



# Iowa Actuaries Club

## *VA CARVM – Implementation Issues*

*Joe Rafson  
KPMG, Chicago*

*Brian Emanuel  
Principal Financial Group, Des Moines*

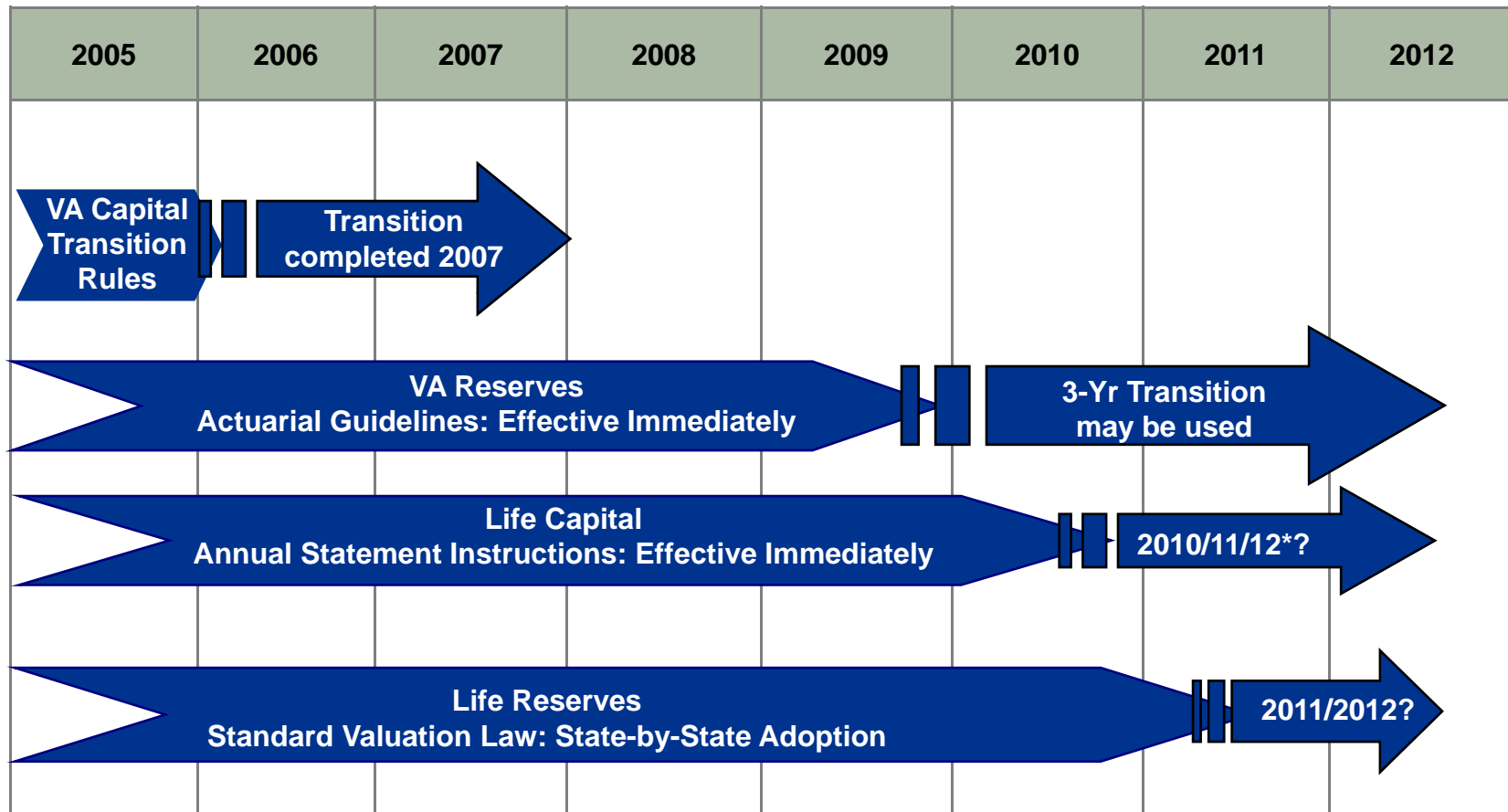
KPMG LLP



## Agenda

- Basics of Principles Based Approach/VA CARVM
- Industry Perspectives and Key Considerations
- Discussion of Key Topics of Practice

# Principle-Based Approach Potential Timelines



Addendum on applying C3 Phase 2 and AG 43 (December 2009)

Practice note on applying C3 Phase 2 and AG 43 (July 2009)



## Actuarial Guideline 43 – Overview

Actuarial Guideline 43 (AG43) which applies to VA reserves is effective for statutory financial statements as of 12/31/2009.

