# ESG Exposure 1/21/21: Scenario Picker Tool

# A Scenario Picker Tool (ESG Timeline Item #9) is being exposed for a public comment period. Please send comments to Reggie Mazyck ([RMazyck@naic.org](mailto:RMazyck@naic.org)) by close of business March 7th, 2021.

**Background**

One of the components of the Academy Interest Rate Generator which needs to be replaced is the Scenario Picker Tool. This tool creates subsets (i.e., 50, 200, 500, and 1000 scenarios) from the full set of 10,000 scenarios, which can be used to reflect the full distribution.

Currently, if a scenario subset is used in reserve calculations, VM-20 prescribes use of the scenario picker tool but VM-21 does not. Applicable VM language is shown below.

VM-20 Section 7.G.2.c:

Use of fewer scenarios rather than a higher number of scenarios is permissible as a model efficiency technique provided that:

1. The smaller set of scenarios is generated using the scenario picker tool provided within the prescribed scenario generator, and
2. The use of the technique is consistent with Section 2.G.

VM-21 Section 8.F:

1. For straight Monte Carlo simulation (with equally probable “paths” of fund returns), the number of scenarios should typically equal or exceed 1000. The appropriate number will depend on how the scenarios will be used and the materiality of the results. The company should use a number of scenarios that will provide an acceptable level of precision.

2. Fewer than 1,000 scenarios may be used provided that the company has determined through prior testing (perhaps on a subset of the portfolio) that the CTE values so obtained materially reproduce the results from running a larger scenario set.

3. Variance reduction and other sampling techniques are intended to improve the accuracy of an estimate more efficiently than simply increasing the number of simulations. Such methods can be used provided the company can demonstrate that they do not lead to a material understatement of results. Many of the techniques are specifically designed for estimating means, not tail measures, and could in fact reduce accuracy (and efficiency) relative to straight Monte Carlo simulation.

**Guidance Note: With careful implementation, many variance reduction techniques can work well for CTE estimators. For example, see Manistre, B.J., and Hancock, G. (2003), “Variance of the CTE Estimator,” 2003 Stochastic Modeling Symposium, Toronto, September 2003.**

**4. The above requirements and warnings are not meant to preclude or discourage the use of valid and appropriate sampling methods, such as Quasi Random Monte Carlo (QRMC), importance sampling or other techniques designed to improve the efficiency of the simulations (relative to pseudo-random Monte Carlo methods).**

**Scenario Picker Tool Methodology**

The proposed scenario picker tool follows the current Academy methodology (<https://www.actuary.org/sites/default/files/files/esg/2009_ESWG_tool.zip>) to create scenario subsets. Scenario subsets as of a given valuation date will contain the same scenarios for all users.

**Monthly Process**

Conning will run the Basic Data Set as of each month-end and produce the full set of 10,000 scenarios, along with four subsets containing 50, 200, 500, and 1,000 scenarios. This process will be completed in time to post the output by 4:00 PM Central Time on the first business day of the following month.

Note: Validation reports for the Basic Data Set and additional statistics will be delivered simultaneously with the scenario files. Users will be provided access to these items via a link from the PBR section on the NAIC’s website to the ESG landing page on Conning’s website.

Note: Rather than providing a scenario picker tool for users to run, Conning will deliver four scenario subsets (50, 200, 500, and 1,000) monthly. Users will not be able to pick a custom number of scenarios.

**12/31/2019 Scenario Subsets**

Scenario subsets produced as of 12/31/2019 will be provided shortly via a link from the [PBR section](https://content.naic.org/pbr_data.htm) on the NAIC’s website to the ESG landing page on Conning’s website. These will be selected from the full set of 10,000 scenarios included with the December 18th, 2020 exposure.

**Request for Comments**

Please send your comments to Reggie Mazyck ([RMazyck@naic.org](mailto:RMazyck@naic.org)) by close of business March 7th, 2021. Comments are appreciated on any aspect of the scenario picker tool, such as:

1. The methodology used in the proposed scenario picker tool,
2. The number and sizes of the subsets to be produced, and
3. The format and usability of the output.