

Actuarial Guideline XXXIII

DETERMINING CARVM RESERVES FOR ANNUITY CONTRACTS WITH ELECTIVE BENEFITS

Background Information

1. Introduction

The Standard Valuation Law (SVL) defines the methods and assumptions which are to be used in determining minimum statutory formula reserves. This law establishes the standards for annuity contracts (which therefore includes any annuity riders or endorsements, and any or all components of which, such as premiums, benefits, contract charges, primary or secondary accumulation values or other components, either relating to annuity benefits provided by the contract or providing separate annuity benefits) and includes the criteria for the interest and mortality assumptions to be used in determining minimum formula contract reserves. The 1980 revisions to the SVL provide for the maximum statutory formula reserve interest rate to be determined through a dynamic formula in order to incorporate changes in economic conditions, liquidity needs and the risks inherent in certain types of contracts.

The SVL defined methodology for annuity contracts, the commissioners annuity reserve valuation method (CARVM), requires that reserves be the greatest of the respective excesses of the present values, at the date of valuation, of the future guaranteed benefits, including guaranteed nonforfeiture benefits, provided for by such contracts at the end of each respective contract year, over the present value, at the date of valuation, of any future valuation considerations derived from future gross considerations, required by the terms of such contracts, that become payable prior to the end of such respective contract year. Such reserves are established to adequately fund all guaranteed contract obligations, including those obligations which are optional to the contract owner and which may not have yet been elected.

Industry practices and methods of reserving under CARVM for annuity contracts with multiple benefit streams have not been found to be consistent. These range from a low reserve equal to the cash surrender value to a reserve representing the greatest actuarial present value of the future benefit streams under all potential annuity or other nonforfeiture benefit election options using a conservative rate of interest.

The major purpose of this Actuarial Guideline is to provide clarification and consistency in applying CARVM to annuities with multiple benefit streams. Some of the areas requiring clarification include: the valuation of annuitization benefits; the application of incidence rates in CARVM; the application of the integrated benefit stream approach in CARVM; how to determine valuation interest rates and mortality tables for multiple benefit streams; and certain practical considerations regarding multiple benefit streams.

2. Annuitization Benefits

Varying forms of contracts provide that the cash value available to the contract owner is less than the amount available to purchase an annuitization option under the terms of the contract.

For purposes of this Actuarial Guideline, “accumulation fund” is defined as the policy value which is used to purchase an annuity option under the terms of the contract.

Frequently there are significant discontinuities in the reserves, both upward and downward, at the time a settlement option is elected, between the reserve held immediately prior to the settlement as

compared to the reserve required for the greatest actuarial present value of the annuitization option elected.

One of the most significant reasons for discontinuities in the reserve patterns at the time of election is the difference in the SPIA valuation rate available at the time of election as compared to the valuation rate used based on the date of issue of the original SPDA contract. Another significant reason is the difference between the guaranteed purchase rate contained in the contract and used for reserve development as compared to the rate actually used to purchase the annuity option at the time of election.

3. Application of Incidence Rates in CARVM

Since CARVM was adopted, there has been an increase in the types of benefits offered under certain annuity contracts, including enhanced death benefits, nursing home benefits, and various partial withdrawal provisions, including some dependent on values other than those used to determine cash values and which may allow for benefits to continue past the point where the cash value is zero. For some of these benefit types, the SVL is not explicit as to whether incidence tables prescribed under the SVL may be used to determine such benefits, versus requiring consideration of all contract owner options available under the contract, and choosing the set of incidence rates which produce the greatest present value.

4. Integrated Benefit Stream Approach

CARVM requires that reserves be based on the greatest present value of all potential future guaranteed benefits. For annuity contracts offering more than one type of potential benefit stream, the SVL is not explicit regarding whether or how blends of more than one type of benefit must be considered under CARVM.

Under the integrated benefit stream approach, any potential benefit stream must be considered, including blends reflecting the interaction of more than one type of benefit. Such potential benefit streams include all types of benefits for which the greatest present value concept is required. Additionally, adjustments must be made to all such potential benefit streams to reflect those benefit types for which prescribed incidence tables are required (e.g., death benefits).

For example, consider an annuity contract offering surrender, annuitization and death benefits. Potential benefit streams that would be considered include surrender streams, annuitization streams, and streams reflecting blends of surrender and annuitization benefits. All such streams would also be adjusted to reflect death benefits and to discount all benefits for survivorship (based on the mortality table prescribed in the SVL).

5. Valuation Interest Rates

For annuities offering more than one type of benefit, the SVL is not explicit as to how valuation interest rates should be determined. The SVL is also not explicit as to how valuation interest rates should be determined for certain types of benefits offered under annuity contracts, such as death and nursing home benefits.

