Interest Rate Forecasting Risk Factor

Technical Conference
Tuesday August 16, 2016

Manitoba Public Insurance

Technical Conference Agenda

Welcome

1) 9:00 – 9:15 Welcome and introductions
2) 9:15 – 9:30 Review purpose of the meeting and desired outcomes

Need for the IRFRF

3) 9:30 – 10:00 Review of case presented in the 2017 GRA
4) 10:00 – 10:45 Review Dr. Cleary's report on the Standard forecast

   10:45 – 11:00 Break
5) 11:00 – 12:00 General discussion on the need for an IRFRF

   12:00 – 1:00 Lunch Break

Options for the IRFRF

6) 1:00 – 2:00 Review of Options for Form of IRFRF

   2:00 – 2:15 Break
7) 2:15 – 3:30 Continued discussion on Magnitude of IRFRF
8) 3:30 – 4:00 Wrap up and next steps

REVIEW OF 2017 GRA REQUEST

Manitoba
Public Insurance

Objectives for this Section

1) Review relief sought in the 2017 GRA
2) Understand the need for the IRFRF
3) Understand what is not a viable solution

2017 General Rate Application Requested Relief

Orders sought:

- Requesting 2.0% overall rate increase
- RSR range of $181 million to $404 million
- No RSR rebuilding fee
- Interest Rate Forecast Risk Factor (IRFRF)
  - To address negative impacts of interest forecast to net income
  - Maintain stable and predictable rates
  - Maintain sound financial health of the business

Defining the Problem
Impacts to Net Income

The Forecast of Interest Rates impacts the Forecast of Net Income

If high forecasted interest rates are not achieved, investment income is too low and a net loss is generated

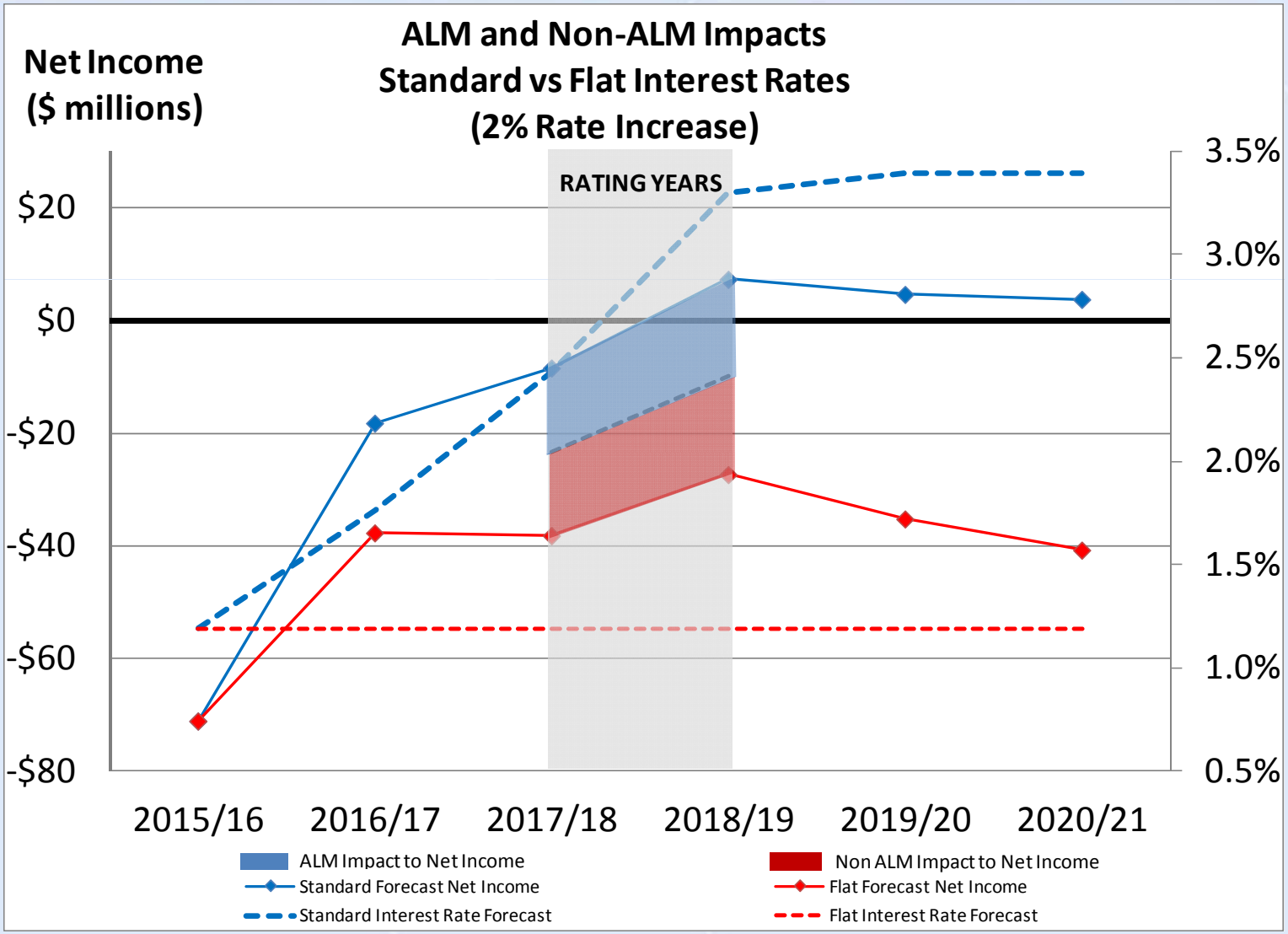
Material Impact on Net Income:

