CASUALTY ACTUARIAL AND STATISTICAL (C) TASK FORCE

Casualty Actuarial and Statistical (C) Task Force Dec. 7, 2021, Minutes
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CAS Presentation (Attachment Eleven)

https://naiconline.sharepoint.com/w:/r/sites/NAICSupportStaffHub/Member%20Meetings/Fall%202021/TF/CasAct/Contents.docx?d=w2c3348f29cd244cd8c952483f9895ce&csf=1&web=1&e=cyNcJN
The Casualty Actuarial and Statistical (C) Task Force met Dec. 7, 2021. The following Task Force members participated: Grace Arnold, Chair, represented by Phil Vigliaturo (MN); James J. Donelon, Vice Chair, represented by Nichole Torbila (LA); Jim L. Ridling represented by Daniel Davis (AL) Evan G. Daniels represented by Tom Zuppan (AZ); Ricardo Lara represented by Lynne Wehmuller (CA); Michael Conway represented by Mitchell Bronson (CO); Andrew N. Mais represented by Wanchin Chou (CT); Karima M. Woods represented by David Christhilf (DC); David Altmaier represented by Greg Jaynes (FL); Colin M. Hayashida represented by Randy Jacobson (HI); Doug Ommen represented by Travis Grassel (IA); Dana Popish Severinghaus represented by Anthony Bredel and Judy Mottar (IL); Vicki Schmidt represented by Nicole Boyd (KS); Kathleen A. Birane represented by Robert Baron and Walter Dabrowski (MD); Eric A. Cioppa represented by Sandra Darby (ME); Anita G. Fox represented by Kevin Dyke (MI); Chlora Lindley-Myers and Cynthia Amann and Julie Lederer (MO); Mike Causey represented by Kevin Conley and Arthur Schwartz (NC); Chris Nicolopoulos represented by Christian Citarella (NH); Russell Toal and Anna Krylova (NM); Judith L. French represented by Tom Botsko (OH); Glen Mulready represented by Andrew Schallhorn (OK); Andrew R. Stolfi represented by David Dahl (OR); Jessica K. Altman represented by Michael McKenney (PA); Cassie Brown represented by J'ne Byckovski and Miriam Fisk (TX); Michael S. Pleciak represented by Rosemary Raszka (VT); Mike Kreidler represented by Eric Slavich (WA); and Allan L. McVey represented by Juanita Wimmer (WV).

1. **Adopted its Nov. 17, Nov. 9, Oct. 19, Oct. 12, Aug. 20, and Summer National Meeting Minutes**

The Task Force met Nov. 9, Oct. 19, and Oct. 12 and held e-votes ending on Nov. 17 and Aug. 20. During its e-vote ending on Nov. 17, the Task Force adopted the *Report on Profitability by Line by State* (Profitability Report). During its Nov. 9 meeting, the Task Force took the following action: 1) adopted a decision to discontinue requiring continuing education (CE) categorization by Appointed Actuaries in 2023; and 2) adopted its 2022 proposed charges. During its Oct. 19 and Oct. 12 meetings, the Task Force took the following action: 1) adopted its *Regulatory Guidance on Property and Casualty Statutory Statements of Actuarial Opinion, Actuarial Opinion Summaries, and Actuarial Reports for the Year 2021* (Regulatory Guidance); 2) adopted a response to the Blanks (E) Working Group regarding proposal 2021-11BWG; and 3) heard a report on the NAIC Rate Model Technical Reviews. During its e-vote ending on Oct. 24, the Task Force adopted a comment letter on the second exposure draft of the *U.S. Qualification Standards* to send to the American Academy of Actuaries (Academy).

2. **Adopted the Report of the Actuarial Opinion (C) Working Group**

Ms. Krylova said the Actuarial Opinion (C) Working Group met Sept. 23, Sept. 8, and Sept. 2 and adopted its Regulatory Guidance. Ms. Krylova said one of the key changes was to mention that the state insurance regulators expect to establish a deadline for the Appointed Actuary’s qualification documentation submission to the insurer’s Board of Directors in the 2022 Statement of Actuarial Opinion (SAO) Instructions.