Purpose

The purpose of this Actuarial Guideline is to codify the basic interpretation of CARVM and does not constitute a change of method or basis from any previously used method, by clarifying the assumptions and methodologies which will comply with the intent of the SVL. This Actuarial Guideline shall apply to all annuity contracts subject to CARVM, where any elective benefits (as defined below) are available to the contract owner under the terms of the contract. However, life or health insurance riders attached to an annuity contract, where all components of the rider (e.g., premiums, benefits, contract charges, accumulation values and other components) are separate and distinct from the components of the annuity contract, should be treated as a separate life or health insurance contract not subject to this Actuarial Guideline. While this Actuarial Guideline applies to all annuity contracts subject to CARVM, in the event an actuarial guideline or regulation dealing with reserves is developed for a specific annuity product design, the product specific actuarial guideline or regulation will take precedence over the Actuarial Guideline.

Definitions

1. Elective and Non-Elective Benefits in CARVM

For purposes of determining reserves under CARVM, each benefit available under the annuity contract must be placed into one of the two categories defined as follows:

Non-Elective Benefits: Benefits that are payable to contract owners or beneficiaries only after the occurrence of a contingent or scheduled event independent of a contract owner's election of an option specified in the contract, including (but not limited to) death benefits, accidental death benefits, disability benefits, nursing home benefits, and benefits payable under either a deferred or immediate annuity contract (with or without life contingencies), where no benefit options are available under the terms of the contract.

Elective Benefits: Benefits that do not fall under the non-elective benefits category (i.e., benefit options that may be freely elected under the terms of the contract). Elective benefits include (but are not limited to) full surrenders, partial withdrawals, and full and partial annuitizations.

In some cases it may not be clear whether some benefits are elective or non-elective. The presence of certain types of non-elective benefits may affect other non-elective benefits and/or elective benefits. The Valuation Actuary should use judgment in making these determinations by considering factors such as the degree to which contract owner actions would be influenced by the availability of each benefit in the contract.

2. Elective and Non-Elective Incidence Rates in CARVM

For non-elective benefits, incidence rates from tables prescribed by the SVL should be applied to determine the payment of non-elective benefits and to discount, for survivorship, all benefit payments included in an Integrated Benefit Stream, as defined below. If no incidence tables are prescribed by the SVL, then company or industry experience (with margins for conservatism) may be used, as appropriate. Annuity mortality tables prescribed by the SVL should be used to determine all mortality based benefits under the contract (including, but not limited to, annuitizations and death benefits) and to discount other types of benefit payments for survivorship.

Actuarial judgment should be used as to the appropriateness of applying any non-elective incidence rates other than mortality. For non-elective waiver-of-surrender-of-charge benefits other than mortality-based benefits and for similar non-elective benefits, incidence rates greater than zero are not to be applied at any time in the projection after the earlier of: (a) the end of the surrender charge period

applicable immediately after the first premium is paid; and (b) when the projected cash value has been depleted.

For elective benefits, incidence rates should not be based on tables reflecting past company experience, industry experience or other expectations. Instead, every potential guaranteed elective benefit stream required to be reserved by CARVM must be considered in the determination of integrated benefit streams as defined below. This is accomplished by considering trial sets of guaranteed elective benefit incidence rates, either through numerical testing or analytical means, to determine which trial set produces the “greatest present value” as described in Text paragraph 1 below. Theoretically, this means that all possible elective benefit incidence rates between 0% and 100% should be considered. However, in practice, such a greatest present value will typically occur by assuming an incidence rate of either 0% or 100%.

3. Integrated Benefit Stream

An integrated benefit stream is one potential blend of guaranteed elective and non-elective benefits available under the contract, determined as the combination of A and B, where:

A equals one potential stream of one or more types of guaranteed elective benefits available under the terms of the contract, based upon a chosen set of elective benefit incidence rates; and

B equals the stream of all guaranteed non-elective benefits provided under the terms of the contract, recognizing the guaranteed elective benefit stream under consideration in A above, and the non-elective incidence rates defined in 2. above.

Both A and B above should be discounted for survivorship, based on the non-elective incidence rates defined in 2. above.

Text

1. Greatest Present Value

All guaranteed benefits potentially available under the terms of the contract must be considered in the valuation process and analysis and the ultimate policy reserve held must be sufficient to fund the greatest present value of all potential integrated benefit streams, reflecting all guaranteed elective and non-elective benefits available to the contract owner. Each integrated benefit stream available under the contract must be individually valued and the ultimate reserve established must be the greatest of the present values of these values, based on valuation interest rate(s) as defined in Section 3 below.

2. Examples of Integrated Benefit Streams That Must Be Considered

A. Cash Value Streams

One mandatory set of integrated benefit streams for a deferred annuity with cash settlement values which must always be considered is any possible blend of future guaranteed partial withdrawals and full surrenders available under the contract, as specified in the SVL, accumulated at the guaranteed credited interest rate(s) and discounted at the valuation rate(s) of interest defined in section 3 below, with appropriate recognition of all guaranteed non-elective benefits available under the contract.