Entirely new approach based on company-specific modeling.

Aggregate AG 43 Reserve is greater of

*The Standard Scenario Amount  
(Defined Deterministic Assumptions)*

**OR**

*The Conditional Tail Expectation Amount  
(Stochastic – Average of Worst 30% Scenarios, i.e. CTE 70)*

# Actuarial Guideline 43 Overview – Significant Differences between Standard Scenario and CTE 70

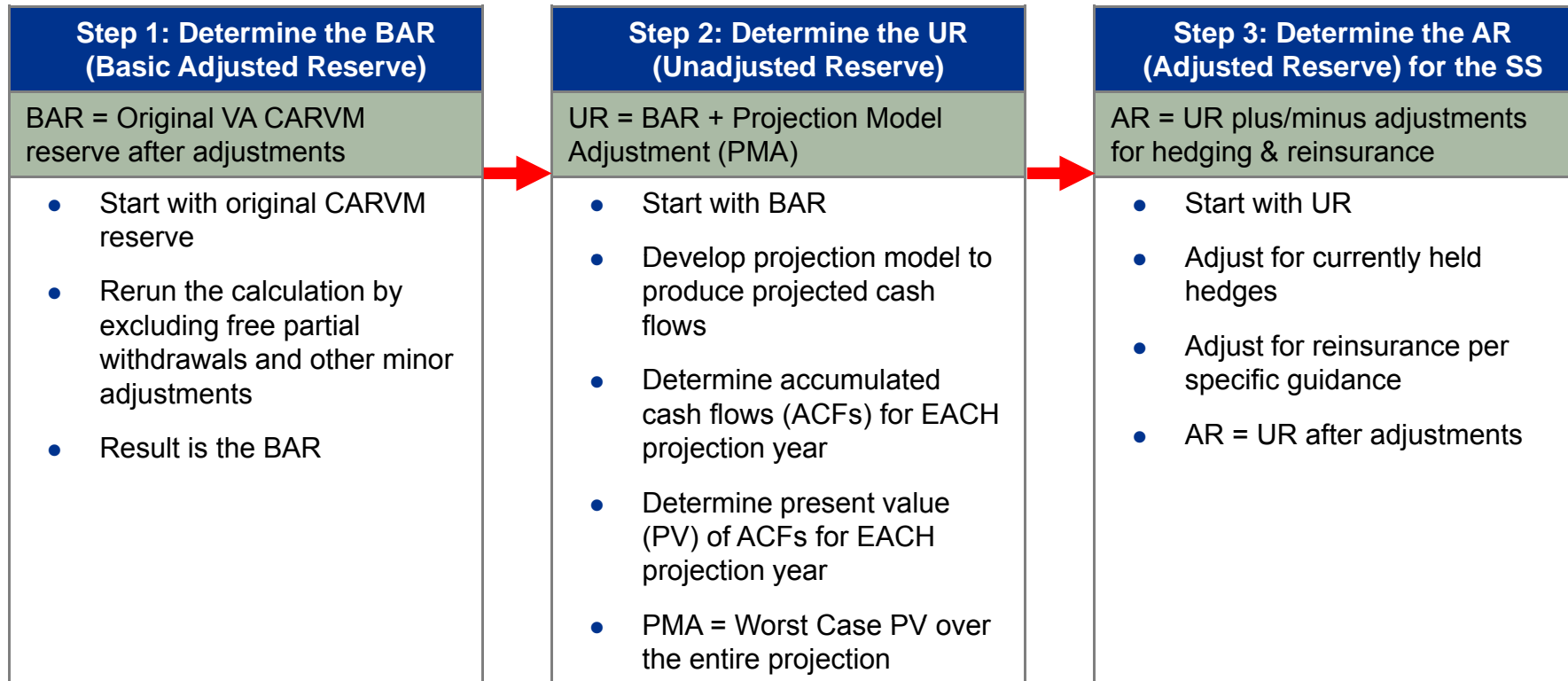
## Standard Scenario

- One deterministic scenario
- Assumptions defined by regulators (AG 43)
- Calculation performed on a seriatim (i.e., policy-by-policy) basis
- Allows the use of currently held hedges only
- No expenses in calculation

