

MOODY'S  
ANALYTICS

AXIS™

*Better  
Faster  
Decisions*

# FASB / AICPA Updates

Judy Hanna, FSA, MAAA

Southeastern Actuaries Conference June 25, 2020

# FASB / AICPA Updates

## Agenda

1. Overview of FASB and AICPA Activity
2. Walkthrough of CECL and LDTI
3. Deeper Dive into LDTI Implementation

1

Overview of FASB and  
AICPA Activity

# FASB ACTIVITY

## ACCOUNTING STANDARD UPDATES - ISSUED 2020

[Update 2020-05](#)—Revenue from Contracts with Customers (Topic 606) and Leases (Topic 842): Effective Dates for Certain Entities

[Update 2020-04](#)—Reference Rate Reform (Topic 848): Facilitation of the Effects of Reference Rate Reform on Financial Reporting

[Update 2020-03](#)—Codification Improvements to Financial Instruments

[Update 2020-02](#)—Financial Instruments—Credit Losses (Topic 326) and Leases (Topic 842)—Amendments to SEC Paragraphs Pursuant to SEC Staff Accounting Bulletin No. 119 and Update to SEC Section on Effective Date Related to Accounting Standards Update No. 2016-02, Leases (Topic 842) (SEC Update)

[Update 2020-01](#)—Investments—Equity Securities (Topic 321), Investments—Equity Method and Joint Ventures (Topic 323), and Derivatives and Hedging (Topic 815)—Clarifying the Interactions between Topic 321, Topic 323, and Topic 815 (a consensus of the FASB Emerging Issues Task Force)

# FASB ACTIVITY

## ACCOUNTING STANDARD UPDATES – ISSUED 2019

[Update 2019-12](#)—Income Taxes (Topic 740): Simplifying the Accounting for Income Taxes

[Update 2019-11](#)—Codification Improvements to Topic 326, Financial Instruments—Credit Losses

[Update 2019-10](#)—Financial Instruments—Credit Losses (Topic 326), Derivatives and Hedging (Topic 815), and Leases (Topic 842): Effective Dates

[Update 2019-09](#)—Financial Services—Insurance (Topic 944): Effective Date

[Update 2019-08](#)—Compensation—Stock Compensation (Topic 718) and Revenue from Contracts with Customers (Topic 606): Codification Improvements—Share-Based Consideration Payable to a Customer

[Update 2019-07](#)—Codification Updates to SEC Sections—Amendments to SEC Paragraphs Pursuant to SEC Final Rule Releases No. 33-10532, Disclosure Update and Simplification, and Nos. 33-10231 and 33-10442, Investment Company Reporting Modernization, and Miscellaneous Updates (SEC Update)

[Update 2019-06](#)—Intangibles—Goodwill and Other (Topic 350), Business Combinations (Topic 805), and Not-for-Profit Entities (Topic 958): Extending the Private Company Accounting Alternatives on Goodwill and Certain Identifiable Intangible Assets to Not-for-Profit Entities

[Update 2019-05](#)—Financial Instruments—Credit Losses (Topic 326): Targeted Transition Relief

# AICPA EXPERT PANEL

## DISCUSSIONS 2020

**Status of Implementation Issues - FASB ASU 2018-12:** discussed by FinREC in Jan 2020

- a. #1: Claim Liabilities - Claim liabilities associated with long duration traditional insurance contracts, interaction with liability for future policy benefits - posted for informal comment on the LDTI issues webpage, comments due back by April 10, 2020:
- b. #8: Updating cash flow assumptions in the net premium ratio - posted for informal comment on the LDTI issues webpage, comments due back by April 10, 2020

<https://www.aicpa.org/interestareas/frc/industryinsights/long-duration-insurance-accounting-issues.html>

**Implementation Issues - FASB ASU 2016-13:** discussed by Expert Panel

Financial Instruments – Measurement of Credit Losses on Financial Instruments, Implementation Issues: The following insurance specific implementation issues are posted for informal comment, with comments due back by February 10, 2020:

- a. Issue #34: Considerations Related to ASC Topic 326: Financial Instruments - Credit Losses, for Reinsurance Recoverables
- b. Issue #44: Considerations Related to ASC Topic 326: Financial Instruments - Credit Losses, for Premiums Receivable

<https://www.aicpa.org/interestareas/frc/industryinsights/credit-loss-standard-issues.html>

# AICPA EXPERT PANEL

## DISCUSSIONS 2019

**Implementation Issues - FASB ASU 2018-12:** discussed by Expert Panel Dec 11 & 12

- a. #9D: DAC Amortization - Expected Term of the Contract
- b. #11A/11B/11C – Ceded Reinsurance
- c. #11D – Cost of Reinsurance – Premium Deficiency

