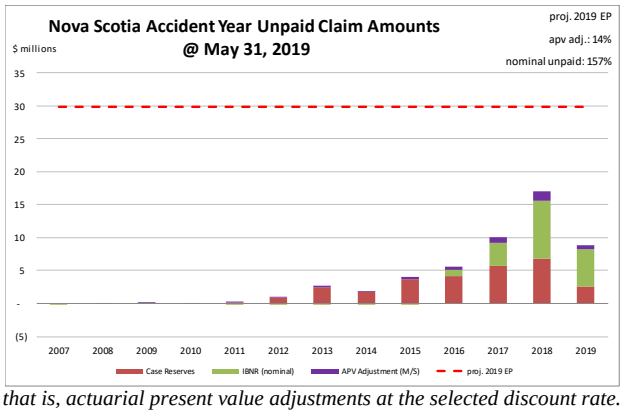
G.3 Booked results for the current valuation implementation

The **May 2019 booked results** were **based on** assumptions derived from **the current (March 31, 2019) valuation** and are discussed in the associated monthly Actuarial Highlights.

The charts at the top of the next page show the levels of claim liabilities booked by accident year on that basis. 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.

other expenses as listed in the RSP Claims Guide. Claims expenses paid through the Member 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 tables immediately below show the associated Member Statement (M/S) policy liabilities.

claim liabilities ($000s)

	amt	%
case	28,136	55.2%
ibnr	18,782	36.8%
M/S apv adjust.	4,089	8.0%
M/S total	51,007	100.0%

premium liabilities ($000s)

	amt	%
unearned prem	15,043	94.1%
prem def/(dpac)	(63)	(0.4%)
M/S apv adjust.	1,004	6.3%
M/S total	15,984	100.0%

policy liabilities ($000s)

	amt	%
claim	46,918	70.0%
premium	14,980	22.4%
M/S apv adjust.	5,093	7.6%
M/S total	66,991	100.0%

G.4 a priori loss ratios

The Nova Scotia RSP a priori loss ratios were carried forward from the December 31, 2018 valuation, and are presented in the "B.1.4", "B.2.3", "B.3.3", and "B.4.3" exhibits in section L.

G.5 Actual vs Projected (AvsP)

Variances in projected recorded and paid emergence and the associated actual emergence is presented in the two following tables.

Recorded Emergence

Nova Scotia RSP

	Third Party Liability			Accident Benefits			Other Coverages			Total		
	Projected Recorded Claims in 2019-Q1	Actual Recorded Claims in 2019-Q1	Actual Less Projected	Projected Recorded Claims in 2019-Q1	Actual Recorded Claims in 2019-Q1	Actual Less Projected	Projected Recorded Claims in 2019-Q1	Actual Recorded Claims in 2019-Q1	Actual Less Projected	Projected Recorded Claims in 2019-Q1	Actual Recorded Claims in 2019-Q1	Actual Less Projected
Accident Year	[1]	[2]	[3] =[2]-[1]	[4]	[5]	[6] =[5]-[4]	[7]	[8]	[9] =[8]-[7]	[10] =[1]+[4]+[7]	[11] =[2]+[5]+[8]	[12] =[11]-[10]
2014 & Prior	-	115	115	-	8	8	-	-	-	-	123	123
2015	39	93	54	13	-	(13)	1	-	(1)	53	93	40
2016	171	477	306	24	(83)	(107)	3	-	(3)	198	394	196
2017	529	472	(57)	8	(17)	(25)	4	(16)	(20)	541	439	(102)
2018	1,065	748	(317)	734	(324)	(1,058)	(74)	481	555	1,725	905	(820)
2019	2,277	1,791	(486)	719	586	(133)	1,644	1,943	299	4,640	4,320	(320)
Total	**4,081**	**3,696**	**(385)**	**1,498**	**170**	**(1,328)**	**1,578**	**2,408**	**830**	**7,157**	**6,274**	**(883)**
2018 & prior	1,804	1,905	101	779	(416)	(1,195)	(66)	465	531	2,517	1,954	(563)

*projected recorded claims based on Recorded to Ultimate emergence model as at 2018-Q4

As indicated on the prior page, total recorded emergence at $6.3 million was $0.9 million (12.3%) less than the $7.2 million projected.