## CTE 70

- Multiple stochastic scenarios (typically a minimum of 1,000)
- “Prudent Assumptions”, including margins, determined by company
- Calculations generally performed on a model point (i.e., grouped) basis due to run-time constraints
- Allows the use of currently held hedges
- Future hedges may be utilized if a clearly defined hedging strategy “CDHS” is in place
- Expenses are included in calculation

## Standard Scenario (SS) – Approach “in a Nutshell”



## CTE 70 Stochastic Calculations

- Utilizes complex company-specific cash flow models
  - Models projected using multiple economic scenarios which must meet calibration requirements
  - Allows grouping of contracts to model points
- “Prudent estimate” assumptions
  - Best estimate plus margin
  - Sensitivity testing required
- Discount rates – three options given
- Hedges
  - Currently held hedges should be included
  - Future hedges may be included only if certain requirements are met
- Extensive certification requirements (around methods, assumptions and CDHS, if adopted)

# Implementation Risks

<i>Risks</i>	
<ul style="list-style-type: none"> <li>• Not in compliance with AG 43</li> <li>• Inaccuracies or errors</li> <li>• Lack of completeness</li> <li>• Subjectivity (stochastic assumptions/methodology)</li> </ul>	<ul style="list-style-type: none"> <li>• Improperly or insufficiently documented</li> <li>• Lack of internal change controls</li> <li>• Available resources are not appropriately skilled or knowledgeable</li> </ul>

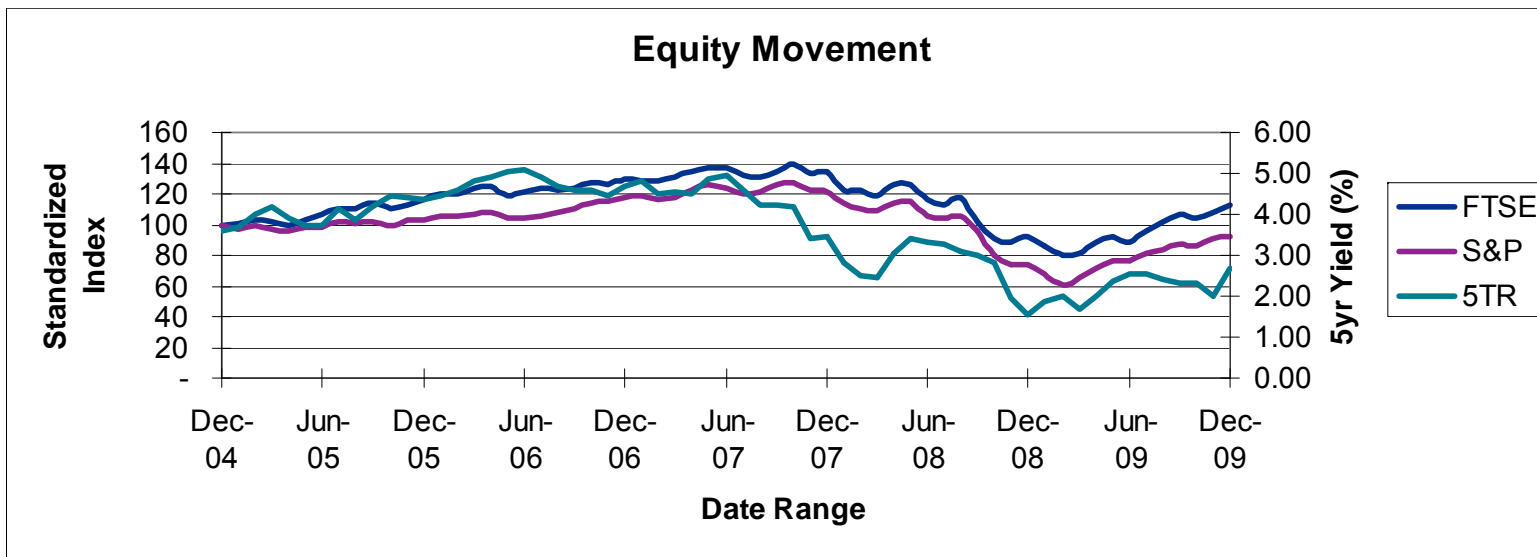
<i>Inputs</i>
<ul style="list-style-type: none"> <li>• Assumptions/margins</li> <li>• Product features/guarantees</li> <li>• Model point grouping (CTE only)</li> <li>• Hedging/reinsurance approaches</li> <li>• Economic scenarios approach (CTE only)</li> </ul>

