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## Educational Note

# Guidance for the 2017 Valuation of Insurance Contract Liabilities of Life Insurers

Document 217098

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## ***Educational Note***

# **Guidance for the 2017 Valuation of Insurance Contract Liabilities of Life Insurers**

**Committee on Life Insurance Financial Reporting**

**ARCHIVED**

**September 2017**

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*Members should be familiar with educational notes. Educational notes describe but do not recommend practice in illustrative situations. They do not constitute standards of practice and are, therefore, not binding. They are, however, intended to illustrate the application (but not necessarily the only application) of the Standards of Practice, so there should be no conflict between them. They are intended to assist actuaries in applying standards of practice in respect of specific matters. Responsibility for the manner of application of standards of practice in specific circumstances remains that of the members.*

## MEMORANDUM

**To:** Members in the life insurance practice area

**From:** Faisal Siddiqi, Chair  
Practice Council  
Stéphanie Fadous, Chair  
Committee on Life Insurance Financial Reporting

**Date:** September 20, 2017

**Subject:** **Educational Note: Guidance for the 2017 Valuation of Insurance Contract Liabilities of Life Insurers**

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### Introduction

The purpose of this educational note is to provide guidance to actuaries in several areas affecting the valuation of the 2017 year-end insurance contract liabilities of life insurers for Canadian generally accepted accounting principles (GAAP) purposes. In addition, the note provides an update on recently published experience studies and introductory information about potential changes in future financial reporting. The guidance in this educational note represents a majority view of the members of the Committee on Life Insurance Financial Reporting (CLIFR) of appropriate practice consistent with the Standards of Practice.

In accordance with the Canadian Institute of Actuaries' (CIA) Policy on Due Process for the Approval of Guidance Material Other than Standards of Practice and Research Documents, this educational note has been prepared by CLIFR, and has received final approval for distribution by the Practice Council on September 5, 2017.

As outlined in subsection 1220 of the Standards of Practice, "The actuary should be familiar with relevant Educational Notes and other designated educational material." That subsection explains further that a "practice that the Educational Notes describe for a situation is not necessarily the only accepted practice for that situation and is not necessarily accepted actuarial practice for a different situation." As well, "Educational Notes are intended to illustrate the application (but not necessarily the only application) of the standards, so there should be no conflict between them."

## Guidance to Members on Specific Situations

From time to time, CIA members seek advice or guidance from CLIFR. Both the CIA and CLIFR strongly encourage such dialogue. CIA members would be assured that it is proper and appropriate for them to consult with the chair or vice-chair of CLIFR.

CIA members are reminded that responses provided by CLIFR are intended to assist them in interpreting the CIA Standards of Practice, educational notes, and Rules of Professional Conduct, in assessing the appropriateness of certain techniques or assumptions. A response from CLIFR does not constitute a formal opinion as to whether the work in question is in compliance with the CIA Standards of Practice. Guidance provided by CLIFR is not binding upon the member.

## Recent Guidance

The following revisions to the Standards of Practice and related promulgations have been approved recently:

- [Final Communication of Updated Promulgations of the Ultimate Reinvestment Rates and Calibration Criteria for Stochastic Risk-Free Interest Rates in the Standards of Practice for the Valuation of Insurance Contract Liabilities: Life and Health \(Accident and Sickness\) Insurance \(Subsection 2330\)](#) (July 28, 2017);
- [Final Communication of a Promulgation of Prescribed Mortality Improvement Rates and Associated Margins for Adverse Deviations within the Practice-Specific Standards on Insurance Contract Valuation: Life and Health \(Accident and Sickness\) Insurance \(Subsection 2350\) and the Accompanying Promulgation](#) (July 30, 2017);
- [Final Communication of a Promulgation of Prescribed Mortality Improvement Rates and Associated Margins for Adverse Deviations within the Practice-Specific Standards on Insurance Contract Valuation: Life and Health \(Accident and Sickness\) Insurance \(Subsection 2350\) and the Accompanying Promulgation – Excel Workbook](#) (July 30, 2017);
- [Final Communication of a Promulgation of Calibration Criteria for Equity Investment Returns Referenced in the Standards of Practice for the Valuation of Insurance Contract Liabilities: Life and Health \(Accident and Sickness\) Insurance \(Subsection 2370\)](#) (July 28, 2017);
- [Exposure Draft – Revisions to General Standards \(Part 1000\)](#) (February 8, 2017);
- [Memorandum: Revisions to the Practice-Specific Standards for Insurance \(Part 2000\)](#) (February 3, 2017);
- [Final Standards – Practice-Specific Standards for Insurance \(Part 2000\)](#) (February 3, 2017);
- [Exposure Draft for Revisions within the Practice-Specific Standards for Insurance \(Sections 2400 and 2500\)](#) (July 13, 2017); and
- [Notice of Intent to Incorporate Principles of International Standard of Actuarial Practice 4 – Actuarial Practice in Relation to IFRS X Insurance Contracts into the Canadian Standards of Practice](#) (June 22, 2015).