Unfavourable development in the prior accident year third party liability was driven by third party liability - bodily injury AY2014 and AY2016 paid claims settlements.

Paid Emergence

Nova Scotia RSP

	Third Party Liability			Accident Benefits			Other Coverages			Total		
	Projected Paid Claims in 2019-Q1	Actual Paid Claims in 2019-Q1	Actual Less Projected	Projected Paid Claims in 2019-Q1	Actual Paid Claims in 2019-Q1	Actual Less Projected	Projected Paid Claims in 2019-Q1	Actual Paid Claims in 2019-Q1	Actual Less Projected	Projected Paid Claims in 2019-Q1	Actual Paid Claims in 2019-Q1	Actual Less Projected
Accident Year	[13]	[14]	[15] =[14]-[13]	[16]	[17]	[18] =[17]-[16]	[19]	[20]	[21] =[20]-[19]	[22] =[13]+[16]+[19]	[23] =[14]+[17]+[20]	[24] =[23]-[22]
2014 & Prior	1,089	940	(149)	10	28	18	-	-	-	1,099	968	(131)
2015	249	766	517	104	15	(89)	-	-	-	353	781	428
2016	241	589	348	55	206	151	1	-	(1)	297	795	498
2017	423	264	(159)	128	32	(96)	11	(11)	(22)	562	285	(277)
2018	532	842	310	241	143	(98)	510	1,082	572	1,283	2,067	784
2019	721	593	(128)	35	21	(14)	980	1,232	252	1,736	1,846	110
Total	**3,255**	**3,994**	**739**	**573**	**445**	**(128)**	**1,502**	**2,303**	**801**	**5,330**	**6,742**	**1,412**
2018 & prior	2,534	3,401	867	538	424	(114)	522	1,071	549	3,594	4,896	1,302

*projected paid claims based on Paid to Ultimate emergence model as at 2018-Q4

As indicated above, total paid emergence at $6.7 million was $1.4 million (26.5%) more than the $5.3 million projected.

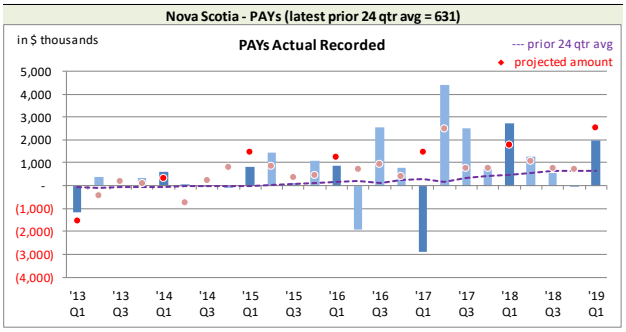
Claims transaction activity is generally volatile and differences between actual and projected claims emergence are anticipated due to this natural "process variance" (this is particularly true where volumes are low), caution must be exercised in reviewing the variances as this is a small pool and single 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.

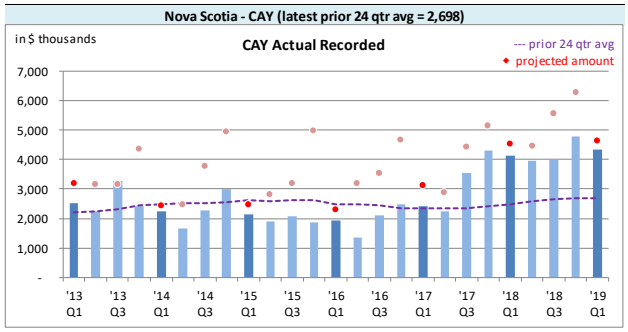
Additional detail and summary charts akin to those found in the monthly Actuarial Highlights are presented in the sections that follow.

G.5.1 AvsP: Recorded Indemnity & Allowed Claims Expense

Actual **recorded** activity (**paid** and case reserve changes) over the last 25-calendar quarters is shown in the charts immediately below, including the "prior 24 quarter average" level.