Ms. Krylova made a motion, seconded by Mr. Botsko, to adopt the report of the Actuarial Opinion (C) Working Group, including its Sept. 23 (Attachment Five) and Sept. 8 and Sept. 2 (Attachment Six) minutes. The motion passed unanimously.

3. **Adopted the Report of the Statistical Data (C) Working Group**

Ms. Darby said the Statistical Data (EX) Working Group met in regulator-to-regulator sessions and took the following action: 1) researched the ability to collect and publish auto and home premium and exposures under an accelerated timeline; 2)
Draft Pending Adoption

adopted the Profitability Report; 3) adopted the *Competition Database Report* (Competition Report); and 4) adopted the *Auto Insurance Database Report* (Auto Report) to be considered by the Task Force before the end of December. Ms. Darby said the Working Group is continuing to work on the *Dwelling Fire, Homeowners Owner-Occupied, and Homeowners Tenant and Condominium/Cooperative Unit Owner’s Insurance Report* (Homeowners Report).

Ms. Darby made a motion, seconded by Mr. Chou, to adopt the report of the Statistical Data (C) Working Group. The motion passed unanimously.

4. **Exposed the Project #2019-49 Proposal**

Mr. Hay presented a proposal regarding the referred Project #2019-49: Retroactive Reinsurance Exception. His presentation included background information about Schedule P reporting and *Statement of Statutory Accounting Principles (SSAP) No. 62R—Property and Casualty Reinsurance*, discussion topics, a proposal, and alternative actions not proposed (Attachment Seven).

Ms. Darby made a motion, seconded by Mr. Chou, to expose a proposed answer to the referral Project #2019-49, as presented by a drafting group, for a 45-day public comment period ending Jan. 20, 2022.

5. **Exposed Random Forest Information Items and Glossary**

Sam Kloese (NAIC) presented background about random forest models (Attachment Eight) and requested feedback on the regulatory review of random forest models. He presented an exhibit of random forest information items, modeled from the appendix of generalized linear models (GLMs) information items in the *Regulatory Review of Predictive Models* white paper and a proposed glossary of random forest model terminology.

Mr. Dahl made a motion, seconded by Ms. Darby, to expose the NAIC staff’s proposed random forest information items and glossary (Attachment Nine) for a 60-day public comment period ending Jan. 20, 2022.

6. **Heard Presentations from Professional Actuarial Associations**

Dee Dee Mays (Academy) presented the activities of the Academy’s Casualty Practice Council, and Derek Freihaut (Academy) described the activities of the Committee on Property and Liability Financial Reporting (COPLFR) (Attachment Ten).

Brian Fannin (Casualty Actuarial Society—CAS) presented about CAS research activity (Attachment Eleven).

7. **Discussed Other Matters**

Mr. Vigliaturo said proposal 2021-11BWG was not adopted by the Blanks (E) Working Group. Given that result, he said he expects the Property and Casualty Insurance (C) Committee to charge the Statistical Data (C) Working Group with expediting the collection and publication of auto and home premium and exposure data from statistical agents.

Having no further business, the Casualty Actuarial and Statistical (C) Task Force adjourned.