B. Annuitization Streams

A second mandatory set of integrated benefit streams that must be considered is any possible blend of future guaranteed full or partial annuitization elections, as specified in the SVL, available to the contract owner at each election date required by CARVM, with appropriate recognition of all guaranteed non-elective benefits available under the terms of the contract. In determining the integrated benefit streams to value the annuitization option, the guaranteed purchase rates contained in the contract, as well as any other contract provisions, excluding any current purchase rates which may be applicable, are applied to the accumulation fund.

C. Other Elective Benefit Streams

In addition to the cash value and annuitization streams described above, all other possible guaranteed elective benefits available under the contract, including blends of more than one type of guaranteed elective benefit, must be considered in a manner consistent with the mandatory cash value and annuitization streams, with appropriate recognition of all guaranteed non-elective benefits available under the contract.

3. Determination of Valuation Interest Rates

Section 4b of the SVL determines valuation rates for an annuity contract based on the following Parameters:

- A. The basis of valuation (issue year or change in fund);
- B. Whether or not the annuity provides for cash settlement options;
- C. Whether interest is guaranteed on premiums received more than 12 months following issue (or the valuation date for change in fund basis);
- D. The guarantee duration; and
- E. The Plan Type.

Parameters A, B and C above should be determined at a contract level. Additional requirements regarding the change in fund basis of valuation are set forth in Section 5 below. Parameters D and E should be determined at a benefit level, as set forth in Section 4 below.

Under a contract level determination, parameters are set based on the characteristics of the contract as a whole. Under a benefit level determination, parameters are set based on the characteristics of each benefit, resulting in potentially different valuation rates for each benefit type comprising the integrated benefit stream.

4. Determination of Guarantee Duration and Plan Type

Guarantee duration and Plan Type are based upon the specific characteristics of each individual benefit type that comprise the integrated benefit stream, as follows:

- A. For portions of the integrated benefit stream attributable to full surrender and partial withdrawal benefits, the Plan Type should be based upon the withdrawal characteristics of the benefit, as stated in the contract. This may result in a Plan Type A, B or C under the 1980 amendments of the SVL. The guarantee duration is the number of years for which interest rates are guaranteed in

excess of the calendar year statutory valuation interest rate for life insurance policies with guarantee duration in excess of twenty (20) years.

- B. For portions of the integrated benefit stream attributable to full and partial annuitization benefits, the determination of the valuation interest rate involves the use of the appropriate Plan Type and weighting factor as determined by the SVL, with the guarantee duration as the number of years from the original date of issue or date of purchase, to the date the annuitization is assumed to commence. If the underlying assumption is that the contract owner may withdraw funds only as an immediate life annuity or as installments over 5 years or more, this will generally result in a Plan Type A, under the 1980 amendments of the SVL, with the valuation interest rate changing as different assumed annuitization dates determine guarantee durations which will fall into different guaranteed duration bands under the SVL. An assumed annuitization option which has a non-life contingent payout period of less than five (5) years shall be considered a Plan Type C, with the valuation interest rate changing as different assumed annuitization dates determine guarantee durations which will fall into different guarantee duration bands under the SVL.

- C. For portions of the integrated benefit stream attributable to non-elective benefits, since the underlying assumption is that no withdrawal is permitted, Plan Type A should generally be used, with a guarantee duration determined as the number of years from issue or purchase to the date non-elective benefits may first be paid. In most cases, the guarantee duration should be less than five years, since non-elective benefit coverage usually begins immediately after issue, with benefits payable commencing in the first contract year.

For benefit types incorporating multiple payments, paragraphs 4(A), 4(B), and 4(C) above should be applied to each separate payment according to the withdrawal, annuitization, or non-elective benefit characteristics of the contract and payment provisions at the time each payment is to be made. If a portion of the integrated benefit stream is part of an immediate life annuity or as series of installments over five (5) years or more, but can be changed directly or indirectly by exercise of contract owner withdrawal options, then it would be inappropriate to apply paragraph 4(B) to that portion of the integrated benefit stream, since the contractholder may withdraw funds other than as a life annuity or in installments of five (5) years or more.