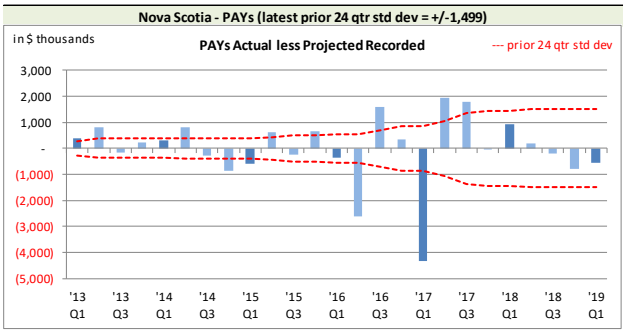
*Nova Scotia RSP Actual **Recorded** by Calendar Quarter*

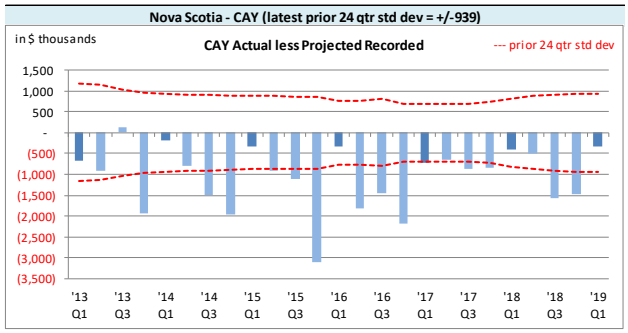




Recorded activity variances from the previous quarter's projections are shown in the charts at the top of the next page, including the "prior 24-quarter standard deviation" levels.

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





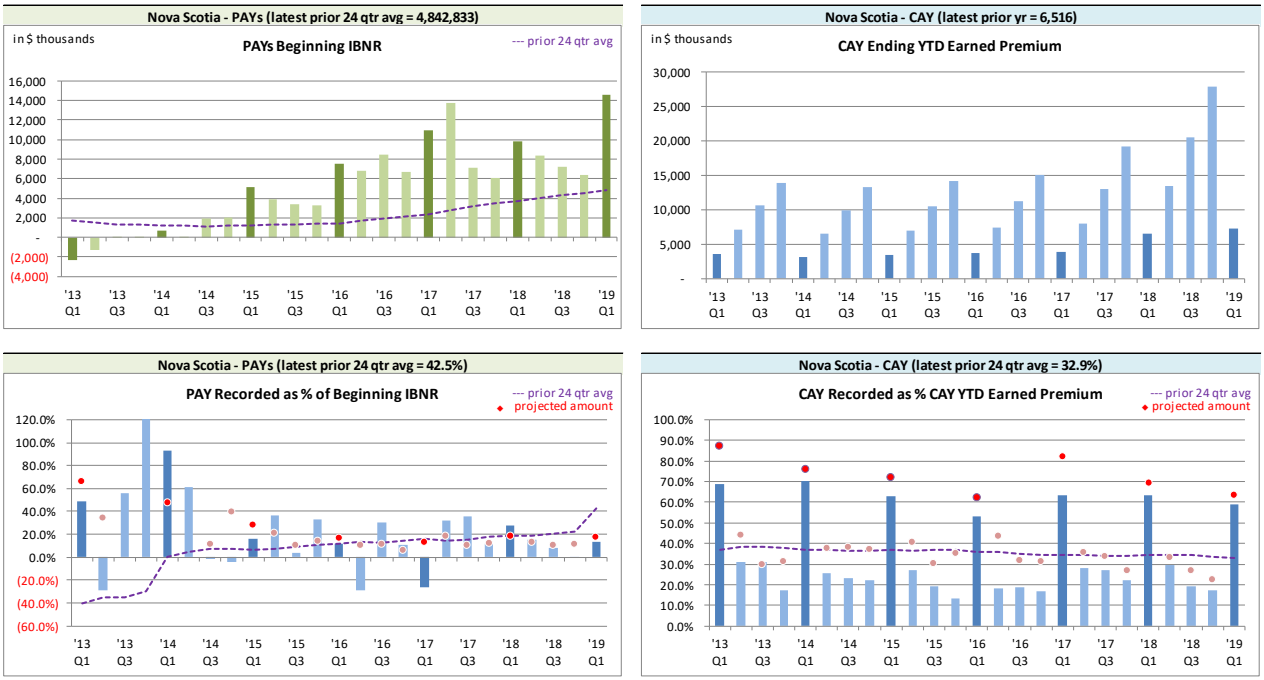
On Latest $ thousands		
Recorded	PAYs	CAY
Actual less Projected Recorded	631	2,698
std dev	1,499	939
A-P <> std dev	12	14
% <> std dev	48.0%	56.0%
norm <> std dev	31.7%	31.7%