CASTF Minutes 120721
The Casualty Actuarial and Statistical (C) Task Force conducted an e-vote that concluded Nov. 17, 2021. The following Task Force members participated: James J. Donelon, Vice Chair, represented by Nichole Torblaa (LA); Lori K. Wing-Heier represented by Tom Zuppan (AZ); Ricardo Lara represented by Lynne Wehmueller (CA); Michael Conway represented by Mitchell Bronson (CO); Andrew N. Mais represented by Wanchin Chou (CT); Karima M. Woods represented by David Christhilf (DC); David Altmaier represented by Christina Huff (FL); Colin M. Hayashida represented by Kathleen Nakasone (HI); Doug Ommen represented by Travis Grassel (IA); Dana Popish Severinghaus represented by Judy Mottar (IL); Vicki Schmidt represented by Nicole Boyd (KS); Eric A. Cioppa represented by Sandra Darby (ME); Anita G. Fox represented by Kevin Dyke (MI); Chlora Lindley-Myers and Cynthia Amann (MO); Troy Downing represented by Mari Kindberg (MT); Chris Nicolopoulos represented by Christian Citarella (NH); Marlene Caride represented by Carl Sornson (NJ); Russell Toal and Anna Krylova (NM); Judith L. French represented by Tom Botsko (OH); Glen Mulready represented by Andrew Schallhorn (OK); Andrew R. Stolfi represented by David Dahl (OR); Raymond G. Farmer represented by Will Davis (SC); Cassie Brown represented by J’ne Byckovski (TX); Michael S. Pieciak represented by Rosemary Raszka (VT); Mike Kreidler represented by Eric Slavich (WA); and Allan L. McVey and Juanita Wimmer (WV).

1. **Adopted the Profitability Report**

The Task Force conducted an e-vote to consider adoption of the *Report on Profitability by Line by State* (Profitability Report). The motion passed unanimously.

Having no further business, the Casualty Actuarial and Statistical (C) Task Force adjourned.

CASTF 11-17 Evote
The Casualty Actuarial and Statistical (C) Task Force met Nov. 9, 2021. The following Task Force members participated: Grace Arnold, Chair, represented by Phil Vigliaturo (MN); James J. Donelon, Vice Chair, represented by Nichole Torblaa (LA); Lori K. Wing-Heier represented by David Heppen (AK); Jim L. Ridling represented by Daniel J. Davis (AL); Ricardo Lara represented by Lynne Wehmueller (CA); Michael Conway represented by Mitchell Bronson (CO); Andrew N. Mais represented by Wanchin Chou (CT); David Altmairer represented by Greg Jaynes (FL); Colin M. Hayashida represented by Randy Jacobson (HI); Doug Ommen represented by Travis Grassel (IA); Dana Popish Severinghaus represented by Reid McClintock (IL); Vicki Schmidt represented by Nicole Boyd (KS); Kathleen A. Birrane represented by Ron Coleman and Walter Dabrowski (MD); Eric A. Cioppa represented by Sandra Darby (ME); Anita G. Fox represented by Kevin Dyke (MI); Chlora Lindley-Myers represented by Julie Lederer (MO); Troy Downing represented by Mari Kindberg (MT); Mike Causey represented by Arthur Schwartz (NC); Chris Nikolopoulos represented by Christian Citarella (NH); Barbara D. Richardson represented by Gennady Stolyarov (NV); Judith L. French represented by Tom Botsko (OH); Glen Mulready represented by Andrew Schallhorn (OK); Andrew R. Stolfi represented by David Dahl (OR); Jessica K. Altman represented by Kevin Clark (PA); Raymond G. Farmer represented by Ryan Bailey (SC); Cassie Brown represented by J’ne Byckovski (TX); Michael S. Pieciak represented by Mary Richter (VT); and Mike Kreidler represented by Eric Slavich (WA).

1. **Received a Report from the Statistical Data (C) Working Group**

Ms. Darby said the Statistical Data (C) Working Group will be reviewing the *Competition Database Report*; the *Dwelling Fire, Homeowners Owner-Occupied, and Homeowners Tenant and Condominium/Cooperative Unit Owner’s Insurance Report* (Homeowners Report); and the *Auto Insurance Database Report* soon and will consider them for adoption prior to the Fall National Meeting.

Ms. Darby made a motion, seconded by Mr. Chou, to adopt the Statistical Data (C) Working Group’s report. The motion passed unanimously.