Basic Net Income - ALM (Match to Corporate)
(including 2017 GRA 2% Rate Increase)
($ millions)

Interest Rate Forecast	Fiscal Years 2016/17	2017/18	2018/19	2019/20	2020/21	Avg. of Rating Yrs
Standard	(18.2)	(8.4)	7.3	4.7	3.8	(0.6)
Flat	(37.6)	(38.1)	(27.3)	(35.2)	(40.7)	(32.7)
Difference	(19.5)	(29.7)	(34.6)	(39.8)	(44.5)	(32.2)

Visually

Forecasted Interest Rates impact on Forecasted Net Income



ALM Impacts vs Non-ALM Impacts

Effect of Flat Interest Rates on Net Income (including 2017 GRA 2% Rate Increase) (Match to Corporate)	
(C $000,000s)	**Avg. of Rating Years**
Standard Interest Rate Forecast	
Net Income (Loss)	(0.6)
ALM Impacts	
Claims Interest Rate Impact	(91.3)
Marketable Bond Impact	(75.3)
ALM Net Impact	(16.1)
Non-ALM Impacts	
Non ALM Net Impacts	(16.1)
Total ALM & Non-ALM Impacts	(32.2)
Flat Interest Rate Scenario	
Net Income (Loss)	(32.7)

Interest Rate Risk and Interest Rate Forecasting Risk

IRFRF is needed for Interest Rate Forecasting Risk not related to ALM

ALM based Risk

- $16.1 million in risk due to ALM
- MPI willing to accept the risk that this benefit to Basic doesn't materialize if interest rates stay flat

Non-ALM based Risk

- $16.1 million due to the risk that the absolute Interest Rate Forecast is too high

ALM Match to Basic

- Conducting ALM on a Corporate basis is deliberate
- ALM at Corporate level = better risk/return profile
- ALM at Basic level = GRA with 3.7% premium rate
- **Would not eliminate** the IRFRF

Basic Net Income - ALM (Match to Basic)
(including 2017 GRA 2% Rate Increase)
($ millions)

Interest Rate Forecast	Fiscal Years 2016/17	2017/18	2018/19	2019/20	2020/21	Avg. of Rating Yrs
Standard	(6.2)	(17.5)	(4.4)	3.2	1.2	(10.9)*
Flat	(16.3)	(49.6)	(40.2)	(41.1)	(46.8)	(44.9)
Difference	(10.0)	(32.1)	(35.8)	(44.3)	(48.0)	(34.0)

* Requires additional 1.7% rate increase over the 2% requested

Match to Basic: ALM Impacts vs Non-ALM Impacts

Effect of Flat Interest Rates on Net Income
(assuming 2% Rate Increase)
(Match to Basic)