With respect to **recorded** indemnity & allowed claims expense activity, the prior accident years' (PAYs) variances (left chart above) do not indicate a projection bias. However, with 48% of variances related to the available projections outside of one standard deviation, the results suggest that the projection process has performed worse than simply projecting the prior 24-quarter average amount. At this time, we attribute this to the difficulty in projecting results during a post-reform period for a small, relatively immature, RSP.

The current accident year (CAY) **recorded** variances (right chart above) fell outside of one standard deviation 56% of the time where projections are available, suggesting that the projection process has performed worse than simply projecting the prior 24-quarter average amount. In addition, bias is evident on a 25-quarter lag basis, as only 1 quarter has had actual recorded indemnity higher than projected which is outside of a 95% confidence range, although the magnitude of the variances have not necessarily been extremely high. The high projected recorded to ytd-earned-premium ratios (bottom right chart on the next page) compared to historical ratios suggest some shortcoming of the emergence model currently used which appears to project too high on CAY recorded activities.

We have included, for reference, additional charts at the top of the next page related to levels influencing **recorded** activity.

Nova Scotia RSP Levels that influence[30] ***Recorded*** *activity by Calendar Quarter*



(Note: The PAYs ratio relative to beginning IBNR is overwhelmed by 2013 Q4 where low levels of beginning IBNR were followed by recorded activity that were multiples of the IBNR level; the axis in the left chart above was limited to focus the discussion)

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

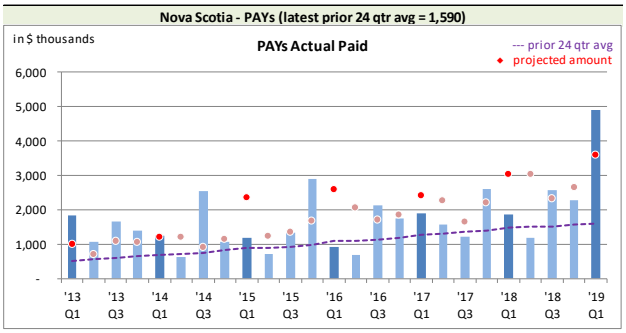
- to offset actual **recorded** activity (through loss ratio matching);
- the annual switchover as a current accident year becomes a prior accident year (occurs in January); and
- IBNR levels potentially change with each new valuation.

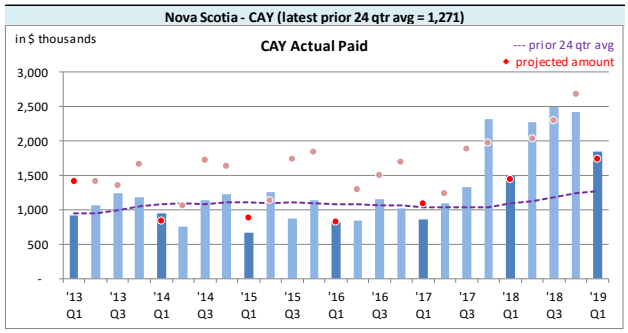
G.5.2 AvsP: Paid Indemnity & Allowed Claims Expense

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

[30] *Our recorded activity projections are based on selected ratios of life-to-date recorded activity to ultimate, converted to a "recorded to beginning IBNR" ratio, where ratio selection is based on our review of historical results. We find it helpful to show CAY emergence relative to earned premium for the purposes of the AvsP discussion.*

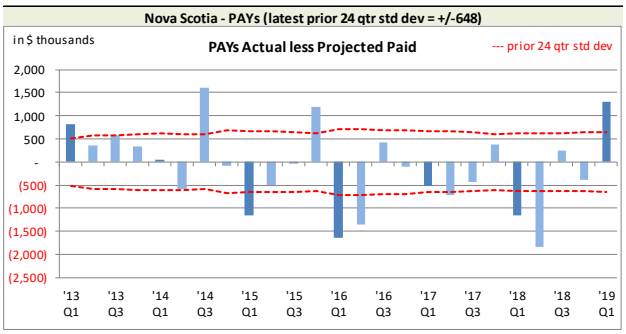
*Nova Scotia RSP Actual **Paid** activity by Calendar Quarter*