<i>Model Calculations</i>
<ul style="list-style-type: none"> <li>• Standard scenario versus stochastic</li> <li>• Valuation software</li> <li>• Manual calculations outside the valuation model (e.g., CTE determination)</li> <li>• Implementation of hedging and reinsurance</li> <li>• Generation of economic scenarios (CTE only)</li> </ul>

<i>Outputs</i>
<ul style="list-style-type: none"> <li>• Outputs to analyses</li> <li>• Manual adjustments</li> <li>• Analyses to general ledger</li> <li>• Reserve determination – standard scenario versus stochastic</li> </ul>



# Backdrop – Equity Market Movements



## S&P 500 Returns

4Q08 – -22.56%

1Q09 – -11.67%

2Q09 – 5.22%

3Q09 – 14.98%

4Q09 – 5.49%

- Market drops combined with low yields and high volatility caused large reserve increases in 4Q08 and 1Q09.
- Recovering markets offset impact of AG43 implementation.

## AG VACARVM (aka AG 43) Share Forum – June 2009

### KPMG Pulse Survey – End-November 2009

- KPMG hosted a Share Forum on AG 43 on June 24<sup>th</sup>, 2009 to discuss practical and theoretical topics related to AG 43.
- Share forum attendees:
  - 28 people in attendance, 10 of the top 25 variable annuity writers.
  - Company variable annuity assets ranged from approximately \$10 billion to over \$50 billion (nearly \$400 billion in total).
- An anonymous “real-time” survey was performed:
  - Survey reflects one vote per company.
  - A limited number of the results are shown in this presentation.
- The survey results in no way reflect the views of KPMG in whole or in part, or of the companies that participated. These are solely the views of the participants (on an anonymous basis) at the AG 43 Share Forum.
- KPMG conducted a “pulse survey” to gain a current pulse on the market with a few targeted questions end-November 2009.
- Company Responses:
  - 17 companies responded to the survey.
  - Many of the respondents were also in attendance at the share forum.
- An anonymous survey was performed:
  - Survey reflects one vote per company.
  - Short list of 8 questions were asked.
- The survey results in no way reflect the views of KPMG in whole or in part, or of the companies that participated. These are solely the views of the participants (on an anonymous basis) of this pulse survey.
- See appendix for detailed responses.

## Potential Reserve Impacts

**What do you anticipate the impact on reserves to be under AG 43 versus prior statutory valuation requirements (AG 33/34/39)?**

**10% overall decreases**

- 1) 0% – Decrease 25% +
- 2) 10% – Decrease 0-25%

**80% overall increases**

- 3) 60% – Increase 0-25%
- 4) 10% – Increase 25-50%
- 5) 10% – Increase 50-100%
- 6) 0% – Increase 100% +

**10% not yet known**

- 7) 10% – Haven't evaluated yet/don't know

*KPMG Share Forum Responses 6/09*

**What do you anticipate the impact on reserves to be under AG 43 versus prior statutory valuation requirements (AG 33/34/39)?**