2. **Adopted a Decision Based on the CAS Study on Appointed Actuary CE**

Mr. Vigliaturo said the continuing education (CE) charge is to “work with the Casualty Actuarial Society (CAS) and the Society of Actuaries (SOA) to identify: 1) what types of learning property/casualty (P/C) Appointed Actuaries are using to meet CE requirements for specific qualification standards today; and 2) whether more specificity should be added to the P/C Appointed Actuaries’ CE requirements to ensure that CE is aligned with the educational needs for a P/C Appointed Actuary. He said this charge resulted from the Executive (EX) Committee’s Appointed Actuary Job Analysis project, was a recommendation from the NAIC’s consultant, and was adopted by the Property and Casualty Insurance (C) Committee as a charge for the Task Force. The Task Force started work on this charge by asking the CAS and SOA to collect data on Appointed Actuaries’ CE and requiring Appointed Actuaries to categorize their CE using specified categories.

Mr. Vigliaturo said the first part of the charge was completed with the CAS’ report on Oct. 12. He said what remains of the charge is to determine if there is any reason to believe that Appointed Actuaries are not remaining competent and taking appropriate CE. No one expressed concerns with Appointed Actuaries’ CE selections.

Ms. Stolyarov made a motion, seconded by Mr. Schwartz, to discontinue requiring CE categorization and the reporting of CE to the CAS and SOA in the 2022 Statement of Actuarial Opinion instructions. The motion passed unanimously.

3. **Adopted its 2022 Proposed Charges**

Mr. Vigliaturo said the CE charge is eliminated for 2022 because of the action taken to discontinue CE categorization and reporting. Mr. Vigliaturo presented some proposed additions to the charges regarding predictive analytics work. The Task Force agreed to add two proposed predictive analytics charges with revised wording.

Ms. Lederer made a motion, seconded by Mr. Dyke, to adopt the Task Force’s 2022 proposed charges as amended (Attachment Two-A). The motion passed unanimously.
Having no further business, the Casualty Actuarial and Statistical (C) Task Force adjourned.
2022 Proposed Charges

CASUALTY ACTUARIAL AND STATISTICAL (C) TASK FORCE

The mission of the Casualty Actuarial and Statistical (C) Task Force is to identify, investigate, and develop solutions to actuarial problems and statistical issues in the property/casualty (P/C) insurance industry. The Task Force’s goals are to assist state insurance regulators with maintaining the financial health of P/C insurers; ensuring that P/C insurance rates are not excessive, inadequate or unfairly discriminatory; and ensuring that appropriate data regarding P/C insurance markets are available.

Ongoing Support of NAIC Programs, Products, or Services

1. The Casualty Actuarial and Statistical (C) Task Force will:
   A. Provide reserving, pricing, ratemaking, statistical, and other actuarial support to NAIC committees, task forces and/or working groups. Propose changes to the appropriate work products (with the most common work products noted below) and present comments on proposals submitted by others relating to casualty actuarial and statistical matters. Monitor the activities, including the development of financial services regulations and statistical (including disaster) reporting, regarding casualty actuarial issues.
      1. Property and Casualty Insurance (C) Committee – ratemaking, reserving or data issues.
      2. Blanks (E) Working Group – P/C annual financial statement, including Schedule P; P/C quarterly financial statement; P/C quarterly and annual financial statement instructions, including Statement of Actuarial Opinion (SAO) and Actuarial Opinion Summary Supplement.
   B. Monitor national casualty actuarial developments and consider regulatory implications.
      1. Casualty Actuarial Society (CAS) – Statements of Principles and Syllabus of Basic Education.
      3. Society of Actuaries (SOA) – general insurance track’s basic education.
   C. Facilitate discussion among state insurance regulators regarding rate filing issues of common interest across the states through the scheduling of regulator-only conference calls.
   D. Conduct the following predictive analytics work:
      1. Facilitate training and the sharing of expertise through predictive analytics webinars (Book Club).
      2. Review the completed work on artificial intelligence (AI) from other Committee groups. Coordinate with the Innovation, Cybersecurity, and Technology (H) Committee on the tracking of new uses of AI, auditing algorithms, product development, and other emerging regulatory issues, in as far as these issues contain a Task Force component.
      3. With NAIC staff assistance, discuss guidance for regulatory review of tree-based models and generalized additive models (GAMs) used in rate filings.
2. The **Actuarial Opinion (C) Working Group** will:
   A. Propose revisions to the following, as needed, especially to improve actuarial opinions, actuarial opinion summaries, and actuarial reports, as well as the regulatory analysis of these actuarial documents and loss and premium reserves:
      3. *Annual Statement Instructions—Property/Casualty.*
      4. Regulatory guidance to appointed actuaries and companies.
      5. Other financial blanks and instructions, as needed.