Recent CLIFR guidance includes the following material:

- Revised educational note supplement: [Calibration of Stochastic Risk-Free Interest Rate Models for Use in CALM Valuation](#) (August 2017);
- Research paper: [Calibration of Equity Returns and Volatility for Stochastic Models](#) (May 2017);
- Educational note supplement: [Selective Lapsation for Renewable Term Insurance Products](#) (February 2017);
- Educational note supplement: [Selective Lapsation for Renewable Term Insurance Products - Illustration of Methods](#) (February 2017);
- Educational note supplement: [Development of the Equilibrium Risk-Free Market Curve for the Base Scenario](#) (December 2015);
- Educational note supplement: [Development of the Equilibrium Risk-Free Market Curve for the Base Scenario: Excel File](#) (December 2015); and
- Revised educational note: [Investment Assumptions Used in the Valuation of Life and Health Insurance Contract Liabilities](#) (reissued September 2015).

Recent Committee on Risk Management and Capital Requirements (COMCR) guidance includes the following material:

- Educational note: [Performance of DCAT in 2017 for Life and Health Insurers](#) (February 2017).

Recent guidance for mortality improvement includes the following material:

- [Research Paper on Mortality Improvement Promulgation](#) (May 2017);
- [Research Paper on Mortality Improvement Promulgation – Excel File](#) (May 2017);
- [Task Force Report on Mortality Improvement \(Final\)](#) (September 2017); and
- [Task Force Report on Mortality Improvement \(Final\) – Excel File](#) (September 2017).

For your convenience all of these publications can be found on the CIA website under [Publications](#). A list of all the current educational notes and research papers can be found in appendix A.

In addition, CLIFR expects to publish the following guidance in the near future:

- Educational note supplement: Ultimate Reinvestment Rate; and
- Educational note: Life Insurance Capital Adequacy Test (LICAT) and Capital Adequacy Requirements for Life and Health Insurance (CARLI).

Some guidance provided last year is still appropriate, and has been duplicated in this educational note. The guidance is labelled as unchanged. Other guidance has been modified, either to reflect recent developments or to improve clarity and is labelled as modified.

The topics covered herein are

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If you have any questions or comments regarding this educational note, please contact Stéphanie Fadous at [Stephanie\\_Fadous@manulife.com](mailto:Stephanie_Fadous@manulife.com).

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## 1. Experience Studies (*modified*)

The Research Committee has published the following studies:

- Mortality study – [Canadian Standard Ordinary Life Experience 2014–2015 Using 86–92 Tables](#) (July 2017).
- Mortality study – [Canadian Standard Ordinary Life Experience 2014–2015 Using 97–04 Tables](#) (July 2017).

These reports submitted by the Individual Life Experience Subcommittee of the Canadian Institute of Actuaries (CIA) Research Executive Committee detail the intercompany mortality experience for Canadian standard ordinary life insurance policies. They reflect the mortality experience of Canadian standard individual ordinary insurance issues between the 2014 and 2015 policy anniversaries. The [CIA 86–92](#) and [CIA 97–04](#) mortality tables were used to calculate the expected death claims for males and females and for smoker/non-smoker distinctions separately.

- Mortality study – [Canadian Individual Annuitant Mortality Experience Policy Years 2002–2003 to 2011–2012](#) (February 2016).

This study updates the 2001–2002 through 2010–2011 study published in 2014; the information presented does not require knowledge of the prior study. Six companies contributed to this study. Unlike the last study, the results do not include incurred but not reported (IBNR) factors. The study considers experience of Canadian individual annuities. Most of the policies studied are in payout status but in some cases experience is included during the deferred period, provided the policy has no cash value and the policy cannot be changed.

- Mortality study – [Canadian Incurred Payout Mortality Table 2014 \(CIP2014\)](#) (February 2015).

The CIA has been collecting data on individual annuities on a seriatim basis since 1989, but no mortality table has been produced from the data. The paper sets out the construction of the first mortality table for Canadian payout annuities, CIP2014. It is based on data of the CIA individual annuitant mortality study for years of experience 2000–2011, but excluding data for policies with annual income of \$72,000 or more.

- Mortality study – [Canadian Group Annuitant Mortality Experience, Calendar Years 2007–2012](#) (April 2017).

This is the inaugural report studying mortality experience for Canadian group annuitants with contributions from six companies. It covers the experience for calendar years 2007 to 2012.

- Morbidity study – [Canadian Individual Critical Illness Insurance Morbidity Experience Study Including Policy Anniversaries Between 2005 and 2014 Using Expected Incidence Rate Tables 2008 CANCI](#) (October 2016).

This is the third report submitted by the Individual Living Benefits Experience Subcommittee of the Research Committee detailing the intercompany morbidity experience for Canadian individual critical illness (CI) insurance policies.

- Lapse study – [Lapse Experience Study for 10-Year Term Insurance](#) (January 2014).

This study of lapse experience under Canadian fully-guaranteed individual renewable and convertible 10-year term insurance (T10) policies was conducted by the Individual Life Experience Subcommittee. This is the first study of T10 lapses conducted by the CIA. Ten of the largest writers of T10 insurance in Canada contributed. The study period runs from January 1, 2005 to December 31, 2010. Lapse rates vary by face amount as evidenced by the differences in lapse rates based on policy count and lapse rates based on amount of insurance. Consequently, most of the analysis in the report is presented on both bases.