(C $000,000s)	**Avg. of Rating Years**
Standard Interest Rate Forecast	
Net Income (Loss)	(10.9)
ALM Impacts	
Claims Interest Rate Impact	(97.1)
Marketable Bond Impact	(95.4)
ALM Net Impact	(1.8)
Non-ALM Impacts	
Non ALM Net Impacts	(32.2)
Total ALM & Non-ALM Impacts	(34.0)
Flat Interest Rate Scenario	
Net Income (Loss)	(44.9)

Interest Rate Risk

Mitigated on a Corporate Basis

Formal Definition:

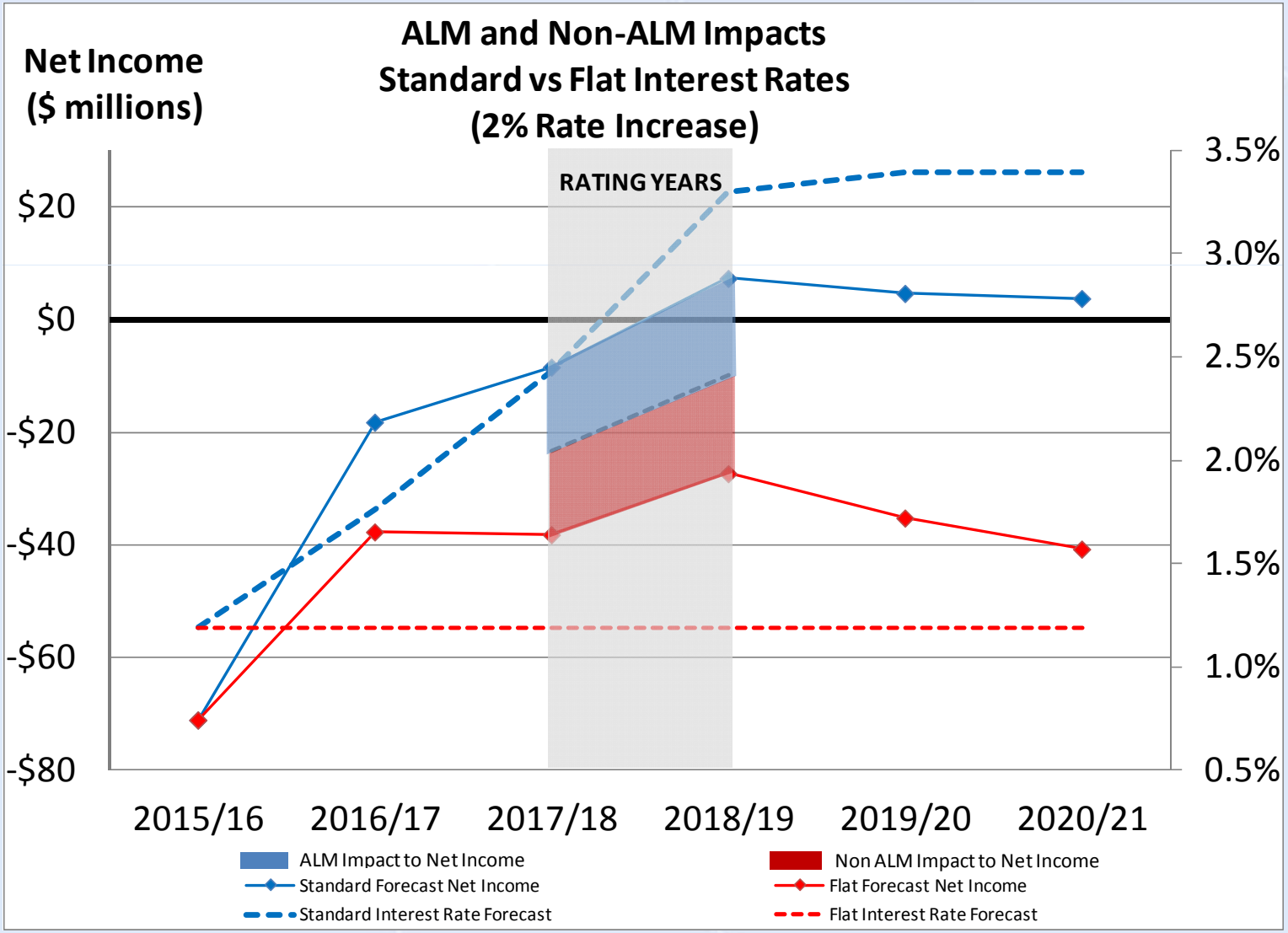
- Interest rate risk = net impact of **changes** in interest rates on claims liabilities and the gain or loss for marketable bonds