3. The **Statistical Data (C) Working Group** will:
   A. Consider updates and changes to the *Statistical Handbook of Data Available to Insurance Regulators.*
   B. Consider updates and developments, provide technical assistance, and oversee the production of the following reports and databases. Periodically evaluate the demand and utility versus the costs of production of each product.
      1. *Dwelling Fire, Homeowners Owner-Occupied, and Homeowners Tenant and Condominium/Cooperative Unit Owner’s Insurance.*
      2. *Auto Insurance Database.*

NAIC Support Staff: Kris DeFrain/Jennifer Gardner/Libby Crews

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The Casualty Actuarial and Statistical (C) Task Force met Oct. 12 and Oct. 19, 2021. The following Task Force members participated: Grace Arnold, Chair, represented by Phil Vigliaturo (MN); James J. Donelon, Vice Chair, represented by Nichole Torblaa (LA); Lori K. Wing-Heier represented by David Heppen (AK); Evan G. Daniels represented by Tom Zuppan (AZ); Ricardo Lara represented by Mitra Sanandajifar and Lynne Wehmueller (CA); Michael Conway represented by Mitchell Bronson (CO); Andrew N. Mais represented by Wanchin Chou (CT); Karima M. Woods represented by David Christhilf (DC); David Altmaier represented by Sandra Starnes (FL); Colin M. Hayashida represented by Randy Jacobson (HI); Doug Ommen represented by Travis Grassel (IA); Dana Popish Severinghaus represented by Reid McClintock and Judy Mottar (IL); Amy L. Beard represented by Stephen Chamblee (IN); Vicki Schmidt represented by Nicole Boyd (KS); Kathleen A. BIRRane represented by Ron Coleman and Walter Dabrowski (MD); Eric A. Cioppa represented by Sandra Darby (ME); Anita G. Fox represented by Kevin Dyke (MI); Clhora Lindley-Myers represented by Julie Lederer (MO); Troy Downing represented by Mari Kindberg (MT); Mike Causey represented by Arthur Schwartz (NC); Chris Nicolopoulos represented by Christian Citarella (NH); Russell Toal represented by Anna Krylova (NM); Barbara D. Richardson represented by Gennady Stolyarov (NV); Judith L. French represented by Maureen Motter (OH); Andrew R. Stolfi represented by David Dahl (OR); Jessica K. Altman represented by James DiSanto (PA); Raymond G. Farmer represented by Will Davis (SC); Cassie Brown represented by J’ne Byckovski and Miriam Fisk (TX); Michael S. Pieciak represented by Rosemary Raszka (VT); and Mike Kreidler represented by Eric Slavich (WA). Also participating was: Gordon Hay (NE).

1. **Adopted Regulatory Guidance and Received a Report from the Actuarial Opinion (C) Working Group**

Ms. Krylova said the Actuarial Opinion (C) Working Group met Sept. 2 and Sept. 8 to finalize the *Regulatory Guidance on Property and Casualty Statutory Statements of Actuarial Opinion, Actuarial Opinion Summaries, and Actuarial Reports for the Year 2021* *(Regulatory Guidance).* Substantive changes include Schedule P reconciliation and notification about a future expected change to create a deadline of submission of qualification documentation to the Board of Directors. The Working Group adopted the Regulatory Guidance.

Ms. Krylova made a motion, seconded by Ms. Darby, to adopt the Actuarial Opinion (C) Working Group’s report, including the 2021 Regulatory Guidance. The motion passed unanimously.

2. **Received a Report from the Statistical Data (C) Working Group**

Ms. Darby said the Statistical Data (C) Working Group updated its *Report on Profitability by Line by State* *(Profitability Report)* and will consider it for adoption on Oct. 20. Data for auto and homeowners have been received.