For example, a Guaranteed Lifetime Income Benefit (GLIB) is a guarantee to the owner of a fixed deferred annuity contract, whether traditional or indexed to an external referent such as an equity index, that the owner can have a defined income for life in an amount determined by formula, while the owner retains traditional rights (such as withdrawal) to the other values provided by the underlying deferred annuity and while such values continue to exist. Income benefits are typically deducted from one or more of the annuity's defined values to the extent such values remain positive. Once the GLIB is elected, the contract owner may have rights to stop and restart the income benefit and may also request full or partial surrender of any remaining annuity value, though doing so may negatively impact or eliminate subsequent guaranteed income benefits. Thus, applying 4(A) and 4(B) above, the GLIB benefit stream is seen to be composed of two portions to determine the Plan Type and guarantee duration, as follows:

The first portion consists of the series of defined payments to the extent that the payments, or any fraction thereof, are withdrawals that reduce or deplete the annuity's defined values. Applying paragraph 4(A) to this portion would result in Plan Type A, Plan Type B, or Plan Type C, by following the definitions of such contained within the Standard Valuation Law and reflecting the specific contract provisions, especially with regard to withdrawal. Paragraph 4(A) would also apply to any residual withdrawals that can be made following election of the GLIB benefit.

The second portion is a life annuity without option to take or receive additional amounts under the contract, and consists of the payments not included in the above portion. Applying paragraph 4(B), Plan Type A would generally apply to this segment with the guarantee duration determined using the period from contract issue to commencement of payments in this second portion.

5. Change in Fund Basis

As indicated by section 4b.C.(1)(c)(vi) of the SVL, a company may elect to value annuity contracts with cash settlement options on either an issue year basis or on a change in fund basis. Annuity contracts with no cash settlement options must be valued on an issue year basis. The issue year basis or change in fund basis should be determined for the contract as a whole, and thus must be consistently applied to all portions of all integrated benefit streams available under the annuity contract. The election of issue year or change in fund basis must be made at the issuance of the contract and must not change during the term of the contract without the prior written approval of the commissioner.

6. Purchase Rates

Contracts may provide, as contractual guarantees, the use of preferential purchase rates to those listed in the contract. As an example, a contract may provide that the company will offer, at the time of annuitization, the rates offered to new purchasers of immediate annuities if such rates will provide a higher annuity benefit than would result from the contractually guaranteed rates provided in the contract. This creates a contract guarantee which must be valued under CARVM. Ignoring this benefit in determining reserves will produce reserves less than the statutory formula reserves required under CARVM. Valuation of this benefit, however, is complicated by the fact that the company does not currently know what the exact rate will be at the time of the settlement election. In order to determine conservative statutory formula reserves, if use of future unknown rates are guaranteed, the company shall establish reserves not less than the contract's accumulation fund value, on the valuation date, reduced by an "expense allowance" not to exceed 7% of such fund. This section does not require the calculation of a reserve for the annuitization of business based upon current purchase rates pursuant to the "annuitization streams" described in Paragraph 2.B. above.

Likewise for contracts which provide for additional amounts during the payout period over those guaranteed at the commencement of the annuity payments, the reserve during the deferred period shall not be less than the contract's accumulation fund reduced by an expense allowance not to exceed 7% of such fund.

7. Practical Considerations

The major purpose of this Actuarial Guideline is to provide clarification and consistency in applying CARVM to annuities with multiple benefit streams. However, in practice there may be other acceptable methods of applying CARVM which are substantially consistent with the methods described in this Actuarial Guideline. Such methods may also be used, with prior regulatory approval.

Additionally, in applying this Actuarial Guideline there may theoretically be an infinite number of contract owner options that are possible under the contract. However, it may not be practical, possible or even appropriate to test every conceivable combination of potential integrated benefit streams theoretically available under the contract. This Actuarial Guideline requires that the actuary consider, not necessarily test, all potential integrated benefit streams to determine to what extent each contract owner option has a material impact on the reserve. In practice, the actuary may be able to eliminate some potential integrated benefit streams by analytical methods. The actuary may also be able to demonstrate the reserve adequacy of certain approximations. For example, in certain situations it may

be shown that a CARVM reserve ignoring non-elective benefits, plus an “add-on” reserve for non-elective benefits, is a reasonable approximation for the theoretically correct CARVM reserve.

Effective Date

This guideline shall be effective on December 31, 1998, affecting all contracts issued on or after January 1, 1981. A company may request a grade-in period for contracts issued prior to December 31, 1998 from the domiciliary commissioner upon satisfactory demonstration that the method and level of current reserves held for such contracts are adequate in the aggregate. This phase-in will require establishment of no less than 33 1/3% of the additional reserves resulting from the application of this guideline on December 31, 1998, no less than 66 2/3% on December 31, 1999, and 100% by December 31, 2000.

Actuarial Guideline XXXIV

VARIABLE ANNUITY MINIMUM GUARANTEED DEATH BENEFIT RESERVES

Actuarial Guideline XXXIV was repealed December 30, 2009, and was replaced by
Actuarial Guideline XVIII—CARVM for Variable Annuities, effective December 31, 2009.

Actuarial Guideline XXXV

THE APPLICATION OF THE COMMISSIONERS ANNUITY RESERVE METHOD TO EQUITY INDEXED ANNUITIES

Background

The purpose of this Actuarial Guideline is to interpret the standards for the valuation of reserves for equity indexed annuities. This Guideline codifies the interpretation of the Commissioners Annuity Reserve Valuation Method (CARVM) by clarifying the computational methodologies which will comply with the intent of the Standard Valuation Law (SVL).