- Lapse study – [Lapse Experience under Term-to-100 Insurance Policies](#) (September 2015).

This is the sixth lapse experience study covering term-to-100 and similar insurance policies (collectively referred to as “T100”). This study covers calendar years 2005–2012; the previous study covered 1999–2004. Overall, compared to the prior study, lapse rates are lower than those observed before.

- Lapse study – [Lapse Experience under Universal Life Level Cost of Insurance Policies](#) (September 2015).

This is the third lapse experience study covering universal life level cost of insurance policies (referred to as “LCOI”, “UL” used to refer to all types of universal life policies). This study covers calendar years 2005–2012. Overall, compared to the prior study, lapse rates are slightly lower than those observed before at most durations.

- Group health and dental insurance claims report – [Extended Healthcare and Dental Experience: A Report on the Post-Employment Benefits Experience Study](#) (March 2016).

This report covers the first-ever group health and dental insurance claims experience study in Canada. The primary focus is the experience for employees aged 50+ to assist actuaries in valuing post-employment benefits.

The Research Executive Committee (previously called Research Committee) plans to publish the following documents in the future:

- Canadian Segregated Fund Policyholder Behaviour Company Practices Survey;
- Canadian Segregated Fund Policyholder Behaviour Experience Study; and
- Canadian Segregated Fund Mortality Experience Study.

The survey and studies are inaugural reports presenting company practices, mortality experience, and lapse experience for Canadian segregated fund business with contributions from six companies.



## 2. Life Insurance and Annuity Mortality (*modified*)

On July 30, 2017, the Actuarial Standards Board (ASB) published a Final Communication of a Promulgation of Prescribed Mortality Improvement Rates Referenced in the Standards of Practice for the Valuation of Insurance Contract Liabilities: Life and Health (Accident and Sickness) Insurance (Subsection 2350) (<http://www.cia-ica.ca/docs/default-source/2017/217079e.pdf>) with an effective date of October 30, 2017.

This updated promulgation introduces new prescribed mortality improvement rates to be used in the calculation of the minimum valuation assumption, and the notion of diversification between death-sensitive and death-supported business. The new prescribed mortality improvement rates are a function of both the attained age and the calendar year. The promulgation also provides additional guidance on subsection 2350 on the definition of “appropriate level of aggregation” with regards to the impact of inclusion of mortality improvement in insurance contract liabilities, and on the application of mortality improvement rates for the calculation of accident and sickness insurance liabilities.

In addition, on May 17, 2017, the ASB Designated Group published a [Research Paper on Mortality Improvement Promulgation](#) that provides a rationale for the proposed mortality improvement rates of the updated promulgation. This paper references a final report prepared by the CIA [Task Force on Mortality Improvement](#) published in 2017. This report provides an analysis of the rate of mortality improvement for the Canadian population and the construction of a mortality projection scale for the purpose of reflecting future mortality improvement in Canadian actuarial work.

## 3. Accident and Sickness (A&S) Insurance Mortality and Morbidity (*modified*) Mortality Improvement (*modified*)

The mortality improvement promulgation referred to in section 2 (Life Insurance and Annuity Mortality) also applies to A&S insurance, although the application varies by the status of the policyholder:

- **Active lives** (lives not currently receiving benefits and the portion of lives that are **not** expected to be in receipt of future benefits as measured in an active life reserve): the guidance provided in section 2 applies.
- **Non-active lives** (lives currently receiving benefits and the portion of lives that are expected to be in receipt of future benefits as measured in an active life reserve): the promulgation states that the actuary may consider reflecting mortality improvement; however, the minimum valuation assumption for mortality improvement does not apply to the valuation of these lives.

### Morbidity Trends (*unchanged*)

In addition, the actuary may consider reflecting secular morbidity trends for accident and sickness insurance if the actuary has credible data or if the actuary has reliable benchmark data to use for purposes of projecting a morbidity trend. The data supporting longer-term trend

assumptions would cover a relevant and sufficiently long period of experience to ascertain the secular trend and rule out shorter-term cyclical trends.

If a morbidity trend assumption is applied, then the actuary would apply a margin on the best estimate assumption consistent with subsection 2350 of the Standards of Practice. The actuary would consider whether the morbidity trend demonstrates unusually high uncertainty and would warrant selection of a margin above the high margin as noted in paragraph 2350.05 of the Standards of Practice. When assessing the appropriateness of aggregate provision for adverse deviations (PfAD) levels, actuaries would consider the interrelationships of the assumptions and any potential undesirable compounding of provisions.