Ms. Darby made a motion, seconded by Mr. Chou, to adopt the Statistical Data (C) Working Group’s report. The motion passed unanimously.

3. **Adopted a Response to the Blanks (E) Working Group Regarding Proposal 2021-11BWG**

Mr. Vigliaturo said proposal 2021-11BWG (Attachment Three-A) was submitted by Birny Birnbaum (Center for Economic Justice—CEJ), one of the NAIC consumer representatives, to the Blanks (E) Working Group earlier this year. The Task Force was asked for comments on the original proposal and responded, “CASTF is ready to provide guidance regarding the implementation of the Blanks proposal 2021-11BWG if that proposal moves forward. Furthermore, CASTF requests that Birny Birnbaum submit the most current up-to-date version of the proposal for further consideration and suggestions from CASTF.”

On July 22, the Working Group met and discussed a modified proposal. As noted in the July 22 letter from the Working Group, the Task Force is asked to review the modified proposal and comment. Mr. Vigliaturo said the question of whether the data would be useful for solvency reporting is a question being handled under the Financial Condition (E) Committee, so he suggested that the Task Force focus on three things: 1) whether the Task Force can get some data from statistical agents under similar timing as the annual statement reporting; 2) whether the data elements in the blanks proposal are defined appropriately; and 3) whether the Task Force wishes to support the proposal.
Ms. Darby reported that the Statistical Data (C) Working Group met Sept. 23 and Oct. 7 to discuss the charge from the Task Force to gather information on whether the timeline can be sped up on receipt of premium and exposure information from outside parties. NAIC staff asked submitting statistical agents and residual markets if their current timeline for submitting data could be sped up. NAIC staff also gathered data on what percentage of the total data each party was submitting.

The Working Group received varied responses from the submitting parties. Because statistical agents are not collecting data in the same way, they cannot provide the data to the NAIC on the same timeline. Additionally, statistical agents indicated that not only do they need to wait for company submissions, but they also need time for data quality checks and communication with companies for any data issues.

For the Dwelling Fire, Homeowners Owner-Occupied, and Homeowners Tenant and Condominium/Cooperative Unit Owner’s Insurance Report (Homeowners Report), in the year following the data year, the Working Group would be able to collect 32% of premium data by the end of May, 60% of premium data by the end of August, and 99% of premium data by the end of November. The Working Group initially believed California would still only be able to provide its data every other year, but it has since indicated that it would be able to use another data set to send in average premium data in June of the year following the data year. All data would still need to be aggregated by NAIC staff, making any output report available in December following the data year, at the earliest.

For the Auto Insurance Database Report (Auto Report), in the year following the data year, the Working Group would be able to collect 32% of premium data by the end of May, 49% of premium data by the end of August, and 91% of premium data by the end of November. Texas data, which makes up the remaining 9% of data, would not be provided until January of the next year. Again, all data would have to be aggregated and reviewed by NAIC staff before a report could be produced. The responses for the Auto Report are based only on the collection of premium and exposure data. Loss data cannot be provided on this same timeline.

Ms. Darby said the Working Group has fulfilled its charge as requested by the Task Force. The Working Group is open to continuing the discussion of data collection, including discussion on the data collection and submission process outlined in the Statistical Handbook, that may address the need for more timely data.

The Task Force discussion included the following: 1) statistical premium and exposure data would be increased by about 12 months; 2) both the statistical report speed increase and the annual statement proposal could be implemented; 3) an option would be to implement the financial statement proposal in the short term and speed up the statistical data in the longer term; 4) data would be useful to assess the impacts of sudden changes, such as COVID-19; 5) the quarterly part of the proposal would not be broken out by state and would not be useful; 6) a cost benefit analysis should be conducted; 7) 100-year events may be better handled using a data call rather than through annual reporting; 8) average premium could be misleading because the same data could support multiple explanations (e.g., moving policies between legal entities in a group); 9) companies may consider exposures by state to be competitive information and not want it to be in a public filing; 10) the data is company-by-company, whereas the statistical data is aggregated; 11) the exposure data would be useful for rate filings so data can be reconciled; 12) exposure data is an element not currently collected anywhere in the annual statement; 13) the proposal can be expanded to other lines of business over time; and 14) exposure basis by line of business has not been discussed by the Task Force.