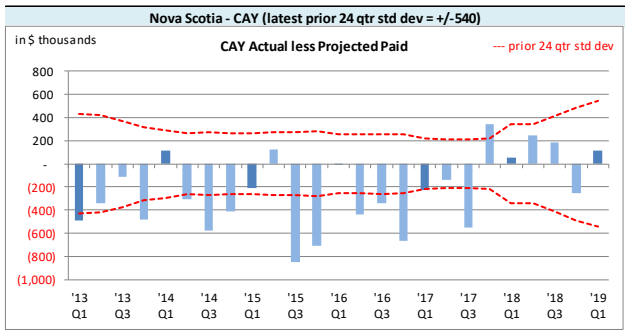




The charts immediately below show the actual less projected **paid** variances for the last 25 calendar quarters, along with bands for the "prior 24-quarter standard deviations" to show how the variances from projection compare with historical standard deviations.

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





On Latest $ thousands		
Paid	PAYs	CAY
Qtrly Avg Paid (prior 24 qtrs)	1,590	1,271
std dev	648	540
A-P <> std dev	11	13
% <> std dev	44.0%	52.0%
norm <> std dev	31.7%	31.7%

With respect to **paid** indemnity & allowed claims expense prior accident years' (PAYs) variances (left chart above), 40% of the variances (where projections are available) have fallen outside of one standard deviation, suggesting the projection process has performed worse than projecting simply based on the preceding 24-quarter average. No bias[31] has been indicated on a 25-quarter lag basis. Like **recorded** activity, we currently attribute the poor projection results to uncertainty related to the post-reform period and the small, immature nature of this RSP.

The PAYs **recorded** variance fell outside of the one standard deviation band during the latest quarter. The PAYs recorded claims activity in the quarter was reviewed and confirmed, with the remaining variance attributed to process variance.

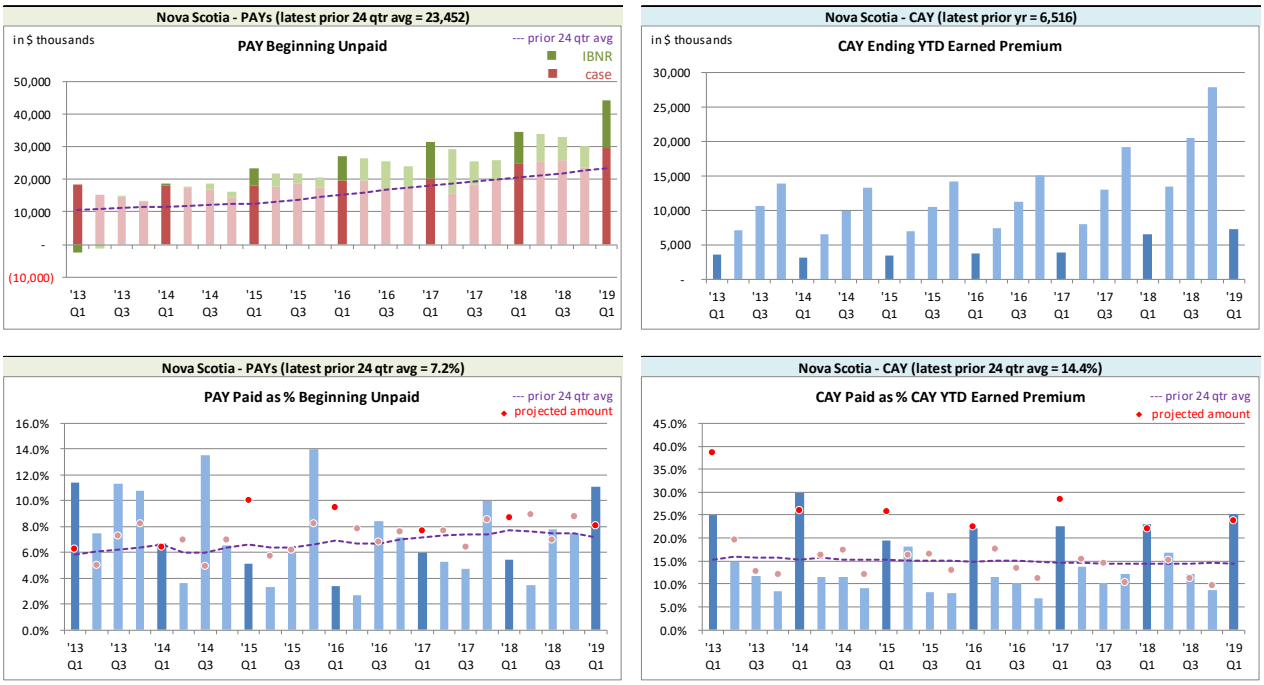
The current accident year **paid** projection variances related to the available projections had 52% outside of one standard deviation, suggesting the projection process has performed worse than simply projecting the prior 24-quarter average amount. In addition, actuals have tended to be lower than projections, and

