

## Appendix 1a – Cash Flow Modeling for C-3 RBC Methodology

### General Approach

1. The underlying asset and liability model(s) are those used for year-end Asset Adequacy Analysis cash flow testing, or a consistent model.
2. Run the 200 scenarios (12 or 50) subset selected from the 10,000 scenarios for interest rates produced from the interest rateNAIC economic scenario generator, using significance values based on the 20-year US treasury rates.
3. The statutory capital and surplus position,  $S(t)$ , should be captured for every scenario for each calendar year-end of the testing horizon. The capital and surplus position is equal to statutory assets less statutory liabilities for the portfolio.
4. For each scenario, the C-3 measure is the most negative of the series of present values  $S(t) * pv(t)$ , where  $pv(t)$  is the accumulated discount factor for  $t$  years using 105 percent of the after-tax one-year US Treasury rates for that scenario. In other words:

$$pv(t) = \prod_{1}^{t} 1/(1+i_t)$$

Drafting Note: Language permitting discounting at the NAER was contemplated but ultimately removed while we work on what specifications are needed to go along with it. Comments are welcome on this item.

5. Rank the scenario-specific C-3 measures in descending order, with scenario number 1's measure being the positive capital amount needed to equal the very worst present value measure.
6. Taking the weighted average of a subset of the scenario specific C-3 scores derives the final C-3 after-tax factor. The C-3 scores are multiplied by the following series of weights:

For the 50 scenario set, the C-3 scores are multiplied by the following series of weights:

----- Weighting Table -----

Scenario Rank:	17	16	15	14	13	12	11	10	9	8	7	6	5
Weight:	0.02	0.04	0.06	0.08	0.10	0.12	0.16	0.12	0.10	0.08	0.06	0.04	0.02

The sum of these products is the C-3 charge for the product.

- (a) For the 12 scenario set, the charge is calculated as the average of the C-3 scores ranked 2 and 3, but cannot be less than half the worst scenario score.
7. If multiple asset/liability portfolios are tested and aggregated, an aggregate C-3 charge can be derived by first summing the  $S(t)$ 's from all the portfolios (by scenario) and then following Steps 2 through 6 above. An alternative method is to calculate the C-3 score by scenario for each product, sum them by scenario, then order them by rank and apply the above weights.
  8. Phase in: A company may elect to phase-in the effect of the new economic scenario requirements on C-3 RBC, using the following steps:
    - 1. Begin with the C-3 RBC amount from Step 7 for the Dec. 31, 2025 instructions for all business within the scope of the modeling requirements as of 12/31/25. Add to this the

amount of C-3 RBC computed in the same manner as the 2025 value for any reinsurance ceded that is expected to be recaptured in 2026 and in the scope of the modeling requirements. This amount is 2025 RBC.

- 2. Determine the C-3 RBC amount as of 12/31/25 using steps 2 - 7 for the same inforce business as in 1. This amount is 2025 RBC New.
- Determine the phase-in amount (PIA) as the excess of 2025 RBC New over 2025 RBC.
- For 12/31/2026, compute the C-3 RBC following steps 2 - 7 above, then subtract PIA times (2/3).
- For 12/31/2027, compute the C-3 RBC following steps 2 - 7 above, then subtract PIA times (1/3).

## Single Scenario C-3 Measurement Considerations

1. GENERAL METHOD - This approach incorporates interim values, consistent with the approach used for bond, mortgage and mortality RBC factor quantification. The approach establishes the risk measure in terms of an absolute level of risk (e.g., solvency) rather than volatility around an expected level of risk. It also recognizes reserve conservatism, to the degree that such conservatism has not been used elsewhere.
2. INITIAL ASSETS = RESERVES - Consistent with appointed actuary practice, the cash flow models are run with initial assets equal to reserves; that is, no surplus assets are used.
3. AVR - Existing AVR-related assets should not be included in the initial assets used in the C-3 modeling. These assets are available for future credit loss deviations over and above expected credit losses. These deviations are covered by C-1 risk capital. Similarly, future AVR contributions should not be modeled. However, the expected credit losses should be in the cash flow modeling. (Deviations from expected are covered by both the AVR and the C-1 risk capital.)
4. IMR - IMR assets should be used for C-3 modeling. (Also see #9 – Disinvestment Strategy.)
5. INTERIM MEASURE - Retained statutory surplus (i.e., statutory assets less statutory liabilities) is used as the year-to-year interim measure.
6. TESTING HORIZONS - Surplus adequacy should be tested over a period that extends to a point at which contributions to surplus on a closed block are immaterial in relationship to the analysis. If some products are being cash flow tested for Asset Adequacy Analysis over a longer period than the 3100 years generated by the interest-rateeconomic scenario generator, the scenario rates should be held constant at the year 3100 level for all future years. A consistent testing horizon is important for all lines if the C-3 results from different lines of business are aggregated.
7. TAX TREATMENT - The tax treatment should be consistent with that used in Asset Adequacy Analysis. Appropriate disclosure of tax assumptions may be required.
8. REINVESTMENT STRATEGY - The reinvestment strategy should be that used in Asset Adequacy Analysis modeling.
9. DISINVESTMENT STRATEGY - In general, negative cash flows should be handled just as they are in the Asset Adequacy Analysis. The one caveat is, since the RBC scenarios are more severe, models that depend on borrowing need to be reviewed to be confident that loans in the necessary volume are likely to be available under these circumstances at a rate consistent with the model's assumptions. If not, adjustments need to be made.