**Status of implementation issues:** discussed by Financial Reporting Executive Committee (FinREC) Nov 2019

- a. #2: Loss Recognition Unit of Account
- b. #4A/4B: Market Risk Benefits - Considerations related to transition, including the use of at fair value
- c. #9A/9B/9C DAC amortization including:
  - i. Considerations for evaluating whether the amortization on a constant-level basis for grouped contracts approximates straight-line amortization on an individual basis
  - ii. Interaction of the liability for future policy benefits cash flow assumption updates and DAC amortization assumption updates
  - iii. Updating of DAC experience as of the beginning of the period or end of period

# Financial Reporting Executive Committee

## Some Background on FinREC

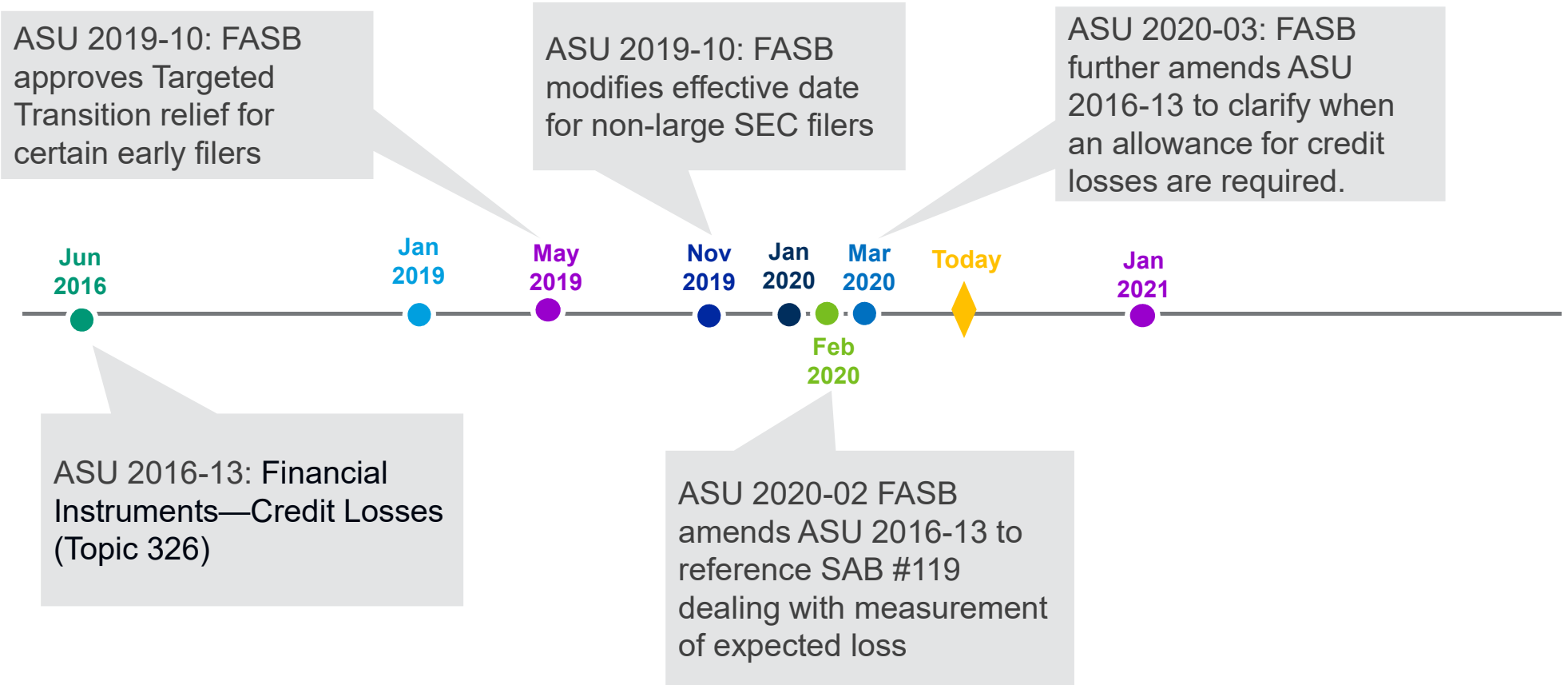
- 1 Senior technical committee of the AICPA for financial reporting
- 2 Determines the Institute's technical policies regarding financial reporting standards
- 3 Provides needed nonauthoritative guidance on financial reporting matters that authoritative-standards setters either are not expected to address or are not expected to address in a timeframe that FinREC considers desirable
- 4 Audit and Accounting Guides subject to FinREC oversight
- 5 Authorized to make public statements on matters related to its operations
- 6 Previously called Accounting Standards Executive Committee (AcSEC)



# 2

## Walkthrough of ASU 2016-13 Credit Losses (Topic 326)

# Timeline of FASB Credit Losses Project



# ASU 2016-13 Credit Losses

## Reinsurance Receivables and Impairments

- » New measurement standard for reinsurance receivables

***An entity shall measure contingent losses relating to disputed amounts in accordance with Subtopic 450-20 on loss contingencies. However, the ceding entity shall measure expected credit losses relating to reinsurance receivables in accordance with Subtopic 326-20 on financial instruments measured at amortized cost.***

- » Referred to as Current Expected Credit Loss (CECL)

- Only expected losses related to the credit risk of the reinsurer are subject to CECL
- Effective for large SEC filers in 2020. All others 2022.

