

A Framework for Developing, Evaluating, and Implementing Economic Scenario Generators (ESGs) – ESG Model Governance

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ESG Model Governance – Agenda

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1. Background Considerations
2. The Importance of Model Governance
3. Core Components of an ESG Model Governance Program
4. Other Considerations

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Background Considerations

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- ❑ ESG model governance is concerned with the processes for ongoing scenario generation and delivery
- ❑ Any members of the American Academy of Actuaries (“the Academy”) who are involved in the production of the scenarios should consider what actuarial standards of practice (ASOPs) may apply
 - ❑ [*ASOP No. 56, Modeling*](#), is particularly relevant. Even for those who are not members of the Academy, this ASOP provides many elements of best practice as far as model governance is concerned and should be viewed as an important reference for the National Association of Insurance Commissioners (NAIC) and Conning.
- ❑ The [*Model Governance Practice Note*](#) developed by the Model Governance Practice Note Work Group of the Academy is also a very useful reference

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ASOP No. 56, *Modeling*, provides guidance to practicing actuaries with respect to using, reviewing, or evaluating models

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- Section 3.1.2 states actuaries “evaluating the model ... should confirm that, in the actuary’s professional judgment, the model reasonably meets the intended purpose.”
- Section 3.1.3 states that “[w]hen using the model, the actuary should make reasonable efforts to confirm that the model structure, data, assumptions, governance and controls, and model testing and output validation are consistent with the intended purpose.”
- Sections 3.2 and 3.4 also have important requirements in connection with model understanding.

As a general point, the ESGWG would like to reiterate the view previously communicated by Academy Life Practice Council work groups that the use of scenario sets generated by proprietary ESGs be permitted as an alternative option to scenario sets prescribed by the NAIC, subject to proper documentation on how the scenario sets were developed and why they are appropriate for statutory reserves and capital.



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The Importance of Model Governance

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- ASOP No. 56, *Modeling*, Section 3.5.2, Appropriate Governance and Controls, states:
 - ▣ “The actuary should use or, if appropriate, rely on others to use appropriate governance and controls to minimize model risk” to maintain the integrity of the model, and to avoid the introduction or use of unintentional or untested changes.

- Robust model governance processes will be critical to the ongoing delivery of scenarios for a number of reasons:
 - ▣ Mitigates the risk of output errors
 - ▣ Reduces the risk of selecting an incorrect (not fit-for-purpose) model & ensures it continues to be fit for purpose
 - ▣ Allows for the smoother, more efficient, production of scenarios
 - ▣ Increases transparency, which aids clarity and builds common understanding
 - ▣ Allows issues to get resolved effectively due to built-in preparedness & escalation procedures for when things go wrong
 - ▣ Gives the industry confidence and builds reputation for outside observers

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Core Components of an ESG Model Governance Program

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- **Roles & Responsibilities**—Define and document responsibilities for *all* stakeholders involved in the ongoing production of scenarios
- **Model Selection and Review Processes**—Establish processes for selecting fit-for-purpose models and for reviewing and validating the model and its outputs
- **Sign-off Protocols**—Establish where sign-offs need to take place
- **Change Control Procedures**—Establish processes for authorizing, reviewing, and testing changes to the model and calibration parameters
- **Access Controls**—For any aspects of the scenario generation process that are outside of Conning’s control, define processes for limiting access to models or processes through access authorization and periodic access review
- **Documentation**—This flows throughout the entire governance process. Documentation of all of the agreed upon processes and procedures should be produced, plus:
 - Appropriate documentation covering each published scenario set
 - Documentation of ongoing model updates and assumption changes



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The Importance of Documentation: The NAIC's View

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- Deliverable I of NAIC RFP #2053
 - “Full documentation on the ESG specifications, calibration, and tools.”
- NAIC May 2020 Q&A
 - Q: Is the level of detail in the documentation expected to be comparable to the existing Academy Interest Rate Generator (AIRG) documentation, more, or less detailed? Does the NAIC intend on making the documentation public (like existing documentation on AIRG), or private (for NAIC eyes only)?
 - A: The documentation is expected to be robust and available to ESG end users. The quality of the documentation provided will be judged as one of the vendor selection criteria. Note that Section III.L of the RFP requires information on how end-users of the ESG will be able to generate scenarios on the fly through a mechanism such as software licensing, an application programming interface (API), and/or available full documentation of the technical workings of the ESG.
- *Note, additional information on the AIRG is available at the following webpage:*
 - <https://www.soa.org/4a20d1/globalassets/assets/files/static-pages/research/2021-academy-interest-rate-generator-faq.pdf>



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The Importance of Documentation: Comprehensive model documentation is highlighted in ASOP No. 56 and the Practice Note

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- ASOP No. 56, *Modeling*, and the *Model Governance Practice Note* discuss several important aspects of model documentation:
 - The intended purpose of the model
 - The conceptual framework of the model, including key methodologies, assumptions, and parameters
 - Model risks and potential limitations, including any approximations and shortcuts used
 - Data inputs, outputs, formats, and reports
 - Processes used to update assumptions, parameters, and other model data
 - Process maps identifying key controls and data handoff points
 - Applicable vendor or third-party documentation and the rationale for the selection of options where options exist

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Details: Some immediate questions that need to be addressed

- What will final model documentation look like?
- What reports, statistics, charts, etc. will accompany each scenario set?
- How is “validation” defined and how will scenario sets be validated? What will the sign-off protocols be? What parties will be involved and what will their roles be? How will duties be segregated?
- What happens if a scenario set “fails” the NAIC’s validation, or does something unexpected?
- What aspects of the model will be updated or changed each month, each year? How will changes to the model be performed (formula/algorithm/judgment), controlled, documented, reviewed, and signed off on? For example, what will the process and frequency be for updating long-term mean reversion points?
- How will changes to initial conditions, and their impact on scenario sets, be monitored?
- What is the regular timeline and process for recalibration timeline? What would trigger an “off-cycle” recalibration and how is that monitored, e.g., can a recalibration be triggered by significant changes to initial conditions or Federal Reserve policy that may change forward-looking expectations?
- What comprises user support (“help desk”)?



Other Considerations

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- Field testing
 - As a best practice, on-going field testing should be built into the governance process for where there have been significant changes to ESG models, assumptions, and calibrations before final launch. This can be viewed as a form of impact analysis.
- Industry alerts on updates to the ESG
 - How can updates on the ongoing developments of the statutorily prescribed scenarios be more widely disseminated across the industry?
 - E.g., Besides valuation, risk and pricing, practitioners need to be aware of developments
 - Add ESG section to NAIC's PBR landing page
- Retention of documents on the NAIC website
 - There should be a careful record of dates and versions for official exposure documents. Previously some documents have been removed and replaced with no version control record.
 - E.g., Have documentation in a single document, with controlled updates and versioning

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Questions



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Questions?

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