**59% overall decreases**

- 1) 18% – Decrease 25%+
- 2) 12% – Decrease 10-25%
- 3) 29% – Decrease 0-10%

**36% overall increases**

- 4) 12% – Increase 0-10%
- 5) 18% – Increase 10-25%
- 6) 6% – Increase 25%+

**6% not yet known**

- 7) 6% – Haven't evaluated yet/don't know

*KPMG Pulse Survey Responses end-11/09*

# Setting of Key Assumptions – Industry Perspectives

## CTE 70 Runs Only

<b>KPMG Share Forum 6/09</b>	
<b>How do you expect to determine the discount rates for AG 43?</b>	
50%	Swap Curve
20%	C3P1 Interest Scenarios
20%	Stochastic Projections (scenario/path dependent)
10%	Path dependent portfolio rates
<b>KPMG Pulse Survey End-11/09</b>	
<b>How do you expect to determine the discount rates for AG 43?</b>	
12%	Swap Curve (Option 1)
24%	C3P1 Interest Scenarios (Option 2)
64%	Path Dependent Variations Discussed (Option 3) <ul style="list-style-type: none"> <li>• Model that integrates market growth &amp; interest rates</li> <li>• 3 Month Treasury Bill Rates (with or without spread)</li> <li>• Net portfolio rate (net of defaults and investment exp)</li> <li>• Average fixed account reinvestment rate</li> </ul>

# Setting of Margins – Industry Perspectives

## CTE 70 Runs Only

### KPMG Share Forum 6/09

*What do you anticipate will be the overall impact of the margins on the CTE 70 amounts over and above the CSV?*

0%	Less than 5%
50%	5% but less than 10%
40%	10% but less than 15%
0%	15% but less than 25%
10%	25% but less than 50%
0%	More than 50%
0%	Unsure/undetermined

### KPMG Pulse Survey end-11/09

*What do you anticipate will be the overall impact of the margins on the CTE 70 amounts over and above the CSV?*

41%	Less than 5%
35%	5% but less than 10%
12%	10% but less than 15%
6%	15% but less than 25%
0%	25% but less than 50%
0%	More than 50%
6%	Unsure/undetermined

# Hedging Considerations

## Standard Scenario

- Currently held hedges are modeled for one year
- No future hedges may be modeled

## CTE 70 Calculations

- Currently held hedges are modeled – some debate over whether modeled to maturity or earlier
- Future hedges may be modeled only if satisfy the requirements for a clearly defined hedging strategy

### CTE 70 – Modeling Future Hedges – KPMG Pulse Survey Results end 11/09

- Are companies planning on modeling future hedges as part of a clearly defined hedging strategy (CDHS)?
  - 29% yes, 59% no, 12% undetermined
- For companies using CDHS, what e-factors will be used for model effectiveness in gaining credit for the modeling of the hedges in the reserves?
  - 60% will use the 30% minimum, 20% use between 30% – 50%, and 20% use 50%

**KPMG Share Forum 6/09:** the majority of companies expected a “cost” for using CDHS

## Discussion Topics

- Revenue Sharing
  - Implications of Investment Act of 1940
  - Subadvisory Structure
  - Commonly Controlled Investment Advisors or SubAdvisors
  - “Net” Revenue Sharing – expense interaction
- Modeling Hedges
  - S&P 500 Total Return vs. Price Return – Implications on existing vs. future hedges
- Annual Statement Presentation Issues
  - Communication with Accounting
- Expense Allocation Issues
  - Systems/Technology
  - Overhead

The information contained herein is of a general nature and is not intended to address the circumstances of any particular individual or entity. Although we endeavor to provide accurate and timely information, there can be no guarantee that such information is accurate as of the date it is received or that it will continue to be accurate in the future. No one should act on such information without appropriate professional advice after a thorough examination of the particular situation.

**Joe Rafson**  
**Senior Manager**

KPMG, Actuarial Services

1 312 665 2863

[jrafson@kpmg.com](mailto:jrafson@kpmg.com)

[www.kpmg.com](http://www.kpmg.com)

**Brian Emanuel**  
**Associate Actuary**

Principal Financial Group

1 515 235 6148

[emanuel.brian@principal.com](mailto:emanuel.brian@principal.com)





## Appendix

# Detailed Pulse Survey Questions and Results



## KPMG Pulse Survey End-November 2009

- KPMG has performed a quick “pulse survey” on a few key questions related to AG 43.
- The survey was conducted in late November, and included responses on 17 companies.
- As the responses are at a point in time, the disclosed information could change between the end of November and the end of December.
- Note that the survey results in no way reflect the views of KPMG in whole or in part, or of the companies that participated. These are solely the views of the participants (on an anonymous basis).