# ASU 2016-13 Credit Losses, cont'd.

## Reinsurance Receivables and Impairments

### » Considers collective vs. individual assessment:

- If similar risk characteristics are not present in the reinsurance receivables, the ceding insurer should measure expected credit losses on an individual basis.
- Similar risk characteristics include, but not limited to:
  - › Reinsurance agreements that have standardized terms
  - › Reinsurance agreements that involve similar insured risks and underwriting practices
  - › **Reinsurance counterparties that have similar financial characteristics and face similar economic conditions.**

# ASU 2016-13 Credit Losses, cont'd.

## Reinsurance Receivables and Impairments

- » Replaces Incurred Loss under ASC 450-20 Loss Contingencies (*previously FAS 5*)
  - Losses accrued when ‘triggering’ event occurred
    - › If it is “probable” that a loss will incur and the amount can be reasonably estimated, it should be accrued in the financial statements
    - › If it is “reasonably possible” that a loss will incur, it should be disclosed in the notes without recognition in the financial statements
    - › If the possibility of loss is “remote”, disclosure is not required

# Reinsurance Receivables

## Definition

- » Current FASB accounting master glossary:

***Reinsurance Recoverable/Receivable***

*All amounts recoverable from reinsurers for paid and unpaid claim settlement expenses, including estimated amounts receivable for unsettled claims, claims incurred but not reported, or policy benefits*

- » NAIC Statutory Annual Statement Schedule F for Life and P&C business uses the same term and definition as existing GAAP.

# Source of Uncollectible Receivables

- » Disputes: due to the complexity of reinsurance contract, ceding company and its reinsurers may have different interpretation of the coverage
  - *the terms of the reinsurance contract do not reflect the intent of the parties of the contract or there is a disagreement between the parties as to their intent the terms of the contract cannot be legally enforced*
  - *the reinsurance transaction performs differently than anticipated due to a flawed design of the reinsurance structure, terms or conditions*
  - *the interpretation of the laws and regulations, materially impacts a reinsurance transaction, etc.*
- » Financial difficulty: reinsurers may have trouble paying their claims on time
- » Receivership: state regulator can take over once reinsurer is in trouble

# Reinsurance Receivables and Impairments

## Top Down vs. Bottom Up Approaches

### » Top Down Approach

- Apply impairment rate for similarly rated companies based on duration of the receivables
- The challenge is the limited availability of historical loss data

### » Bottom Up Approach

- Calculate expected losses on a collective or individual basis based on probability of default (PD) of the reinsurers, any losses given default (LGD) and exposure at default (EAD) of the receivables
- Useful for differentiating risk



# Lifetime Expected Credit Loss Measurement

- » Bottom up approach
  - Lifetime Expected Credit Loss (ECL) is calculated as

$$ECL(t_0) = AC_{t_0} \cdot PD_{Maturity} \cdot LGD$$

- » Amortized Cost (AC) can be thought of as the discounted value of Exposure at Default (EAD)
- » Probability of Default (PD) and Loss Given Default (LGD) are needed

# CECL Modelling for Reinsurance Receivables

» CECL allowance covers losses from three types:

Type 1: ECL on paid and unpaid claim, not settled yet (Life & P&C)

- Term is usually less than 6 months

Type 2: ECL from the IBNR claim (Life and P&C)

- Term is around 6 month; typically less than one year

Type 3: ECL from future claim (Life)

- Longer time horizon; term could be 10~20 years

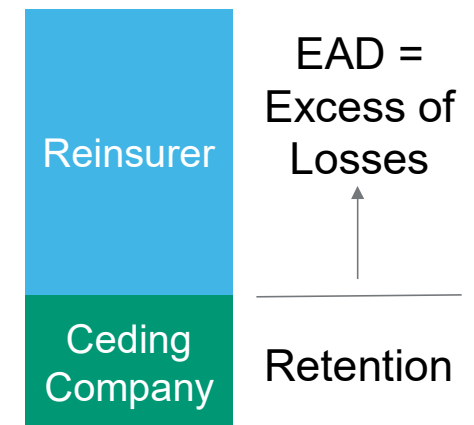
» The three loss types above will have same PD term structure, but potentially different “maturity,” EAD, and LGD

# Measuring Probability of Default (PD)

- » PDs should reflect
  - › The likelihood that the contract will not be fulfilled, due to financial difficulties
  - › Term structure of PDs
    - Vary by loss type (ICOS, IBNR, future) and maturity
  - › Point-in-Time and forward looking assessment of future risk
- » PD sources: forward-looking assessments from the markets
  - › Public firms: Implied from the equity market
  - › Private firms: internal or external ratings + rating converter
- » Additional considerations:
  - › Parent vs subsidiary
  - › Third-party guarantee