#### 4. Economic Assumptions (*modified*)

##### Credit Spreads

The revised educational note: [Investment Assumptions Used in the Valuation of Life and Health Insurance Contract Liabilities](#) (September 2015) provides guidance on developing assumptions for credit spreads, including margins and limits. Two clarifications follow:

- If testing at the level at which the Canadian asset liability method (CALM) liabilities are determined demonstrates that the promulgated maximum net credit spread after margin (net of defaults) increases the liabilities, then the additional margin pertaining to the net credit spread after margin would be applied on each fixed-income asset. This is illustrated by the following example:
  - The investment strategy in a given CALM segment assumes that reinvestment will be in three equally weighted fixed-income assets, with assumed ultimate net credit spreads after margin of 70 bps, 90 bps, and 50 bps respectively.
  - The average net credit spread after margin, prior to the application of the paragraph 2330.08 additional margin is 50 bps.
  - After application of the paragraph 2330.08 additional margin, the net credit spreads after margin for the first two assets are reduced to 80 bps each, and there is no change to the 50 bps assumption for the third asset. The resulting average net credit spread after margin is 70 bps.
- Additional scenarios (as defined in paragraph 2330.33) are limited to varying risk-free interest rates and not credit spreads.

##### Equilibrium Risk-Free Market Curve

In 2014, a CIA educational note: [Investment Assumptions Used in the Valuation of Life and Health Insurance Contract Liabilities](#) (September 2014) was issued to provide guidance and support to actuaries in the application of the revised Standards of Practice. The educational note provides guidance on developing an “equilibrium risk-free market curve” used in the base scenario that would extend for at least 40 years from the balance sheet date. During 2015, CLIFR reviewed the construction of this equilibrium risk-free market curve to address considerations that had arisen in the implementation of the new standards of practice.

As a result of this review, CLIFR issued a revised educational note: [Investment Assumptions Used in the Valuation of Life and Health Insurance Contract Liabilities](#) (September 2015). The 2015 version of the educational note remained unchanged from the 2014 publication, with the exception of the guidance provided for developing an equilibrium risk-free market curve extending beyond the current market curve and a clarification of the non-fixed income assets definition.

Further information on the development of the new guidance for extending the equilibrium risk-free market curve can be found in the CIA educational note supplement: [Development of the Equilibrium Risk-Free Market Curve for the Base Scenario](#) (December 2015). This educational note supplement includes a [spreadsheet](#) that illustrates the development of the base scenario.

### **Ultimate Reinvestment Rate**

The ASB is responsible for promulgating the calibration criteria for stochastic risk-free interest rate models and the ultimate reinvestment rates (URRs) from time to time. The ongoing low interest rate environment has prompted the ASB to monitor these developments closely, and the ASB promulgated new URRs and new calibration criteria for year-end 2017. The [final promulgation](#) was published in July, and the effective date is October 23, 2017. For further information on the calibration criteria, see section 6 below.

CLIFR intends to publish a paper in 2017 to describe the process by which the promulgated URRs were developed. Given that only Canadian URRs were promulgated by the ASB, knowledge of this process may aid actuaries in developing URRs appropriate for other jurisdictions.

### **Negative Interest Rates**

There is an increased prevalence of negative interest rates in developed markets around the world. The actuary would consider the implications on the valuation of insurance contract liabilities when interest rates are negative.

CLIFR formed a new subcommittee in 2016 to investigate the implications of negative interest rates for the prescribed scenarios. The subcommittee concluded that the construction of the prescribed scenarios remains appropriate if negative interest rates prevail at valuation date.

### **Non-fixed Income (NFI) Return Where Reliable Historical Information is not Available**

CLIFR formed a new sub-committee in 2017 to provide additional guidance on setting the non-fixed income returns for the purpose of valuation, where reliable historical information is not available (as per paragraph 2340.18 of the Standards of Practice). More specifically, the sub-committee will investigate the treatment of tax attributes in setting these assumptions and whether additional criteria for selecting benchmarks are necessary. CLIFR expects to provide the conclusions reached by this subcommittee in 2018.

## **5. International Financial Reporting Standards (modified)**

In May 2017, the International Accounting Standards Board (IASB) published the final standards for Insurance Contracts, IFRS 17. The implementation date will be January 1, 2021. For the most current information please see the [IASB website](#). Note that an eIFRS professional account is required to access the final standards and related documents.

The CIA Committee on International Insurance Accounting (IIAC) under the International Relations Council has the following mandate with regards to international accounting and actuarial standards for the valuation of insurance and related products:

- Monitor developments and ensure that news of relevant and material developments is dispersed appropriately within the CIA;
- Recommend where specific additional Canadian guidance may be helpful, and if so, assist in its development; and
- Where relevant and appropriate, provide input from a CIA perspective to the international governing bodies.

The IIAC is developing a report highlighting the key differences between CALM and IFRS 17, which will likely be published in the first half of 2018. The committee is also hosting educational webcasts throughout the year.

The ASB Designated Group on Insurance Contract Standards of Practice, published a [Notice of Intent to Incorporate Principles of International Standard of Actuarial Practice 4 – Actuarial Practice in Relation to IFRS X Insurance Contracts into the Canadian Standards of Practice](#) in June 2015. The Canadian Accounting Standards Board has indicated its intention that, once adopted by the IASB, and subject to its due process, IFRS 17 will be adopted without modification for the valuation of insurance contracts in Canadian generally accepted accounting principles (GAAP) financial statements.

## 6. Stochastic Scenarios (*modified*)

### Calibration Criteria for Equity Returns and Volatility: All Products

Calibration criteria for equity return assumptions for segregated fund liabilities were promulgated in 2012. A research paper that provided the rationale for these calibration criteria was published February 2012. In the 2012 research paper presented the results of the calibration of left and right tail of equity returns, but deferred the calibration of the volatility of equity returns in the context of hedging to a later date.