Asset Liability Management (ALM) has mitigated Interest Rate Risk on a Corporate basis

- $3.7 M in impact to net income of forecasted **changes**
- Results in $16.1 M risk to Basic if increase in int. rates does not occur

Visually

Forecasted Interest Rates Impact on Forecasted Net Income



Interest Rate Forecasting Risk

Not the same as "Interest Rate Risk"

- Practically defined as:
  i. Aggressive third party interest rate forecasts may not materialize
  ii. Basic Autopac premiums set based on these forecasts will lead to a deficiency in premiums
  iii. The magnitude of the risk is estimated for by the difference in forecasted net income when Standard Interest Rate Forecast doesn't materialize

- The higher interest rates are forecasted to be, the more risk of loss exists when they don't materialize

The Source of the Problem

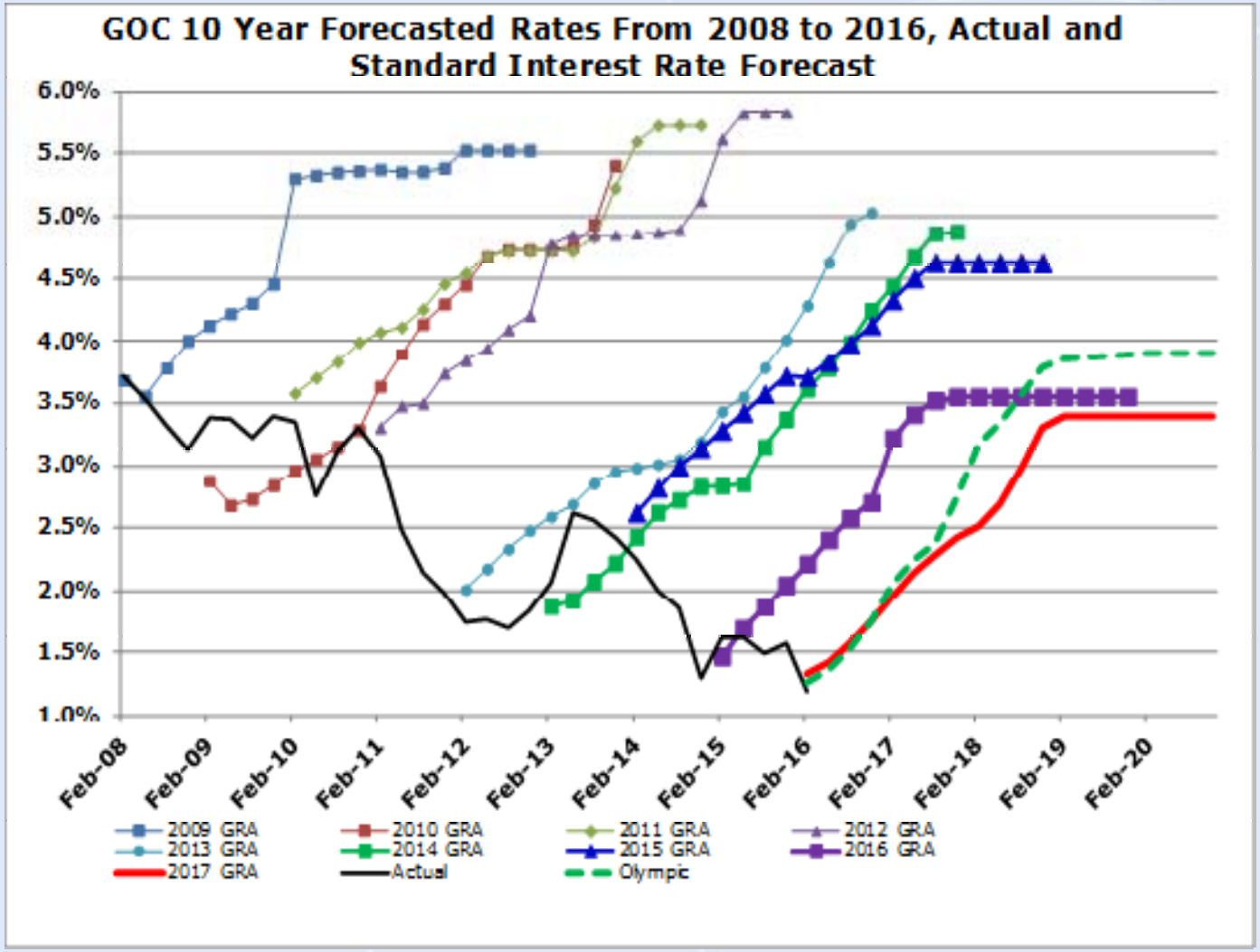
Standard Interest Rate Forecast

- The Standard interest rate forecast, based on forecasts produced by third parties have consistently overstated the interest rate forecast relative to actual results.

- There is a clear track record of the Standard forecast (and underlying third party forecasts) not materializing

Standard Interest Rate Forecast

The Risk is Persistent



Interest Rate Forecast

The Forecasting Error is Persistent

- Simple ‘Visual’ assessment
  - Standard Interest Rate forecast has been “directionally” correct in only 6 of 32 quarters
  - Only 3 quarters with correct direction and magnitude.

Interest Rate Forecast

Historical Interest Rate Movements

- The magnitude of Interest Rate movement in the Standard Forecast is ‘uncommon’
  - Analyzed Bank of Canada >10 year interest rates since 1956, excluding the Stagflation Period from 1976 to 1985
  - Standard forecast movement of 211 basis points over the next 10 quarters (to the end of the rating period) represents a 96.5 percentile interest rate movement (1-in-29 year)
  - Olympic average forecast of 259 basis points represents a 99.4 percentile interest rate movement (1-in-167 year)

Identifying the Solution

Rule Out What is "Not" the Solution

- The following will **not** be effective or appropriate solutions to Interest Rate Forecasting Risk:
  1. Change Asset Liability Management approach
  2. Rely on Rate Stabilization Reserve
  3. Use Interest Rate Margin for Adverse Deviation

Asset Liability Management

- ALM matching to Corporate is highly effective