# Modeling Exposure At Default (EAD)

- » EAD and LGD for the three loss types should be estimated separately
  - Otherwise, EAD and LGD need to be expected value averaged across the these types
  - The degree of uncertainty and difficulty in estimation increases from type 1 to type 3
- » EAD
  - Exposure amount that may not be collectable
    - › Reinsurers only pay a stated percentage of claims
      - Ex. Coinsurance, Modco, Yearly renewable term
    - › Reinsurers are required to pay out only if the total claims suffered by the ceding company in a given period exceed a stated amount (Catastrophe, stop loss coverage)
  - Can be potentially assessed from the actuarial system
  - Hardest for type 3



Coinsurance - Assuming a Loss of \$10M

- Reinsurer (EAD = \$3M, 30%)
- Ceding Company (\$7M, 70%)

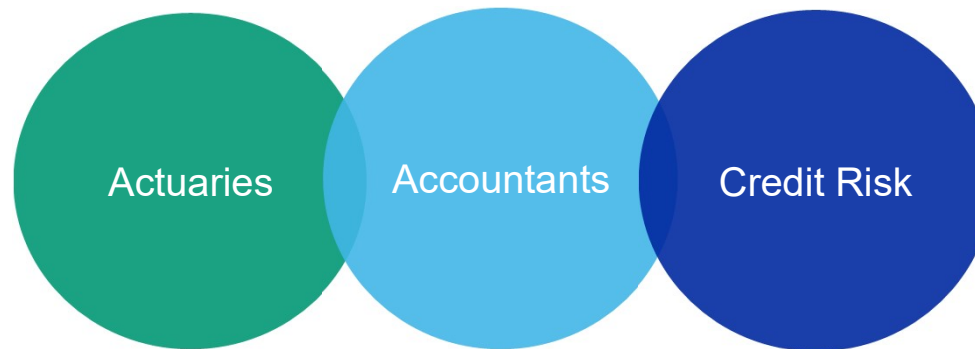


# Modelling Loss Given Default (LGD)

- » LGD is closely linked to how EAD is parameterized
  - If EAD is the total amount in default,  $LGD = (1 - \text{recoverable portion})$  of the EAD
  - If EAD is the amount that cannot be received,  $LGD = 100\%$
- » LGDs for reinsurance contracts are typically low because of high seniority of reinsurance claims by regulation
- » LGDs depend on specific arrangements between the ceding companies and their reinsurers and are influenced by contract type, collateral, etc.
  - If the contract is fully collateralized,  $LGD=0$

# Common CECL Challenges for Reinsurance

- » Reinsurance contracts are highly customized and tailored
- » Lack of historical loss experience data
- » Accounting offset may exist