CLIFR created a working group in 2016 to update this research paper, and a revised research paper [Calibration of Equity Returns and Volatility for Stochastic Models](#), was published on May 17, 2017. The ASB's [final promulgation](#) of recommendations from this paper occurred on July 28, 2017 and has an effective date of October 28, 2017.

The models and methodologies used to develop the equity return accumulation factor calibration criteria in the 2012 research paper were reviewed. The data used in the 2012 research paper analysis was also updated to include monthly TSX and S&P total return data between January 2011 and December 2015. As a result of this review and data update, no changes are proposed to the existing left-tail equity return accumulation factor calibration criteria. With the addition of the equity volatility criteria (see below), right-tail return criteria and minimum volatility criteria are no longer needed.

In addition, equity volatility criteria are now provided in the form of minimum values of the annualized standard deviation of continuously compounded monthly returns for the 90<sup>th</sup>, and 95<sup>th</sup> percentiles for the one-year and five-year horizons.

Two sets of calibration criteria are provided, one for broad-based equity indices of non-Asian developed economies, and one for small capitalization equity indices. Guidance is also provided for indices that do not fall into these two categories.

The promulgated calibration criteria are intended to apply to the calibration of all stochastic models used for the determination of insurance contract liabilities, where such models require assumptions regarding real-world equity returns and volatility. The calibration criteria are not intended to apply to risk-neutral assumptions.

An advisory note was published by the Office of the Superintendent of Financial Institutions (OSFI) in December 2010 setting out calibration criteria for investment returns applicable when calculating capital requirements for segregated funds with an internal model. The actuary is reminded that OSFI criteria apply to the calculation of capital requirements for segregated funds only, whereas the criteria set out in the research paper apply to the calculation of any insurance contract liabilities using stochastic modelling of equity returns. However, nothing prevents the actuary from satisfying the OSFI criteria, when these criteria are more stringent than the promulgated criteria.

#### **Calibration Criteria for Fixed-Income Returns: Segregated Funds**

Calibration criteria for fixed-income returns were promulgated in 2014. A [research paper](#) that provided the rationale for these calibration criteria was published in April 2014. Calibration criteria are provided for the left tail of fixed-income returns at the one-, five-, 10-, and 20-year horizons as well as for the right tail at the one-year horizon, for three different initial benchmark yields. Calibration criteria are provided for Canadian and U.S. broad-based fixed-income indices, and qualitative guidance is provided for other types of fixed-income funds in the research paper.

#### **Calibration Criteria for Risk-Free Interest Rate Models Used in CALM Valuation**

CLIFR created a working group in 2015 to update the calibration criteria for stochastic risk-free interest rate models, and published a [revised educational note supplement](#) on August 16, 2017. The ASB's [final promulgation](#) of recommendations from this paper occurred on July 28, 2017 and has an effective date of October 28, 2017.

Included in the educational note supplement are updates to the guidance for the long-term (term to maturity of 20 years and longer) risk-free interest rate and for the short-term (one-year maturity) risk-free interest rate, medium-term (five- to 10-year maturity) risk-free interest rates, and the slope of the yield curve. The previous exercise considered data to the end of 2011; the current group updated data to mid-year 2016, but otherwise preserved the methodology applied in 2012.

#### **7. Selective Lapsation (*modified slightly*)**

There are no changes to the guidance for the 2017 year-end valuation.

The educational note [Expected Mortality: Fully Underwritten Canadian Individual Life Insurance Policies](#) published in 2002 discusses the impact of selective lapsation on mortality after term renewal. The principles and formulas discussed in this educational note are based on Valuation Technique Paper #2 (VTP #2) published in 1986.

CLIFR formed a subcommittee in 2014 to determine whether the 2002 educational note remains appropriate, taking into account the evolution of the market and products over the last 30 years. As a result of this review, CLIFR issued an educational note supplement [Selective Lapsation for Renewable Term Insurance Products](#) published in 2017.

One of the important changes in the products available today compared to what was available in the past is the premium jump at renewal. VTP #2 was put in place at a time when the premium jump at renewal was about twice the initial premium. Today, the premium jumps are much higher. These premium jumps at renewal are driving lapse rates higher than 70 percent when considering lapses occurring in the first months after the renewal date.

The CLIFR subcommittee assessed the appropriateness of the VTP #2 method, considering the evolution of product design and the available industry experience. After the review, it was found that the VTP #2 method remains theoretically sound. Nevertheless, CLIFR suggests that the following aspects require consideration:

- Deaths during grace period: When lapse rates are low, modelling deaths during the grace period has an insignificant impact on mortality deterioration. This may not be the case when lapse rates are very high.
- Skewness of lapses: There is skewness in lapses throughout a policy year, and particularly in the year following the renewal date where lapses tend to be concentrated near the beginning of the next policy year. If the skewness in lapses in the year following renewal is not considered in the model, the projected mortality may be underestimated in the year following the renewal date.
- Underlying lapses: Not reflecting the underlying lapses in the VTP #2 method has an insignificant impact on mortality deterioration when the lapse rates are low. This may not be the case when lapse rates are very high.