[31] *For the binomial distribution with 25 trials and an assumed 50% success probability, the 95% confidence range is 8 to 17. That is, for the 25 quarters presented, if the paid projection was unbiased, with a 95% confidence, we would expect between 8 to 17 variances above 0. Less than 8 variances above 0 would indicate that our projections are biased high, and greater than 17 variances would indicate that our projections are biased low.*

bias has been indicated at a 95% confidence level on a lagging 25-quarter basis, with only 7 times in the past 25 quarters where actuals were higher than our projections for the CAY **paid** amount. The high projected paid to ytd-earned-premium ratios (bottom right chart below) compared to historical ratios suggest some shortcoming of the emergence model currently used which appears to project too high on CAY paid activities.

We have included, for reference, additional charts immediately below related to levels influencing **paid** activity.

Nova Scotia RSP Levels that influence[32] ***Paid*** *activity by Calendar Quarter*



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
- IBNR levels potentially change with each new valuation.

For the prior accident year (upper left chart above), both the beginning unpaid (case reserve) levels and the prior accident year's ratio of paid activity to beginning unpaid seem to have increased since the introduction of the Fair Auto Insurance Reforms (FAIR) in 2011.

[32] *Our paid projections are based on selected ratios of life-to-date paid activity to ultimate, converted to a "paid to beginning unpaid" ratio, where ratio selection is based on our review of historical results. We find it helpful to show CAY emergence relative to earned premium for the purposes of the AvsP discussion.*

G.6 Current valuation IBNR selections

Exhibit B.1.1 (see section L for all exhibits) summarizes the overall change in ultimate with this valuation and B.1.2 shows selected loss ratios over the most recent 4 valuations for comparison purposes on an "all coverages basis". The "B.2" exhibits provide information for third party liability, "B.3" exhibits for accident benefits, and "B.4" exhibits for the "other" government line.

G.7 Premium Liabilities / Future Accident Years

In order to provide a basis for estimating the full premium liability level for monthly statements (i.e. the level of premium deficiency liability / deferred policy acquisition cost asset to carry) we leverage the a priori loss ratios for the accident year underlying the unearned premium levels.

The test of recoverability leverages assumptions set by the Appointed Actuary. These include the Member expense allowances (taking into account the Board approved allowances) and policy administration / maintenance expense assumptions.

G.8 Actuarial Present Value Adjustments

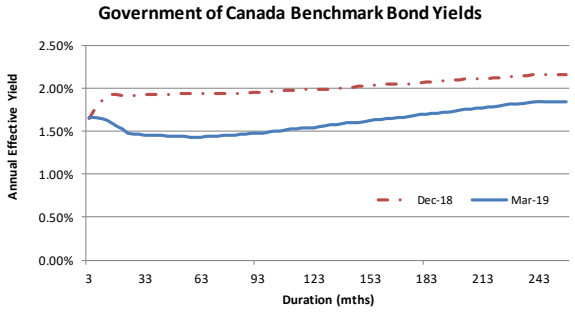
G.8.1 Selected Claims Payment Patterns

Payment patterns are selected through the emergence models (the same used for projecting future claims paid and recorded activity for the AvsP process), leveraging a "paid to ultimate" metric.