Equity indexed deferred annuity products provide policyholders with a minimum guaranteed interest accumulation rate on a portion of all premium payments and a portion of the growth, if any, of an equity based index such as the S&P 500. While there is no “typical” equity indexed product, there are design features that are common to most products. Some of these features are a participation rate guaranteed for one or more years, a cap on the portion of the index growth that is credited to policyholders, and a policy term which defines a time period for which current guarantees are applicable.

Equity indexed immediate annuity products provide policyholders with a minimum guaranteed annuitization rate and an opportunity to receive larger periodic payments based on the growth, if any, in an equity index. The product design may include features such as a participation rate, cap or term.

While contract parameters such as participation rate and cap are guaranteed for a period of time, growth of the underlying index is not. Index growth may be positive or negative. This combination of guaranteed parameters and unknown equity index growth makes the application of CARVM to these products problematic.

CARVM defines minimum statutory reserves as “the greatest of the respective excesses of the present value, at the date of valuation, of the future guaranteed benefits, including guaranteed nonforfeiture benefits, ... over the present value, at the date of valuation, of any future valuation considerations derived from future gross considerations, required by the terms of such contract, that become payable prior to the end of such respective contract year. The future guaranteed benefits shall be determined by using the mortality table, if any, and the interest rate, or rates, specified in such contracts for determining guaranteed benefits.”

In order that all insurers issuing equity indexed annuity products establish reserves for statutory reporting purposes that are consistent with CARVM minimum statutory formula reserves requirements, this actuarial guideline identifies a computational method that is deemed to be consistent with CARVM in situations when specific operational criteria called “Hedged as Required” criteria are met. In addition, two computational methods are defined that are deemed to be consistent with CARVM in the event the “Hedged as Required” criteria are not met.

Two forms of the “Hedged as Required” criteria are provided. The “basic” criteria are applicable when an insurer uses long dated options to hedge the equity risk embedded in an equity indexed annuity. The second set of criteria is applicable when an insurer uses an option replication strategy.

Scope

This Actuarial Guideline applies to all equity indexed annuity contracts, regardless of the date of issue, that are subject to CARVM.

Computational Methods

Computational methods deemed to be consistent with CARVM can be classified into two groups, Type 1 methods and Type 2 methods. The following computational method is considered a Type 1 method: the Enhanced Discounted Intrinsic Method (EDIM). Type 1 computational methods are deemed to be consistent with CARVM if the applicable “Hedged as Required” are met. The following methods are considered Type 2 methods: the Commissioners Annuity Reserve Method with Updated Market Values (CARVM with UMV) and the Market Value Reserve Method (MVRM). Also, an adaptation of the MVRM, known as the Black-Scholes Projection Method (BSPM), is recognized. For a complete description of these methods, please consult Attachment 1.

General Requirements on the Use of Certain Computational Methods

The MVRM and EDIM computational methods are both based on a future value. In the case of MVRM, a projected index is determined. The projected index is then used to determine end of term and interim benefit amounts. CARVM is applied to these benefit amounts. In the case of EDIM, the end of term guaranteed value (a future value) is used to determine an interest rate for calculating terminal reserves for the guaranteed benefits after the initial terminal reserve. Determination of the “term” is an essential component of both computational methods.

The EDIM, MVRM and the BSPM adaptation of the MVRM computational methods are considered acceptable interpretations of CARVM under the following conditions:

1. The policy form design features a single dominant benefit which is the most likely benefit to be provided under the policy form with the determination of the single dominant benefit based on a consideration of product features such as the pattern of guaranteed participation rates, surrender charges, vesting rates, spread deductions, and marketing/advertising material.
2. The point in time associated with the single dominant benefit most likely to be provided under the contract is used as the terminal point of the current term for purposes of applying the computational method and complying with the “Hedged as Required” criteria, if applicable.
3. The appointed actuary has demonstrated to the satisfaction of the regulatory officials in each state in which the insurer is required to submit a statutory financial statement, prior to the use of the MVRM or EDIM computational methods, that the requirements above have been met.

Variations from the MVRM and EDIM as described in Attachment 1, are not acceptable interpretations of CARVM. The BSPM is considered an acceptable adaptation of the MVRM.

Type 1 Methods

A Type 1 computational method is deemed to be consistent with CARVM if an insurer using the method complies with the applicable “Hedged as Required” criteria (Attachment 2) and provides a certification as to compliance with the criteria. The certification must be signed by the appointed actuary. The certification shall be provided with each annual and quarterly statutory financial statement filed with the appropriate insurance regulatory official in each state in which the insurer does business.