## 8. Capital Section (*modified*)

OSFI's Life Insurance Capital Adequacy Test (LICAT) guideline and the Capital Adequacy Requirements for Life and Health Insurance (CARLI) guideline of the Autorité des marchés financiers (AMF) were issued in fall 2016 and are effective January 1, 2018. A new Dynamic Capital Adequacy Testing (DCAT) educational note: [Performance of DCAT in 2017 for Life and Health Insurers](#) was issued on February 9, 2017 by the CRMCR. The educational note, which provides guidance on addressing LICAT and CARLI in DCAT, would be considered by the actuary for DCAT reports issued in 2017 based on fiscal year-end 2016.

From time to time, assumptions are promulgated or existing promulgations are reviewed by the ASB, and for DCAT purposes the actuary would consider whether changes to these promulgations should be assumed. These assumptions include mortality improvement assumptions, the maximum net credit spread after margin, ultimate reinvestment rates, calibration criteria for stochastic risk-free interest rates, and calibration criteria for equity returns.

### LICAT Designated Group and Subcommittee

In 2016, a new designated group of the ASB was created to review the standards of practice for the preparation and filing of LICAT returns. The designated group will publish an educational

note in 2017, after OSFI has released the updated guideline. The educational note will provide guidance to actuaries preparing LICAT or CARLI.

The objective of the educational note is to assist with interpretation of LICAT requirements and to narrow the range of practice in application of the new capital standards. The educational note will cover the following topics: best-estimate assumptions, quantification of provisions for adverse deviations for inclusion in the surplus allowance, future mortality improvement, participating policyholder dividend cash flows, participating and adjustable credit, future credited rates on universal life policies, and future income taxes. Note that although some of these topics pertain to the valuation of policy liabilities, the guidance provided in the educational note is for the purpose of preparing LICAT and does not apply to the valuation of policy liabilities itself.

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**Appendix A: CIA Guidance**

Accession Number	Title	Publication Date
217097	<a href="#">Task Force Report on Mortality Improvement (Final)</a>	September 20, 2017
217097T	<a href="#">Task Force Report on Mortality Improvement (Final) – Excel File</a>	September 20, 2017
217085	<a href="#">Revised Educational Note Supplement: Calibration of Stochastic Risk-Free Interest Rate Models for Use in CALM Valuation</a>	August 16, 2017
217081	<a href="#">Final Communication of Updated Promulgations of the Ultimate Reinvestment Rates and Calibration Criteria for Stochastic Risk-Free Interest Rates in the Standards of Practice for the Valuation of Insurance Contract Liabilities: Life and Health (Accident and Sickness) Insurance (Subsection 2330)</a>	July 28, 2017
217080	<a href="#">Final Communication of a Promulgation of Calibration Criteria for Equity Investment Returns Referenced in the Standards of Practice for the Valuation of Insurance Contract Liabilities: Life and Health (Accident and Sickness) Insurance (Subsection 2370)</a>	July 28, 2017
217079	<a href="#">Final Communication of a Promulgation of Prescribed Mortality Improvement Rates and Associated Margins for Adverse Deviations within the Practice-Specific Standards on Insurance Contract Valuation: Life and Health (Accident and Sickness) Insurance (Subsection 2350) and the Accompanying Promulgation</a>	July 30, 2017
217079T	<a href="#">Final Communication of a Promulgation of Prescribed Mortality Improvement Rates and Associated Margins for Adverse Deviations within the Practice-Specific Standards on Insurance Contract Valuation: Life and Health (Accident and Sickness) Insurance (Subsection 2350) and the Accompanying Promulgation – Excel Workbook</a>	July 30, 2017
217074	Exposure Draft: <a href="#">Revisions within the Practice-Specific Standards for Insurance (Sections 2400 and 2500)</a>	July 13, 2017
217055	Research Paper: <a href="#">Calibration of Equity Returns and Volatility for Stochastic Models</a>	May 17, 2017
217054	<a href="#">Research Paper on Mortality Improvement Promulgation</a>	May 17, 2017
217054T	<a href="#">Research Paper on Mortality Improvement Promulgation – Excel File</a>	May 17, 2017