G.8.2 Selected Discount Rate

The projected future claims paid cash flow are matched to a simulated portfolio of Government of Canada benchmark monthly bonds (yields anchored to the valuation date), and 15 basis point investment expense is assumed.

A **discount rate of 1.43%** per annum was selected for the valuation of the claim liabilities and premium liabilities at March 31, 2019, **down from 1.93%** selected with the December 31, 2018 valuation. The chart to the right shows the Government of Canada benchmark bond yield curves at December 2018 and March 2019.



Sensitivity to the discount rate assumption is presented in Exhibit C (see section L).

G.8.3 Selected Margins for Adverse Deviations

The **margin for adverse deviation** ("MfADs") **for investment income** was **maintained at 25 basis points** with the current valuation.

There were **no changes to selected claims development margins** from the prior valuation and these are summarized in Exhibit D (see section L).

G.9 **Special IBNR Provisions / Adjustments**

There were no special IBNR provisions or adjustments included with the current (as at March 31, 2019) or prior (as at December 31, 2018) valuation.

H. Appendix 1: Changes in process introduced since the September 30, 2018 valuation

The September 30, 2018 valuation supported the October 31, 2018 fiscal year-end financial statements. There have been no significant changes to the valuation process since that valuation.

A more detailed description of the current valuation process is presented in section K.

I. Appendix 2: Recent Regulatory and/or Legislative Initiatives

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.

I.1 Ontario

Ontario Bill 91 (Building Ontario Up Act (Budget Measures), 2015) was introduced into the Legislature by the Minister of Finance on April 23, 2015 and **received Royal Assent on June 4, 2015**. Bill 91 announced a number of amendments to regulations made under the Insurance Act, including: updating the Catastrophic Impairment Definition and changes to the standard benefit level under the Statutory Accident Benefits Schedule (SABS); restrictions on insurance premium increases and lowering of the maximum interest rate charged on monthly auto insurance premium payments; and adjustments to the monetary threshold beyond which the tort deductible does not apply to reflect inflation (adjustments to reflect inflation in the associated tort deductible were undertaken via an update to regulation 461/96). On August 26, 2015, the Ontario government filed Ontario regulations 250/15 and 251/15 implementing reforms set out in Bill 91. With the most recent valuation (March 31, 2019), reform adjustments (originally introduced with the September 30, 2015 valuation) specifically related to the SABS impacting the bodily injury and accident benefits coverages, were included with the updated industry trend analysis (completed using industry data as at June 30, 2018), impacting the selection of ultimates.

I.2 Alberta

In the **Alberta Treasury Board and Finance Notice 04-2018** (Clarification of Minor Injury Regulation), dated **May 17, 2018**, the Alberta Superintendent of Insurance advised that clarifying amendments have been made to the definition of minor injuries under the Minor Injury Regulation (MIR). With the most recent valuation (March 31, 2019), adjustments have been made to our valuation estimates to reflect our estimates of the impact of these amendments, including a one-time adjustment of -10.0% applied to account for MIR change effective June 1, 2018, reflected in the most recent updated industry trend analyses completed using industry data as at June 30, 2018.

The **Minister of Treasury Board and Finance issued Ministerial Order 14/2018**, on **October 31, 2018**, which states unless otherwise directed by the Minister, the AIRB may not approve filings from insurers for cumulative rate increases on private passenger vehicles greater than +5.0% during the period between December 1, 2018 and August 31, 2019. At the current time, no explicit adjustments have been made to our valuation estimates or views based on this order.

I.3 Harmonized Sales Tax

In the fiscal 2016-17 provincial budget released February 2, 2016, the **New Brunswick** Finance Minister announced a 2 percentage point increase in the provincial component of the harmonized sales tax ("HST") effective July 1st, 2016 increasing the combined HST rate in the province from 13% to 15%.

With the most recent valuation (March 31, 2019), HST adjustments are assumed to be reflected in the data and no explicit adjustments are included.

I.4 Harmonized Sales Tax Class Action - Ontario

Since the end of October 2018, class action lawsuits have been brought against multiple insurers related to HST and limits / sub-limits of benefits per the Statutory Accident Benefits Schedule and FSCO's Professional Services Guideline as part of claims settlement practices in Ontario.