- Residual risk exists on a Basic basis
  - The Corporation is prepared to accept this risk
- Matching to Corporate is deliberate, and results in a lower required Basic rate increase
  - Basic ratepayers enjoy the benefits of a higher risk/return profile of more growth assets and less fixed income.

Rate Stabilization Reserve

- The purpose of the RSR is to:

  Protect motorists from rate increases that would otherwise have been necessary due to unexpected variances from forecasted results and due to events and losses arising from non-recurring events and factors.

- RSR is not equipped to handle systematic forecast errors
  - The Corporation does not view the current Standard Forecast as a 'best estimate'
  - RSR cannot substitute for 'break-even rates'

Interest Rate Margin for Adverse Deviation

- The Interest Rate Margin for Adverse Deviation (MfAD) in the Appointed Actuary's Report is selected to provide for possible adverse experience in yield rates, reinvestment, and/or asset defaults for the assets that are backing the claims liabilities.

- The assumed yield for discounting the claims liabilities is based on the fixed income portfolio yield as at the valuation date. The fixed income portfolio is dollar and duration matched to the claims liabilities.

- The discount rate used in the Actuarial Report is a point-in-time estimate and does not require the forecasting of future interest rates. Therefore, interest rate forecasting risk (as defined in the Rate Application) does not exist, nor is the MfAD intended to cover this type of risk.

Need for an IRFRF

Conclusions of the 2017 GRA

- The risk posed by the interest rate forecast is not sustainable
  - Risk to the financial health of Basic, and in turn ratepayers
  - Fundamental principle of public auto insurance is to operate on a break-even basis
- The Appropriate remedy to this risk is an IRFRF
  - The IRFRF proposed is an essential component of the Corporation's requested orders in this GRA

Need for an IRFRF

Conclusions of the 2017 GRA Cont'd

The proposed IRFRF is necessary to:

i) Arrive at a 'best estimate' forecast of breakeven net income

ii) Safeguard the financial health of Basic and the Corporation

iii) Reduce the prospect of rate shock in future years

iv) Maintain public confidence in Manitoba Public Insurance and the public auto insurance model over the long term

The IRFRF is just, reasonable and in the public interest