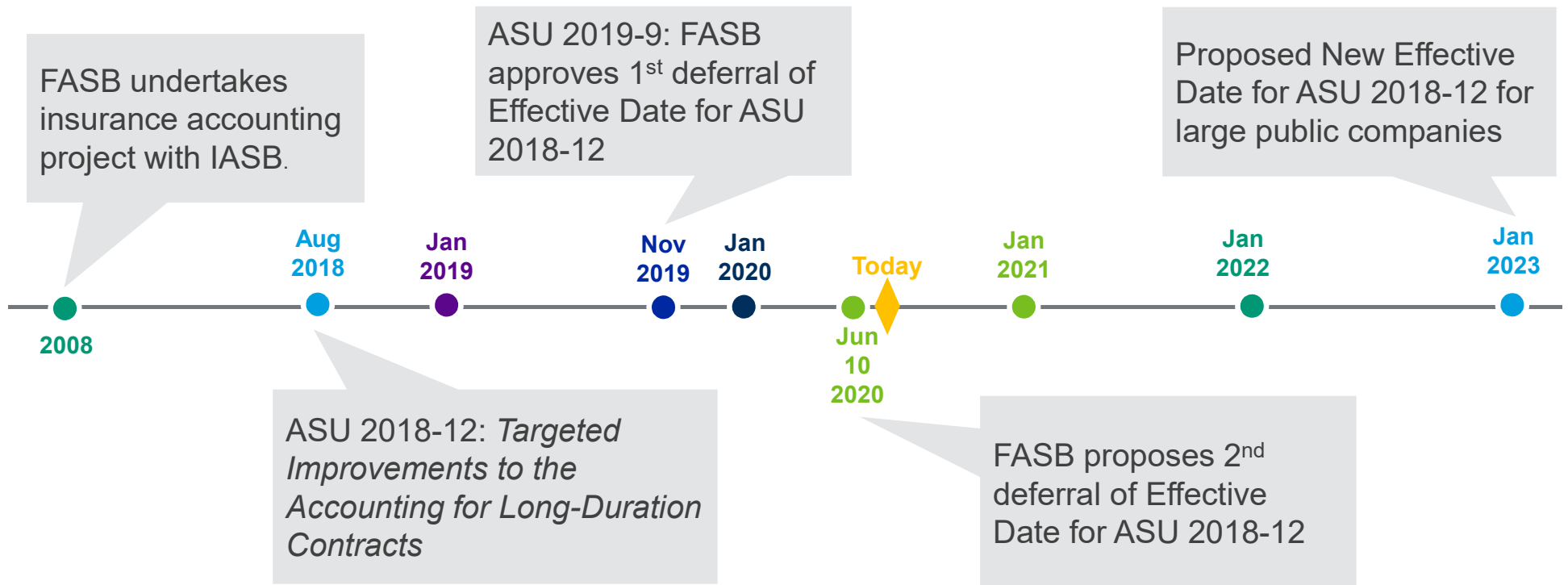


Leverage the expertise and experience across existing GAAP, SAP, SII and credit risk management practices

# 3

Walkthrough of ASU 2018-12  
Targeted Improvements of Long  
Duration Insurance  
(Topic 944)

# Timeline of FASB Targeted Improvements Project





# New Proposed Effective Date of ASU 2018-12

- » FASB Board met June 10, 2020 and voted to ask its staff to prepare an exposure draft (ED) proposing new effective dates for long-duration insurance contracts in response to Covid-19.
- » Upon approval by FASB, the ED would be issued with 45-day comment period.
- » Proposal is to make ASU 2018-12 effective:
  - For large public entities starting in 2023 (previously 2022, originally 2021)
  - For other entities starting in 2025 (previously 2024, originally 2023)
  - Early application is permitted

# Deferred Acquisition Cost

## Key Elements of Change

### » Requirements

- New constant basis amortization method over life of contract
- Amortization should be independent of revenue or profit
- Assumptions should be consistent with liability
- Calculations performed seriatimly or grouped by cohort
- Does not accrue interest
- Only current period deferrals
- Excess terminations result in write down of DAC through experience adjustment
- Prior and current period inforce and assumptions needed for amortization and experience adjustments

# Policy Benefit Liability

## Key Elements of Change – Whole Life and Term

### » Requirements

- Remeasurement gain/loss requires prior period inforce, current period actuals and updated cashflow assumptions. Assumptions updated at least annually.
- Current period actuals are an input to the net premium ratio calculation
- Current period PBL requires current period inforce file, current period actuals, updated cash flow assumptions.
- Calculations performed seriatimly or grouped by cohort
- Standardized market observable discount rate
- Interest rates 'locked' by cohort
- Interest rates unlocked for contribution to other comprehensive income (OCI)

# Policy Benefit Liability Disclosures

## Key Elements of Change

### » Requirements

- Reporting requirement to provide reserve rollforward
- Multiple run attribution analysis provides disclosure components
- Large number of projections requiring differing inforce, assumptions, discount rates and/or other items.
- Increased governance and controls
- Run time and scheduling concerns

# Multiple Valuation Runs Required for GAAP Reporting

Run	Purpose	Valuation Date	Population	Assumptions	Discount Rate
1	Beginning of period PBL and DAC	Prior Period	Prior Period	Prior	Locked AND Prior Current
2	Beginning of period remeasured PBL	Prior Period	Prior Period	Current	Locked
3	PBL for new issues	Prior Period	New Issues	Current	Locked
4	DAC for new issues	Prior Period	New Issues	Current	N/A
5	End of period PBL and DAC	Current Period	Current Period	Current	Locked AND Current
6	Expected DAC amort base for experience adjustment	Current Period	Current Period	Prior	N/A

# Common Challenges of Implementing LDTI

- » Compliance Difficulty
- » Multiple runs with different data models and assumptions
  - Roll forward disclosures require change in actuarial balances to be attributed to its various sources
- » Management of extensive cohort historical actuals
  - Net premium ratio must be unlocked by replacing best estimate assumptions with actual cash flows
- » Post run assembly of results for income and disclosures
  - Tight reporting deadlines place greater demands on system performance and require efficient processes

# 4

Deeper Dive into Targeted  
Improvement Implementation

# Deferred Acquisition Cost - Grouped

## Calculation Basics

$$\mathbf{DAC_t = DAC_{t-1} + Deferr. Costs_t - Amortization - Experience Adj. (EA)}$$

- » Deferrable costs are current period actual costs
- » Actuals may be lagged
- »  $Amortization = Expected\ Amortization\ Base_t * \left[ \frac{DAC_{t-1} + Def.Costs}{\sum Future\ Amort.\ Base} \right]$
- »  $EA\ Ratio = \max \left( 0, \frac{Expected\ Amort\ Base - Actual\ Amort\ Base}{Expected\ Amort\ Base} \right)$
- »  $EA = Ratio * (DAC_{t-1} + Deferrable\ Costs_t - Amortization)$



# Deferred Acquisition Cost - Grouped

## ASU & Alternate Views

- » ASU: If amortization rate for the period is calculated at period start (thereby excluding actual experience - i.e., amortization is based on expectations at period start) and actual terminations exceed expectations, then EA is needed to further reduce the DAC balance. However, no EA is needed adjustment if there were fewer than expected terminations.
- » Alternate: If amortization rate is calculated at period end (thereby including actual experience), no separate experience adjustment would exist.