If negative cash flows are handled by selling assets, then appropriate modeling of contributions and withdrawals to the IMR need to be reflected in the modeling.

10. STATUTORY PROFITS RETAINED - The measure is based on a profits retained model, anticipating that statutory net income earned one period is retained to support capital requirements in future periods. In other words, no stockholder dividends are withdrawn, but policyholder dividends, excess interest, declared rates, etc., are modeled realistically and assumed, paid or credited.
11. LIABILITY and ASSET ASSUMPTIONS - The liability and asset assumptions should be those used in Asset Adequacy Analysis modeling. Disclosure of these assumptions may be required.
12. SENSITIVITY TESTING - Key assumptions shall be stress tested (e.g., lapses increased by 50 percent) to evaluate sensitivity of the resulting C-3 requirement to the various assumptions made by the actuary. Disclosure of these results may be required.
13. USE OF NON-PRESCRIBED SCENARIO GENERATORS - At the option of the company, interest rates may be generated in part or in full using non-prescribed scenario generators in lieu of the prescribed economic generators, provided that the scenarios thus generated do not result in a C-3 charge for the product as calculated in Step 6 that is materially lower than the C-3 charge for the product as calculated in Step 6 resulting from the use of the scenarios from the prescribed NAIC economic scenario generator as defined in Step 2 above.

## **Appendix 1b - Frequently Asked Questions for Cash Flow Modeling for C-3 RBC**

1. Where can the scenario generator be found? What is needed to run it?

The scenario generator is the Conning GEMS Economic Scenario Generator. Outputs may be found at the following website: <https://naic.conning.com/scenariofiles> a Microsoft Excel spreadsheet. By entering the Treasury yield curve at the date for which the testing is done, it will generate the sets of 50 or 12 scenarios. It requires Windows 95 or higher. This spreadsheet and instructions are available on the NAIC Web site at ([http://www.naic.org/cmte\\_e\\_rbc.htm](http://www.naic.org/cmte_e_rbc.htm)). It is also available on diskette from the American Academy of Actuaries.

2. The results may include sensitive information in some instances. How can it be kept confidential?

As provided for in Section 8 of the Risk-Based Capital (RBC) For Insurers Model Act, all information in support of and provided in the RBC reports (to the extent the information therein is not required to be set forth in a publicly available annual statement schedule), with respect to any domestic or foreign insurer, which is filed with the commissioner constitute information that might be damaging to the insurer if made available to its competitors, and therefore shall be kept confidential by the commissioner. This information shall not be made public or be subject to subpoena, other than by the commissioner and then only for the purpose of enforcement actions taken by the commissioner under the Risk-Based Capital (RBC) For Insurers Model Act or any other provision of the insurance laws of the state.

3. The definition of the annuities category talks about “debt incurred for funding an investment account...” Could you give a specific description of what is intended?

One example is a situation where an insurer is borrowing under an advance agreement with a federal home loan bank, under which agreement collateral, on a current fair value basis, is required to be maintained with the bank. This arrangement has many of the characteristics of a GIC, but is classified as debt.

4. The instructions specify that assumptions consistent with those used for Asset Adequacy Analysis testing be used for C-3 RBC, but my company cash flow tests a combination of universal life and annuities for that analysis and using the same assumptions will produce incorrect results. What was intended in this situation?

Where this situation exists, assumptions should be used for the risk-based capital work that are consistent with those used for the Asset Adequacy Cash Flow Testing. In other words, the assumptions used should be appropriate to the annuity component being evaluated for RBC and consistent with the overall assumption set used for Asset Adequacy Analysis.