# KPMG Pulse Survey End-November 2009

## Survey Questions

### Below are the survey questions:

<b>Q1</b>	If you were setting reserves based on the equity markets and yield curves as of end-November, which would dominate for your company – standard scenario or CTE 70?
<b>Q2</b>	Follow-up from question #1, was the same one dominating earlier in the year (say 3-6 months ago) or did the dominant one recently shift? Please respond – (a) same as before or (b) recently shifted.
<b>Q3</b>	For those that recently shifted (say in the last 3-6 months), can you please state what were the key reasons for the shift? For example, if the standard scenario was dominating and now it is the CTE 70, were there 2-3 key reasons for the shift for your company?
<b>Q4</b>	If reserves were set today based on the max (CTE 70, Standard) would you be experiencing an increase or decrease in reserves from yearend 2008 when considering the total reserves held (basic plus any asset adequacy reserves set up at yearend 2008)? Please respond with one of the letters (a) increase in reserves of more than 25%, (b) increase in reserves between 10% – 25%, (c) increase in reserves between 0% – 10%, (d) decrease in reserves between 0% – 10%, (e) decrease in reserves of between 10% – 25%, (f) decrease in reserves of more than 25%.
<b>Q5</b>	For the CTE 70 calculations, the level of risk margins may be compared to a CSV calculation. For your company, which best describes the level of risk margins at an aggregate level you expect to use in the calculations (a) 0% but less than 5%, (b) 5% but less than 10%, (c) 10% but less than 15%, (d) 15% but less than 25%, (e) 25% or more.
<b>Q6</b>	Are you planning on using clearly defined hedging strategy for future hedges in the CTE 70 calculations? If yes, what is the approximate e-factor you intend to use ??? 30% up to 70%?
<b>Q7</b>	What is the basis you intend to use in setting the discount rate for the AG 43 calculations (we note that the guideline addresses three possible options)?
<b>Q8</b>	Have you made any changes to the RBC calculations as a result of introducing AG 43 this year? If so, please briefly describe the types of changes you have made or are considering making.

## KPMG Pulse Survey End-November 2009

### Key Findings

- **Standard vs. CTE 70** – 14 of the 17 respondents show that the standard scenario is dominating, and the remaining 3 show the CTE 70 dominating.
  - Of the 3 where CTE 70 is dominating, 2 of them stated that this was a recent shift.
- **Reserve Impacts** – 6 companies are expecting to increase reserves relative to 2008, 10 companies are expecting a decrease and 1 company has not yet concluded.
- **Margins** – 7 companies expect margins for CTE 70 in the 0% – 5% range, 6 companies expect margins in the 5% – 10% range, and there were several other variations noted.
- **Clearly Defined Hedging Strategies** – 5 companies intend to use clearly defined hedging strategies (CDHS) and expect e-factors in the 30% – 50% range, 10 companies do not intend to use CDHS and 2 had not yet determined their plans.
- **Discount Rates** – 2 companies intend to use option 1 for CTE 70 discount rates (forward rates), 4 companies intend to use option (interest rate scenarios), a majority of 10 companies intend to use option 3 (treasury rates) and 1 company has not yet determined. There may be some variations in interpretations of these options.
- **Reserves vs. RBC** – 3 companies cited some changes in RBC assumptions as a result of AG 43, and the remainder expect no changes in RBC.

# KPMG Pulse Survey – AG 43 Preliminary Results as of End-November 2009

Company Identifier	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
<b>A</b>	Standard scenario	Same as before	N/A	(e) Decrease in reserves of between 10% – 25%	(a) 0% but less than 5%	No	Not totally determined yet. Most likely the option 2 – based on the 200 scenarios from C3 Phase 1	No
<b>B</b>	Standard scenario	Same as before	N/A	(b) increase in reserves between 10% – 25% (due to equity market increase on separate accounts)	(b) 5% but less than 10% (not quantified but the guess is (b))	Yes. 50% e-factor	Option 2 – the 200 interest rate scenarios available as prescribed for C3P1	No
<b>C</b>	Standard scenario	Same as before	N/A	(d) Decrease in reserves of between 0% – 10%	(a) 0% but less than 5%	No	Option 1 – the forward interest rates implied by the swap curve in effect as of the valuation date	No
<b>D</b>	Standard scenario	Same as before for some legal entities and recently shifted for the others	Certain actuarial assumptions in CTE 70 are more dynamic than Standard Scenario. Thus CTE 70 reserve reduces quickly when market performs well.	(c) increase in reserves between 0% – 10%	(c) 10% but less than 15%	No	Option 2 – the 200 interest rate scenarios available as prescribed for C3P1 without additional spreads	No
<b>E</b>	Standard scenario	Same as before	N/A	(b) increase in reserves between 10% – 25%	(a) 0% but less than 5%	Yes. 30% e-factor	Option 2 – the 200 interest rate scenarios available as prescribed for C3P1	No