# Deferred Acquisition Cost - Grouped

## Alternate Calculation

$$DAC_t = DAC_{t-1} + \text{Defer. Costs}_t - \text{Amortization}$$

- » FinREC #9ABC DAC Amortization
  - On review accepted the updating of DAC experience as of the beginning of the period or end of reporting period
  - Proposed edits made to the Auditing and Accounting Guide
- » Deferrable costs are current period actual costs
- » Amortization = *Actual Amortization Base t* \*  $\left[ \frac{DAC_{t-1} + \text{Def. Costs}}{\sum \text{Future Amort. Base t}} \right]$
- » Experience Adjustment = 0

# Policy Benefit Liability

## Basic Calculations

$$\text{PBL} = \text{PV Benefits} - K * \text{PV Gross Premiums}$$

$$K = (\text{Accum Benefits} + \text{PV Benefits} - \text{Accum Transition Balance}) / (\text{Accum Gross Prem} + \text{PV Gross Premium})$$

- » Actuals may be lagged
- » Setting of contract discount rates
  - Once at start of cohort period
  - At start of reporting period for new business in that period
  - At end of reporting period for new business in that period
  - At end of cohort period for all business
- » Cohort alignment of direct and ceded business

# Policy Benefit Liability Disclosure

## Reserve Roll Forward Example

Balance, beginning of year at current rate	XXX
Beginning balance at locked discount rate	XXX
Effect of changes in cash flow assumptions	XXX
Effect of actual variances from expected experience	<u>XXX</u>
Adjusted beginning of year balance	XXX
Actual cash flows	XXX
Interest accrued	<u>XXX</u>
Ending balance at locked discount rate	XXX
Ending balance at current rate	XXX

# Policy Benefit Liability Disclosure

## Reserve Roll Forward Example

<b>Balance, beginning of year at current rate</b>	<b>XXX</b>
Beginning balance at locked discount rate	XXX
Effect of changes in cash flow assumptions	XXX
Effect of actual variances from expected experience	<u>XXX</u>
Adjusted beginning of year balance	XXX
Actual cash flows	XXX
Interest accrued	<u>XXX</u>
Ending balance at locked discount rate	XXX
Ending balance at current rate	XXX

# Policy Benefit Liability

## More Flexible Roll Forward Example

<b>Balance, beginning of year at current rate</b>	<b>XXX</b>
Effect of inforce adjustments	XXX
(+) Effect of model corrections	XXX
Effect of version upgrades	<u>XXX</u>
<b>Effect of opening balance adjustments</b>	<b>XXX</b>
<b>Adjusted Balance, beginning of the year at current rate</b>	<b>XXX</b>

# Policy Benefit Liability Disclosure

## Reserve Roll Forward Example

Balance, beginning of year at current rate	XXX
Beginning balance at locked discount rate	XXX
<b>Effect of changes in cash flow assumptions</b>	<b>XXX</b>
Effect of actual variances from expected experience	<u>XXX</u>
Adjusted beginning of year balance	XXX
Actual cash flows	XXX
Interest accrued	<u>XXX</u>
Ending balance at locked discount rate	XXX
Ending balance at current rate	XXX

# Policy Benefit Liability

## More Flexible Roll Forward Example

	Effect of changes in mortality assumption	XXX
(+)	Effect of changes in lapse assumption	XXX
	Effect of all other changes	<u>XXX</u>
	<b>Effect of changes in cash flow assumptions</b>	<b>XXX</b>

- » Captures the effect of expected projected assumptions at the start of the period
- » Likewise – there can be breakouts of the actual line items and their variance from expected
- » Limited to material changes



# Policy Benefit Liability Disclosure

## Reserve Roll Forward Example

Balance, beginning of year at current rate	XXX
Beginning balance at locked discount rate	XXX
Effect of changes in cash flow assumptions	XXX
<b>Effect of actual variances from expected experience</b>	<b><u>XXX</u></b>
Adjusted beginning of year balance	XXX
Actual cash flows	XXX
Interest accrued	<u>XXX</u>
Ending balance at locked discount rate	XXX
Ending balance at current rate	XXX

5

Questions and  
Answers

Thank You

MOODY'S  
ANALYTICS

AXIS™

*Better  
Faster  
Decisions*

Judy Hanna, FSA, MAAA  
Boston region  
judy.hanna@moodys.com  
1.416.572.3858

ggyaxis.com

© 2020 Moody's Corporation, Moody's Investors Service, Inc., Moody's Analytics, Inc. and/or their licensors and affiliates (collectively, "MOODY'S"). All rights reserved.