Accession Number	Title	Publication Date
217019	Educational Note Supplement: <a href="#">Selective Lapsation for Renewable Term Insurance Products</a>	February 16, 2017
217019t	Educational Note Supplement: <a href="#">Selective Lapsation for Renewable Term Insurance Products - Illustration of Methods</a>	February 16, 2017
217018	Educational Note: <a href="#">Performance of DCAT in 2017 for Life and Health Insurers</a>	February 9, 2017
217017	Exposure Draft – <a href="#">Revisions to General Standards (Part 1000)</a>	February 8, 2017
217017rl	Exposure Draft – <a href="#">Revisions to General Standards (Part 1000) (red-lined version)</a>	February 8, 2017
217015	Memorandum: <a href="#">Revisions to the Practice-Specific Standards for Insurance (Part 2000)</a>	February 3, 2017
217014	Final Standards – <a href="#">Practice-Specific Standards for Insurance (Part 2000)</a>	February 3, 2017
217007	Educational Note— <a href="#">Use of Models</a>	January 26, 2017
217005	Final Standards – <a href="#">Revisions to General Standards to Reflect the Use of Models</a>	January 26, 2017
217006	Memorandum: <a href="#">Final Standards – Revisions to General Standards to Reflect the Use of Models</a>	January 26, 2017
216102	<a href="#">Notice of Intent to Review the Standards of Practice to Incorporate Changes Needed as a Result of the New Capital Standard</a>	October 14, 2016
216094	<a href="#">Notice of Intent to Revise Mortality Improvement Rates and Associated Margins for Adverse Deviations within the Practice-Specific Standards on Insurance Contract Valuation: Life and Health (Accident and Sickness) Insurance (Subsection 2350) and the Accompanying Promulgation</a>	September 19, 2016
215111	Educational Note Supplement: <a href="#">Development of the Equilibrium Risk-Free Market Curve for the Base Scenario</a>	December 17, 2015
215111T	Educational Note Supplement: <a href="#">Development of the Equilibrium Risk-Free Market Curve for the Base Scenario: Excel File</a>	December 17, 2015
215072	Revised Educational Note: <a href="#">Investment Assumptions Used in the Valuation of Life and Health Insurance Contract Liabilities</a>	September 16, 2015

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215050	<a href="#">Notice of Intent to Incorporate Principles of International Standard of Actuarial Practice 4 – Actuarial Practice in Relation to IFRS X Insurance Contracts into the Canadian Standards of Practice</a>	June 22, 2015
214128	Memorandum: <a href="#">Final Standards – Revisions to the General and Practice-Specific Standards – Consistency of Reporting and Conformance with International Standard of Actuarial Practice 1</a>	December 9, 2014
214129	Final Standards – <a href="#">Revisions to the General and Practice-Specific Standards – Consistency of Reporting and Conformance with International Standard of Actuarial Practice 1</a>	December 9, 2014
214109	Research Paper: <a href="#">Development of New Prescribed Interest Rate Scenarios for CALM Valuations</a>	October 10, 2014
214096	<a href="#">Final Communication of a Promulgation of Calibration Criteria for Investment Returns Referenced in the Standards of Practice for the Valuation of Insurance Contract Liabilities: Life and Health (Accident and Sickness) Insurance (Subsection 2360) (Fixed Income Returns)</a>	August 21, 2014
214046	<a href="#">Final Communication of Formulations of the Maximum Net Credit Spread, Ultimate Reinvestment Rates, and Calibration Criteria for Stochastic Risk-Free Interest Rates in the Standards of Practice for the Valuation of Insurance Contract Liabilities: Life and Health (Accident and Sickness) Insurance (Subsection 2330 of the Final Standards for Revisions to the Standards of Practice)</a>	May 15, 2014
214047	Final Standards – <a href="#">Revisions to Economic Reinvestment Assumptions within the Practice-Specific Standards on Insurance Contract Valuation: Life and Health (Accident and Sickness) Insurance (Section 2300 and Subsection 1110)</a>	May 15, 2014
214048	Memorandum: <a href="#">Final Standards – Revisions to Economic Reinvestment Assumptions within the Practice-Specific Standards on Insurance Contract Valuation: Life and Health (Accident and Sickness) Insurance (Section 2300 and Subsection 1110)</a>	May 15, 2014
214034	Research Paper: <a href="#">Calibration of Fixed-Income Returns for Segregated Fund Liability</a>	April 11, 2014

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214008	Educational Note: <a href="#">Dividend Determination for Participating Policies</a>	January 9, 2014
214006	Final Standards – <a href="#">Revocation of the Current Standards of Practice Entitled Recommendations – Dividend Determination and Illustration and Explanatory Notes in Amplification of Certain Dividend Recommendations, and Introduction of a New Subsection Relating to Participating Policy Dividend Determination in Part 2000 – Practice-Specific Standards for Insurance</a>	January 9, 2014
213107	Research Paper – <a href="#">Calibration of Stochastic Risk-Free Interest Rate Models for Use in CALM Valuation</a>	December 21, 2013
213077	Revised Educational Note – <a href="#">Dynamic Capital Adequacy Testing</a>	November 13, 2013
213008	<a href="#">Final Standards for Practice-Specific Standards on Insurance Contract Valuation (Section 2300) to Narrow the Range of Practice on Certain Elements</a>	February 12, 2013
213004	Final Standards – <a href="#">Introduction of Standards Relating to Appointed Actuary Opinions with Respect to Use of Internal Models to Determine Required Capital for Segregated Fund Guarantees</a>	February 7, 2013
212096	Educational Note: <a href="#">Future Income and Alternative Taxes</a>	December 17, 2012
212054	Memorandum: <a href="#">Final Communication of a Promulgation of Calibration Criteria on Investment Returns Referenced in the Standards of Practice for the Valuation of Insurance Contract Liabilities, Life and Health (Accident and Sickness) Insurance (Subsection 360)</a>	July 3, 2012
212027	Educational Note: <a href="#">Reflection of Hedging in Segregated Fund Valuation</a>	May 10, 2012
212012	Educational Note: <a href="#">Valuation of Universal Life Insurance Contract Liabilities</a>	February 28, 2012
212004	Research Paper: <a href="#">Calibration of Equity Returns for Segregated Fund Liabilities</a>	February 3, 2012
211108	Memorandum: <a href="#">Final Standards of Practice – Dynamic Capital Adequacy Testing – Section 2500 (with appendix)</a>	November 11, 2011
211107	Final Standard of Practice: <a href="#">Revision of the Standards of Practice – Dynamic Capital Adequacy Testing – Section 2500</a>	November 11, 2011