# KPMG Pulse Survey – AG 43 Preliminary Results as of End-November 2009 (continued)

Company Identifier	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
F	Standard scenario	Flipped to SS in June and stayed at SS in Sep	N/A	N/A – have not run YE 08 on AG43 basis recently	(b) 5% but less than 10% (not quantified but the guess is (b))	No	Option 3 – discount based on a model that integrates market growth and interest rates	No
G	Standard scenario	Same as before	N/A	(b) increase in reserves between 10% – 25% (including new business as well)	(b) 5% but less than 10%	Undetermined	Option 1 – the forward interest rates	Minor adjustment to forward rates
H	CTE 70	Recently shifted	Equity market recover primarily; effect of currently held hedges	(f) decrease in reserves of more than 25%	10% at an aggregate level (may add additional reserves beyond that)	No, Currently held only for both Standard and CTE 70	Option 3 – discount rate developed from a stochastic model that integrates the development of interest rates and the Separate Account returns	No
I	CTE 70	Same as before	N/A	(a) increase in reserves of more than 25%	Not yet finalized	Yes. 30% e-factor	Option 2 – the 200 interest rate scenarios available as prescribed for C3P1	No
J	CTE 70	Recently shifted	Market/ reduction of in-the-moneyness	(f) decrease in reserves of more than 25% (using excess reserve)	(b) 5% but less than 10%	No	Option 3 – 3 month treasury bill rates	Yes, clarified policyholder behavior/ consistent dynamic surrenders

# KPMG Pulse Survey – AG 43 Preliminary Results as of End-November 2009 (continued)

Company Identifier	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
<b>K</b>	Standard scenario	Recently shifted	Mainly due to changes to assumptions in model (e.g., discount rate, utilization rate)	(f) decrease in reserves of more than 25% when comparing excess reserves (i.e., total reserves less CSV)	(d) 15% but less than 25%	Yes. 30% or 50% e-factor	Option 3 – stochastically generated Treasury rate plus a spread	No
<b>L</b>	Standard scenario	Same as before	N/A	(d) decrease in reserves between 0% – 10% (excess reserves/total reserves – CSV)	About 5%	No	Option 3 – Net Investment Earned Rate (net of defaults & investment expenses)	Not determined yet
<b>M</b>	Standard scenario	Same as before	N/A	(d) decrease in reserves between 0% – 10%	(a) 0% but less than 5%	No	Option 3 – discount rate developed from a stochastic model that integrates the development of interest rates and the Separate Account returns	Yes, non-guaranteed revenue sharing grading rules and margins on assumptions
<b>N</b>	Standard scenario	Same as before	N/A	(d) decrease in reserves between 0% – 10%	(a) 0% but less than 5%	No	Option 3 – discount rate developed from a stochastic model that integrates the development of interest rates and the Separate Account returns	No
<b>O</b>	Standard scenario	Same as before	N/A	(e) Decrease in reserves of between 10% – 25% (excess reserves/total reserves – CSV)	(c) 10% but less than 15%	Yes. 30% e-factor	Option 3 – Net Investment Earned Rate (net of defaults & investment expenses) on new investments	No, other than general model refinements

## KPMG Pulse Survey – AG 43 Preliminary Results as of End-November 2009 (continued)

Company Identifier	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
<b>P</b>	Standard scenario	N/A – 1st run at q3 09	N/A	(c) increase in reserves between 0% – 10% (comparison vs. 9/30/09)	(b) 5% but less than 10% or (c) 10% but less than 15%	Undetermined	Option 3 – discount rate developed from a stochastic model that integrates the development of interest rates and the Separate Account returns	No
<b>Q</b>	Standard scenario	Same as before	N/A	(d) decrease in reserves between 0% – 10%	(a) 0% but less than 5%	No	Option 3 – average fixed account reinvestment rate	No