Mr. Birnbaum said the Working Group should take a more holistic review of modernizing and re-engineering statistical reporting and not make changes one piece at a time. He said the financial statement approach is a less expensive plan and would be beneficial to consumer representatives, financial analysts, and academics. He submitted his stance in writing (Appendix 1). He added that the quarterly reports do not contain by state by line information; thus, this proposal did not include that by quarter. He said the blanks proposal is consistent with the NAIC State Ahead initiative to modernize regulatory processes. He reiterated that this data is financial data and completely consistent with the financial statement aim. He said the data would be available in four to five months; statistical data will not be available for at least 12 months.

Continuing the discussion on the Oct. 19 meeting, interested parties Ralph Blanchard (Travelers), Jonathan Rodgers (National Association of Mutual Insurance Companies—NAMIC), Rachel Underwood (Cincinnati Insurance Companies), and Angela Gleason (American Property Casualty Insurance Association—APCIA), voiced opposition to the blanks proposal. Mr. Blanchard said the data is statistical; the three main financial reports are cash flow statements, income statements, and balance sheets. He said financial data has a dollar sign in front of it; calling it statistical data borders on dishonest. The cost of this proposal has not been calculated; it is usually cheaper to speed up an existing process than to create a new one. The financial systems are not set up to collect exposure data. Mr. Blanchard said there is a big difference between financial systems and
statistical systems. He said it is not a trivial exercise for the companies to report this requested information on these financial statements. He added that there has been no specificity with how the data would be used. Mr. Rodgers said the chief concern is that the request is to add statistical-level data to the blanks. There will be several unintended consequences. NAMIC would like a clear explanation of how the data will be used. Mr. Rodgers said the statistical data can be collected a full year earlier through statistical agents, and that should be the way forward. The purpose of the blanks is to communicate financial information in a uniform format; this data is not financial. Mr. Rodgers said this proposal could lead to requesting more statistical data in the financial statements. He said companies share the concern of data reporting errors and the resulting amended financial statements; statistical agents do data quality checks. Audit issues would be material. Currently, reports are aggregated and produced annually; the data is being proposed to be by company and produced quarterly. State insurance regulators can request the information. Ms. Underwood said the proposal is to get industry-level, aggregate premium per exposure by state. The sponsor previously responded that if the data could be available sooner, this proposal would not be needed. The time to publish statistical data can be cut in half, and preliminary results could be published even earlier. She said this data does not change significantly, especially quarter-by-quarter. Statistical agents need two months to perform data quality checks, but this proposal is asking companies to have final reports in less than two months. Ms. Gleason agreed with previous comments, and she looks forward to understanding the reasons for the reporting and desired use. She said everyone likes data, but there are valid data security concerns. She said the Working Group proposed a method that is in line with *State Ahead* because it tried to modernize and propose a way forward.

Mr. Vigliaturo said preliminary state views were gathered by NAIC staff about how Task Force members proposed to respond to the Blanks (E) Working Group, asking whether to voice support, voice opposition, or remain neutral as a Task Force and the reasons each state would use to support their position. His plan was to see if there is a strong majority for any view and then propose a fitting motion. Unfortunately, the strawman vote with 20 Task Force states responding, does not give much direction because the votes are about evenly split between supporting and opposing the proposal. Mr. Vigliaturo suggested that the Task Force submit a state-by-state Task Force member survey response, but with final votes from states that may differ what was submitted on the survey. He asked the states to report to NAIC staff by Oct. 22.

Mr. Vigliaturo said states would be identified, and any comments made in the survey will be forwarded. Mr. Birnbaum said the statistical report is not a direct comparison to the blanks proposal because it is not company-by-company.