**CREDIT RATINGS ISSUED BY MOODY'S INVESTORS SERVICE, INC. AND/OR ITS CREDIT RATINGS AFFILIATES ARE MOODY'S CURRENT OPINIONS OF THE RELATIVE FUTURE CREDIT RISK OF ENTITIES, CREDIT COMMITMENTS, OR DEBT OR DEBT-LIKE SECURITIES, AND MATERIALS, PRODUCTS, SERVICES AND INFORMATION PUBLISHED BY MOODY'S (COLLECTIVELY, "PUBLICATIONS") MAY INCLUDE SUCH CURRENT OPINIONS. MOODY'S INVESTORS SERVICE DEFINES CREDIT RISK AS THE RISK THAT AN ENTITY MAY NOT MEET ITS CONTRACTUAL FINANCIAL OBLIGATIONS AS THEY COME DUE AND ANY ESTIMATED FINANCIAL LOSS IN THE EVENT OF DEFAULT OR IMPAIRMENT. SEE MOODY'S RATING SYMBOLS AND DEFINITIONS PUBLICATION FOR INFORMATION ON THE TYPES OF CONTRACTUAL FINANCIAL OBLIGATIONS ADDRESSED BY MOODY'S INVESTORS SERVICE CREDIT RATINGS. CREDIT RATINGS DO NOT ADDRESS ANY OTHER RISK, INCLUDING BUT NOT LIMITED TO: LIQUIDITY RISK, MARKET VALUE RISK, OR PRICE VOLATILITY. CREDIT RATINGS, NON-CREDIT ASSESSMENTS ("ASSESSMENTS"), AND OTHER OPINIONS INCLUDED IN MOODY'S PUBLICATIONS ARE NOT STATEMENTS OF CURRENT OR HISTORICAL FACT. MOODY'S PUBLICATIONS MAY ALSO INCLUDE QUANTITATIVE MODEL-BASED ESTIMATES OF CREDIT RISK AND RELATED OPINIONS OR COMMENTARY PUBLISHED BY MOODY'S ANALYTICS, INC. AND/OR ITS AFFILIATES. MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS AND PUBLICATIONS DO NOT CONSTITUTE OR PROVIDE INVESTMENT OR FINANCIAL ADVICE, AND MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS AND PUBLICATIONS ARE NOT AND DO NOT PROVIDE RECOMMENDATIONS TO PURCHASE, SELL, OR HOLD PARTICULAR SECURITIES. MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS AND PUBLICATIONS DO NOT COMMENT ON THE SUITABILITY OF AN INVESTMENT FOR ANY PARTICULAR INVESTOR. MOODY'S ISSUES ITS CREDIT RATINGS, ASSESSMENTS AND OTHER OPINIONS AND PUBLISHES ITS PUBLICATIONS WITH THE EXPECTATION AND UNDERSTANDING THAT EACH INVESTOR WILL, WITH DUE CARE, MAKE ITS OWN STUDY AND EVALUATION OF EACH SECURITY THAT IS UNDER CONSIDERATION FOR PURCHASE, HOLDING, OR SALE.**

MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS, AND PUBLICATIONS ARE NOT INTENDED FOR USE BY RETAIL INVESTORS AND IT WOULD BE RECKLESS AND INAPPROPRIATE FOR RETAIL INVESTORS TO USE MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS OR PUBLICATIONS WHEN MAKING AN INVESTMENT DECISION. IF IN DOUBT YOU SHOULD CONTACT YOUR FINANCIAL OR OTHER PROFESSIONAL ADVISER.

ALL INFORMATION CONTAINED HEREIN IS PROTECTED BY LAW, INCLUDING BUT NOT LIMITED TO, COPYRIGHT LAW, AND NONE OF SUCH INFORMATION MAY BE COPIED OR OTHERWISE REPRODUCED, REPACKAGED, FURTHER TRANSMITTED, TRANSFERRED, DISSEMINATED, REDISTRIBUTED OR RESOLD, OR STORED FOR SUBSEQUENT USE FOR ANY SUCH PURPOSE, IN WHOLE OR IN PART, IN ANY FORM OR MANNER OR BY ANY MEANS WHATSOEVER, BY ANY PERSON WITHOUT MOODY'S PRIOR WRITTEN CONSENT.

MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS AND PUBLICATIONS ARE NOT INTENDED FOR USE BY ANY PERSON AS A BENCHMARK AS THAT TERM IS DEFINED FOR REGULATORY PURPOSES AND MUST NOT BE USED IN ANY WAY THAT COULD RESULT IN THEM BEING CONSIDERED A BENCHMARK.

All information contained herein is obtained by MOODY'S from sources believed by it to be accurate and reliable. Because of the possibility of human or mechanical error as well as other factors, however, all information contained herein is provided "AS IS" without warranty of any kind. MOODY'S adopts all necessary measures so that the information it uses in assigning a credit rating is of sufficient quality and from sources MOODY'S considers to be reliable including, when appropriate, independent third-party sources. However, MOODY'S is not an auditor and cannot in every instance independently verify or validate information received in the rating process or in preparing its Publications.