At the current time, no adjustments have been made to our valuation estimates, but in conjunction with FA's Appointed Actuary, FA management continues to review and consider the implications of the potential outcomes related to the class action lawsuits. Please contact Shawn Doherty at sdoherty@facilityassociation.com if you need further information.

J. Appendix 3: Court Decisions

J.1 Nova Scotia Court of Appeal

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.

K. Appendix 4: General description of the RSP valuation process

1) select a priori loss ratios
   a. start with prior valuation a priori model
   b. update with prior valuation final selected ultimates
   c. update with trend / rate as available
   d. final selection approved by Appointed Actuary
2) collect / prepare / reconcile / validate valuation data
   a. results presented for review and acceptance by Appointed Actuary
3) complete Actual vs Projected process
   a. prepare exhibits and metrics
   b. share with Appointed Actuary for review and consideration
4) calculate ultimate estimates based on incurred link ratio method
   a. prepare triangles and link ratio averages
   b. prepare estimates based on pre-determined default link ratio selections
   c. final link ratio selections reviewed and accepted by Appointed Actuary
5) calculate ultimate estimates based on a priori loss ratio method
   a. prepare estimates
   b. final estimates reviewed and accepted by Appointed Actuary
6) calculate ultimate estimates based on Bornhuetter / Ferguson method
   a. prepare estimates
   b. final estimates reviewed and accepted by Appointed Actuary
7) final IBNR selection
   a. prepare summary of IBNR estimates underlying each valuation method at coverage / accident half-year level
   b. Appointed Actuary selects final IBNR by coverage and accident half-year, taking into consideration IBNR estimated from valuation methods employed and other information
8) complete paid emergence and apv factor models (coverage / accident half-year)
   a. load triangles, selected ultimates, current yield curves into model
   b. select initial emergence ratios (currently using initial paid / ultimate ratios to determine emergence ratios) and calculate associated payment / cash flow estimates
   c. select discount rate and investment rate margin
   d. select development margins

e. final selections reviewed / accepted by Appointed Actuary

9) select expense ratios for premium liabilities
   a. initial selections prepared
   b. Appointed Actuary selects final ratios
10) present results to Actuarial Committee
   a. prepare and post analysis package
   b. implementation impact estimated
   c. update analysis and selections based on discussion and review
   d. post updated analysis package (as necessary)
11) summarize valuation assumptions
   a. Appointed Actuary reviews and signs off
   b. assumptions given to Facility Association for implementation
12) present results to Audit & Risk Committee
   a. prepare and post valuation summary and implementation impact package
   b. present / review / discuss results
13) complete recorded emergence models (coverage / accident half-year)
   a. load triangles, selected ultimates
   b. select initial emergence ratios (currently using recorded / ultimate ratios to determine emergence ratios) and calculate associated recorded emergence
   c. final selections reviewed / accepted by Appointed Actuary
14) implement valuation
15) prepare summary of year-on-year change in process and liabilities for review by Accounting Committee (annual only – occurs in November to align with October Statement preparation)
16) prepare summary of year-on-year change in process and liabilities for review by Audit & Risk Committee (annual only – occurs in November to align with October Statement preparation)
17) prepare Appointed Actuary Report (annual only – occurs in February/March to align with release of Board approved Financial Statements)

L. Appendix 5: Exhibits

The exhibits are split by RSP. Exhibits are posted separately on the FA website.
Within each RSP exhibit group are found:

Exhibit A changes in ultimate selection over time

Exhibit B.1 ("**total**" government line/coverage level)

- **B.1.1** Summary
- **B.1.2** Loss Ratios over time
- **B.1.3.1** Government Line Ultimates
- **B.1.3.2** Selected Weights
- **B.1.3.3** IBNR by Method
- **B.1.4.1** a priori LRs

Exhibit B.2 (same as B.1 exhibits, but for **TPL** government line)

Exhibit B.3 (same as B.1 exhibits, but for **Accident Benefits** government line)

Exhibit B.4 (same as B.1. exhibits, but for "**Other**" government line)

Exhibit C interest rate sensitivity

Exhibit D claims development margins