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211091	Final Standards of Practice: <a href="#">Standards of Practice for Recognizing Events in Work</a> (clean version)	September 26, 2011
211084	Final Standards of Practice: <a href="#">Practice-Specific Standards for Insurance, Incorporation of Standard Wording for Fairness Opinions (subsection 2460)</a>	September 7, 2011
211072	<a href="#">Final Communication of a Promulgation of Prescribed Mortality Improvement Rates Referenced in the Standards of Practice for the Valuation of Insurance Contract Liabilities: Life and Health (Accident and Sickness) Insurance (Subsection 2350)</a>	July 12, 2011
211070	Final Standards of Practice: <a href="#">Standards of Practice for the Valuation of Insurance Contract Liabilities: Life and Health (Accident and Sickness) Insurance (Subsection 2350) Relating to Mortality Improvement</a> (clean version)	July 12, 2011
211027	Educational Note: <a href="#">Investment Return Assumptions for Non-Fixed Income Assets for Life Insurers</a>	March 1, 2011
211003	<a href="#">Final Communication of a Promulgation of Calibration Criteria for Investment Returns Referenced in the Standards of Practice for the Valuation of Policy Liabilities: Life and Health (Accident and Sickness) Insurance (Subsection 2360)</a>	January 20, 2011
210088	Research Paper: <a href="#">IFRS Disclosure Requirements for Life Insurers</a>	December 13, 2010
210086	Educational Note: <a href="#">Valuation of Gross Policy Liabilities and Reinsurance Recoverables</a>	December 1, 2010
210065	Research Paper: <a href="#">Mortality Improvement Research Paper</a>	September 23, 2010
210053	Report: <a href="#">Report of the Task Force on Segregated Fund Liability and Capital Methodologies</a>	August 11, 2010
210034	Educational Note: <a href="#">Valuation of Group Life and Health Policy Liabilities</a>	June 4, 2010
209122	Educational Note: <a href="#">Calibration of Stochastic Interest Rate Models</a>	December 3, 2009
209121	Educational Note: <a href="#">Currency Risk in the Valuation of Policy Liabilities for Life and Health Insurers</a>	December 2, 2009
209095	Research Paper: <a href="#">Considerations for the Development of a Pandemic Scenario</a>	October 15, 2009

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208004	Educational Note: <a href="#">Implications of Proposed Revisions to Income Tax Legislation (Nov 7, 2007 Department of Finance Proposal)</a>	January 23, 2008
207109	Educational Note: <a href="#">Considerations in the Valuation of Segregated Fund Products</a>	November 22, 2007
207029	Educational Note: <a href="#">Implications of CICA Handbook Section 3855 – Financial Instruments on Future Income and Alternative Taxes: Update to Fall Letter</a>	April 11, 2007
206147	Educational Note: <a href="#">Use of Actuarial Judgment in Setting Assumptions and Margins for Adverse Deviations</a>	November 30, 2006
206134	Educational Note: <a href="#">Best Estimate Assumptions for Expenses</a>	November 8, 2006
206133	Educational Note: <a href="#">Approximations to Canadian Asset Liability Method (CALM)</a>	November 8, 2006
206132	Educational Note: <a href="#">Margins for Adverse Deviations</a>	November 8, 2006
206077	Educational Note: <a href="#">CALM Implications of AcSB Section 3855 Financial Instruments – Recognition and Measurement</a>	June 7, 2006
206049	Educational Note: <a href="#">Regulatory Capital Filing Certification</a>	May 24, 2006
206048	Final Standards of Practice: <a href="#">Practice-Specific Standards for Insurers Subsection 24(1) Regulatory Capital Filing Certification</a>	May 24, 2006
205122	Educational Note: <a href="#">Applicability of Rules, Standards, and Other Guidance to CIP Members</a>	November 30, 2005
205111	Educational Note: <a href="#">Valuation of Segregated Fund Investment Guarantees (Revised)</a>	October 26, 2005
203106	Educational Note: <a href="#">Selection of Interest Rate Models</a>	December 2003
203083	Educational Note: <a href="#">Aggregation and Allocation of Policy Liabilities</a>	September 15, 2003
202037	Educational Note: <a href="#">Expected Mortality: Fully Underwritten Canadian Individual Life Insurance Policies</a>	July 8, 2002
202012	Final Report: <a href="#">CIA Task Force on Segregated Fund Investment Guarantees</a>	March 6, 2002
20169	Research Paper: <a href="#">Use of Stochastic Techniques to Value Actuarial Liabilities Under Canadian GAAP</a>	August 15, 2001