To the extent permitted by law, MOODY'S and its directors, officers, employees, agents, representatives, licensors and suppliers disclaim liability to any person or entity for any indirect, special, consequential, or incidental losses or damages whatsoever arising from or in connection with the information contained herein or the use of or inability to use any such information, even if MOODY'S or any of its directors, officers, employees, agents, representatives, licensors or suppliers is advised in advance of the possibility of such losses or damages, including but not limited to: (a) any loss of present or prospective profits or (b) any loss or damage arising where the relevant financial instrument is not the subject of a particular credit rating assigned by MOODY'S.

To the extent permitted by law, MOODY'S and its directors, officers, employees, agents, representatives, licensors and suppliers disclaim liability for any direct or compensatory losses or damages caused to any person or entity, including but not limited to by any negligence (but excluding fraud, willful misconduct or any other type of liability that, for the avoidance of doubt, by law cannot be excluded) on the part of, or any contingency within or beyond the control of, MOODY'S or any of its directors, officers, employees, agents, representatives, licensors or suppliers, arising from or in connection with the information contained herein or the use of or inability to use any such information.

NO WARRANTY, EXPRESS OR IMPLIED, AS TO THE ACCURACY, TIMELINESS, COMPLETENESS, MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OF ANY CREDIT RATING, ASSESSMENT, OTHER OPINION OR INFORMATION IS GIVEN OR MADE BY MOODY'S IN ANY FORM OR MANNER WHATSOEVER.

Moody's Investors Service, Inc., a wholly-owned credit rating agency subsidiary of Moody's Corporation ("MCO"), hereby discloses that most issuers of debt securities (including corporate and municipal bonds, debentures, notes and commercial paper) and preferred stock rated by Moody's Investors Service, Inc. have, prior to assignment of any credit rating, agreed to pay to Moody's Investors Service, Inc. for credit ratings opinions and services rendered by it fees ranging from \$1,000 to approximately \$2,700,000. MCO and Moody's investors Service also maintain policies and procedures to address the independence of Moody's Investors Service credit ratings and credit rating processes. Information regarding certain affiliations that may exist between directors of MCO and rated entities, and between entities who hold credit ratings from Moody's Investors Service and have also publicly reported to the SEC an ownership interest in MCO of more than 5%, is posted annually at [www.moody.com](http://www.moody.com) under the heading "Investor Relations — Corporate Governance — Director and Shareholder Affiliation Policy."

Additional terms for Australia only: Any publication into Australia of this document is pursuant to the Australian Financial Services License of MOODY'S affiliate, Moody's Investors Service Pty Limited ABN 61 003 399 657 AFSL 336969 and/or Moody's Analytics Australia Pty Ltd ABN 94 105 136 972 AFSL 383569 (as applicable). This document is intended to be provided only to "wholesale clients" within the meaning of section 761G of the Corporations Act 2001. By continuing to access this document from within Australia, you represent to MOODY'S that you are, or are accessing the document as a representative of, a "wholesale client" and that neither you nor the entity you represent will directly or indirectly disseminate this document or its contents to "retail clients" within the meaning of section 761G of the Corporations Act 2001. MOODY'S credit rating is an opinion as to the creditworthiness of a debt obligation of the issuer, not on the equity securities of the issuer or any form of security that is available to retail investors.

Additional terms for Japan only: Moody's Japan K.K. ("MJKK") is a wholly-owned credit rating agency subsidiary of Moody's Group Japan G.K., which is wholly-owned by Moody's Overseas Holdings Inc., a wholly-owned subsidiary of MCO. Moody's SF Japan K.K. ("MSFJ") is a wholly-owned credit rating agency subsidiary of MJKK. MSFJ is not a Nationally Recognized Statistical Rating Organization ("NRSRO"). Therefore, credit ratings assigned by MSFJ are Non-NRSRO Credit Ratings. Non-NRSRO Credit Ratings are assigned by an entity that is not a NRSRO and, consequently, the rated obligation will not qualify for certain types of treatment under U.S. laws. MJKK and MSFJ are credit rating agencies registered with the Japan Financial Services Agency and their registration numbers are FSA Commissioner (Ratings) No. 2 and 3 respectively.

MJKK or MSFJ (as applicable) hereby disclose that most issuers of debt securities (including corporate and municipal bonds, debentures, notes and commercial paper) and preferred stock rated by MJKK or MSFJ (as applicable) have, prior to assignment of any credit rating, agreed to pay to MJKK or MSFJ (as applicable) for credit ratings opinions and services rendered by it fees ranging from JPY125,000 to approximately JPY250,000,000.

MJKK and MSFJ also maintain policies and procedures to address Japanese regulatory requirements.