For purposes of determining compliance with the “equivalence of characteristics” requirement in the “Hedged as Required” criteria, the current term of an equity indexed deferred annuity policy will be determined based on the requirements in the section captioned “General Requirements on Use of Certain Computational Methods.” For purposes of applying a Type 1 computational method, the time horizon for

present value calculations should be based on the current term of the policy based on the requirements in the section captioned “General Requirements on Use of Certain Computational Methods.”

The Enhanced Discounted Intrinsic Method (EDIM) requires an initial reserve amount that is determined by methods that are not specifically included in the EDIM. For purposes of compliance with statutory minimum formula reserve requirements, the initial reserve under EDIM must be set at least equal to the initial reserve produced by either CARVM with UMV, or the MVRM with assumptions used to compute any necessary option market values reasonable as of the date of issue of the policy. The insurer must provide a certification (Attachment 3) as to the reasonableness of the assumptions.

Type 2 Methods

The use of Type 2 method is not conditioned upon the requirement to meet the “Hedged as Required” criteria. However, an insurer using a Type 2 method must provide a certification (Attachment 4) signed by the appointed actuary with each annual and quarterly statutory financial statement filed with the appropriate insurance regulatory official in each state in which the insurer does business. This certification deals with the assumptions underlying the option market values included in the calculation of reserves using a Type 2 method and the consistency in assumptions between these option market values and the statement value of any options owned by the insurer to support the equity indexed annuity business being valued.

For purposes of applying the MVRM and the BSPM recognized adaptation computational methods, the time horizon for present value calculations should be based on the requirements in the section captioned “General Requirements on Use of Certain Computational Methods.”

Required Change in Method

In the event an insurer that is using a Type 1 computational method for a block of business fails to meet the applicable “Hedged as Required” criteria, the required actuarial certification must disclose this fact. If the reason for failing the “Hedged as Required” criteria is not corrected within one quarterly financial reporting of the initial disclosure of the failure in the actuarial certification, the insurer must use a Type 2 computational method for determining minimum statutory formula reserves for this block of business.

If at a later date, the insurer can demonstrate to the satisfaction of its domiciliary commissioner that it is meeting the applicable “Hedged as Required” criteria, the insurer may, with the approval of the domiciliary commissioner, resume using a Type 1 computational method. In addition, the insurer must notify the appropriate regulatory official in each state in which the insurer does business subject to the change in computational method.

Optional Change in Method

An insurer using either a Type 1 or Type 2 computational method for a block of business, may with the approval of its domiciliary commissioner and after notifying the appropriate regulatory official in all the other states in which the insurer writes this block of business, use a computational method of the other type. If the change in computational methods involves a change from a Type 2 computational method to a Type 1 computational method, the request to the domiciliary commissioner for approval of the change in method must be accompanied with a demonstration of compliance with the applicable “Hedged as Required” criteria.

Plan Type

The use of either a Type 1 computational method or a Type 2 computational method requires a determination of Plan Type for purposes of determining the maximum valuation interest rate. Design features unique to equity indexed annuities, such as an equity enhanced surrender values, vesting schedules, or participation rate, should not used to determine the Plan Type of a policy form. Only those design features specifically identified in Section 4b, Paragraph C of the NAIC Model SVL may be used to assign a Plan Type to a policy form.

The definition of Plan Type A and Plan Type B in the NAIC Model SVL includes the phrase “with an adjustment to reflect changes in interest rates or asset values since receipt of the funds by the insurance company...” The reference to “change in … asset values” does not include changes in policy values due to changes in the equity index underlying the policy form.

Other Regulatory Requirements

The guidance provided in this Actuarial Guideline concerning statutory minimum formula reserves for equity indexed annuity products supersedes the valuation guidance in Sections 5 and 6 of the NAIC Interest-Indexed Annuity Contracts Model Regulation.

Asset Adequacy Testing of Reserves

To the extent required by law, regulation, or regulatory requirements, reserves established for equity indexed annuity policies must be tested for adequacy using appropriate methods and assumptions.

ATTACHMENT 1

Description of Computational Methods

CARVM-UMV

Step 1: For each duration and each benefit at which an index-based benefit is available, determine the market value of the appropriate call option. The appropriate call option is one that exactly hedges the floor of the benefit at that point in time. This means that the payoff of the call option should exactly equal the difference between the specific benefit available at that point in time (reflecting all relevant contract features) and the guaranteed floor of that benefit. The market value should be determined using an appropriate option pricing technique, such as Black-Scholes or a stochastic scenario method.

Step 2: The market value of all of the call options are projected forward at the appropriate valuation interest rate to the point in time at which the call option would expire. The valuation interest rate should be consistent with the requirements of any applicable Actuarial Guidelines or regulations, such as Actuarial Guideline XXXIII or Actuarial Guideline IX-B.

Step 3: The future guaranteed benefits for each benefit at each time point are determined by adding the guaranteed floors of the benefit to the amounts determined in Step 2.

Step 4: Now a CARVM calculation can be performed. The CARVM calculation should be in accordance with Actuarial Guideline XXXIII and any other applicable regulations or Actuarial Guidelines.

MVRM

Step 1: Calculate the projected index value at the end of the “term” which would produce a benefit at the end of the “term” equal to the sum of (1) the contract guarantee at that time, and (2) the current market value of the call option(s) which would fully hedge the index-based benefit, accumulated at the appropriate valuation interest rate. This calculation should be performed assuming equal annual percentage increases in the index. The call options used are those with maturity dates coterminous with the setting of participation rates, spread, or any other method of determining index-based benefits. The valuation interest rate used to accumulate the call options should be consistent with the requirements of any applicable Actuarial Guidelines or regulations, such as Actuarial Guideline XXXIII or Actuarial Guideline IX-B. Note that the “term” referred to above should be consistent with the “term” described in this Actuarial Guideline.

Step 2: From the current level of the index and the projected level of the index at the end of the term, calculate an implied compound constant growth rate of the index from the valuation date to the end of the term. Use this implied growth rate to project the level of the index at intermediate anniversaries.

Step 3: All annuity benefits can now be determined from the index levels.

Step 4: Now a CARVM calculation can be performed. The CARVM calculation should be in accordance with Actuarial Guideline XXXIII and any other applicable regulations or Actuarial Guidelines.

MVRM Using Black-Scholes Projection Method

This is an adaptation of the basic MVRM approach to accommodate products for which the participation rate, spread, or any other benefit determination method is redetermined during the term (particularly annually).

Step 1: Calculate the cost of a full hedging call option as a percentage of the account value for the period that the benefit determination is guaranteed, accumulate the percentage to the end of that period at the risk-free interest rate, and use the accumulated percentage cost as the projected growth rate of the account value during the period. Perform the same type of calculation for each successive period within the term,

giving recognition to the benefit guarantees, forward interest rates, forward index volatility, and index dividend levels.

Step 2: Determine the index level which would provide the projected account level on each anniversary on the basis of the participation rate, spread, or other benefit determination method used.

Step 3: All annuity benefits can now be determined from the index levels.

Step 4: Now a CARVM calculation can be performed. The CARVM calculation should be in accordance with Actuarial Guideline XXXIII and any other applicable regulations or Actuarial Guidelines.

EDIM

Step 1: The Fixed Component at issue is the formula reserve produced by either CARVM-UMV or MVRM. The Fixed Component at the end of the term is the floor of the benefit actually being hedged.

Step 2: The intermediate values of the Fixed Component are found by solving for an interest rate that would accumulate the initial value to the ending value. For example, assume you purchase options assuming that 90% of policyholders will surrender at maturity, and that 10% of policyholders will annuitize at maturity. The Fixed Component is the sum of (1) 90% of the Fixed Component that grows to the floor of the surrender benefit; and (2) 10% of the Fixed Component that grows to the floor of the annuitization benefit.

Step 3: The Equity Component is equal to the discounted intrinsic value of the options. The discounted intrinsic value of the options is found by taking the intrinsic value at the valuation date, and discounting at the valuation rate for the number of years from the valuation date to the end of the term. The valuation interest rate used to discount the intrinsic value of the call options should be consistent with the requirements of any applicable Actuarial Guidelines or regulations, such as Actuarial Guideline XXXIII or Actuarial Guideline IX-B.

Step 4: The reserve is the sum of a Fixed Component and an Equity Component.

ATTACHMENT 2**Hedged as Required Criteria**

In order to use a Type 1 computational method, the appointed actuary needs to certify quarterly that it meets either the “Basic” or “Option Replication” criteria.

Basic

1. Required equivalence of characteristics between the option contracts held and the options embedded in the products with respect to specific contract features such as: Index, averaging features, option type, strike price, term, etc.
2. The amount of hedge purchased, at or near the contract issuance, must be greater than or equal to a Specified Percentage of the product’s account value, at contract issuance. The Specified Percentage varies by the length of the option guarantee (some annual ratchet products may have a term of several years, but the participation rates are only guaranteed for one year, so the “term” for this purpose is 1 year), and allows the company to assume no more than 3% per year of elective benefit decrements, unless the Commissioner agrees to a higher limit. For example, for a five-year point-to-point product, the Specified Percentage would be: $SP\% = (1 - .03)^5 = 86\%$.
3. The Company must have a specific plan for hedging risks associated with interim death benefits, early surrenders, etc.
4. The Company must have a system in place that is used to monitor the effectiveness of the company’s hedging strategy.
5. The Company must have a stated maximum tolerance for differences between the expected performance of the hedge and the actual results of the hedge.

Option Replication

1. Required equivalence of characteristics between the target of an option replication strategy employed, and the options imbedded in the liabilities with respect to specific contract features such as: index, averaging features, option type, strike price, term, etc.
2. At the end of each quarter, the notional amount of the target of the option replication strategy must be greater than or equal to the sum of the Specified Percentages of each contracts account value. The Specified Percentage varies by the length of the remaining option guarantee (some annual ratchet products may have a term of several years, but the participation rates are only guaranteed for one year, so the “term” for this purpose is 1 year), and allows the company to assume no more than 3% per year of elective benefit decrements, unless the Commissioner agrees to a higher limit. For example, if a point-to-point contract has five years remaining, the Specified Percentage for that contract would be: $SP\% = (1 - .03)^5 = 86\%$. Appropriate assumptions for non-elective decrements such as mortality may be added to the assumption for elective decrements.
3. The company must have a specific plan for hedging risks associated with interim death benefits, early surrenders, etc.
4. The Company must have system in place that is used to monitor the effectiveness of the company’s hedging strategy.
5. The Company must have a stated maximum tolerance for differences between the expected performance of the hedge and the actual results of the hedge. The maximum tolerance test and compliance evaluation test must meet the following minimum requirements. The compliance evaluation criteria will be a retrospective correlation test performed at least on a weekly basis.

The Company will compare the change in the market value, from the beginning of the calendar quarter, of the hedge portfolio with the change in the market value of the options embedded in the liability portfolio. The maximum dollar amount of difference permitted between these two changes is 10% of the beginning of period market value of the options embedded in the liabilities. If the difference exceeds this limit, the following steps must be taken:

- If for a second time during a quarter the dollar amount of difference exceeds 10% of the beginning of period market value of the options embedded in the liabilities, but is less than 25% of the beginning of period market value of the options embedded in the liabilities, the Company must notify the Commissioner of Insurance in each state in which the insurer is licensed. The notification must indicate the dollar amount of reserves being hedged by the option replication strategy.
- If at any of the weekly intervals, the difference between the two changes exceeds 25% of the beginning of period market value of the options embedded in the liabilities, the Company must notify the Commissioner of Insurance in each state in which the insurer is licensed. The notification must indicate the dollar amount of reserves being hedged by the option replication strategy and the impact on surplus of reporting the reserves based on the CARVVM-UMV.
- If at any point in time during the quarter the difference between the two changes exceeds 35% of the beginning of period market value of options embedded in the liabilities, the insurer is deemed to be out of compliance with the "Hedged as Required" criteria, and the Company must notify the Commissioner of Insurance in each state in which the insurer is licensed. The notification must indicate the dollar amount of reserves being hedged by the option replication strategy and the impact on surplus of reporting the reserves based on the CARVVM-UMV.

Drafting Note: The requirements discussed above deal with the situation in which the actual hedge underperforms relative to the expected hedge performance. The ability of an insurer to over-hedge may be constrained by other components of a state's regulatory framework including the state's investment article and regulations concerning the use of derivative instruments. For purposes of this Drafting Note, over-hedged means that at a particular point in time, the hedge portfolio exceeds the portfolio of liabilities being hedged. If over-hedged, the excess hedging instruments are excluded from the measurements required in Item 5 of the Hedged as Required Criteria.⁸

ATTACHMENT 3**Reasonableness of Assumptions Certification**

The following certification must be filed in conjunction with each quarterly and annual statutory financial statement filed with the appropriate regulatory official in each state in which the insurer does business. The certification must be signed by the appointed actuary.

I, (state name and professional designation), am the appointed actuary for (company name). I have reviewed the assumptions underlying the values assigned to all equity options used in the determination of the initial statutory reserves under the Enhanced Discounted Intrinsic Method for all equity indexed deferred annuity products issued or reinsured by (company name) and reported in the statutory financial statement as of (the date of valuation). The assumptions used to determine such option market values are reasonable in light of the relevant economic conditions prevalent at the time of issue of each policy valued using the Enhanced Discounted Intrinsic Method.

(Name of actuary)

(Signature of actuary)

(Date of certification)

ATTACHMENT 4**Reasonableness and Consistency of Assumptions Certification**

The following certification must be filed in conjunction with each quarterly and annual statutory financial statement filed with the appropriate regulatory official in each state in which the insurer does business. The certification must be signed by the appointed actuary.

I, (state name and professional designation), am the appointed actuary for (company name). I have reviewed the assumptions underlying the values assigned to all equity options used in the determination of statutory reserves for all equity indexed annuity products issued or reinsured by (company name) insurance company and reported in the statutory financial statement as of (the date of valuation). The assumptions used to determine such option market values are:

1. reasonable in light of current relevant economic conditions as of the date of valuation, and
2. are consistent with the comparable assumptions used to determine the statement value of any derivative instruments used to hedge the equity indexed based obligations embedded in the equity indexed annuities subject to this certification.

(Name of actuary)

(Signature of actuary)

(Date of certification)