Mr. Chou made a motion, seconded by Ms. Darby, to respond to the Blanks (E) Working Group on Oct. 22 with the results of individual states’ survey responses and the Statistical Data (C) Working Group report about the potential to speed up premium and exposure statistical data collection and reporting. The motion passed unanimously.

4. Received a Report from the CAS on Appointed Actuary CE

Mr. Vigliaturo said the Executive (EX) Committee hired a consultant a few years ago to conduct a job analysis on the property/casualty (P/C) Appointed Actuary. One of the recommendations in the consultant’s report was to evaluate the continued competence of Appointed Actuaries after obtaining of credentials. With that charge given to the Task Force, the Task Force asked the Casualty Actuarial Society (CAS) and the Society of Actuaries (SOA) to collect data on Appointed Actuaries’ continuing education (CE) and required Appointed Actuaries to categorize their CE using the Task Force’s adopted categories. With those actions taken, what remains of the continued competence charge is to work with the CAS and the SOA to identify: 1) what types of learning P/C Appointed Actuaries are using to meet CE requirements for “Specific Qualification Standards” today; and 2) whether more specificity should be added to the P/C Appointed Actuaries’ CE requirements to ensure that CE is aligned with the educational needs for a P/C Appointed Actuary.

Ken Williams (CAS) described the written report submitted by the CAS (Attachment Three-B) in fulfillment of the Task Force’s first charge. He said the CAS reviewed over 100 members to evaluate CE compliance. A higher percentage of appointed actuaries participate in the process. There were 41 Appointed Actuaries and 37 used the required categorization. Mr. Williams said reserves and requirements were the highest number of hours, and reinsurance was the lowest; there were a lot of “other,” which is mostly COVID-19-related. He said the report shows the number of Appointed Actuaries who reported learning in a category and provided the average number of hours.

Mr. Vigliaturo said the aim is for the Task Force to: 1) discuss any concerns with the types of CE being taken by Appointed Actuaries; 2) decide whether there is a need to take any action to require that specific CE be taken by Appointed Actuaries; and 3) decide whether to continue to require the CE categorization or end this reporting requirement in the SAO instructions.
On its Oct. 19 call, the Task Force began discussion of the second part of the Task Force’s charge. Mr. Vigliaturo asked: 1) whether anyone has any concerns with the types of CE being taken by Appointed Actuaries; 2) whether it appears that Appointed Actuaries are taking relevant CE to continue to update skills; and 3) whether the Task Force has concerns that there is a need to take any further action, such as creating requirements for certain types of CE. He said if the Task Force has no concerns, then the question becomes whether to continue to require the CE categorization or end this reporting requirement in the 2022 SAO instructions. Mr. Schwartz said the categories originally adopted by the Task Force are excessive. He said he would want to make the categories fewer, the reporting simpler, and the process streamlined.

Ms. Lederer said before implementation of the CE categorization, she submitted a comment letter on this proposal and stated that she did not know what she would do with the resulting information. She said the reserving category is well represented, so perhaps actuaries find this topic to be important, or perhaps Appointed Actuaries are spending too much time on this category. She said it might be worth discussing not requiring the categorization in the future. Alternatively, she said state insurance regulators should discuss the findings and metrics that could lead to the decision to remove categorization requirements. Mr. Vigliaturo said he agrees that it was difficult to classify presentations because one presentation could contain multiple categories.

The Task Force will continue this discussion on its Nov. 9 call.

5. **Received a Report on Project #2019-49**

Mr. Hay said he drafted a response to the referral of Project #2019-49—Retroactive Reinsurance Exception, and he will have a final proposal for the Task Force for the meeting in December. His draft response includes two proposals regarding Statement of Statutory Accounting Principles (SSAP) No. 62R—Property and Casualty Reinsurance paragraph 36. First, add intercompany pooling agreements to the exceptions in SSAP No. 62R; second, modify the Schedule P instructions to require explanation for each of the steps in SSAP No. 62R paragraph 36 exceptions. Mr. Hay said the issues involve structured settlements, reinsurance commutations, innovations, runoff agreements, and affiliated reinsurance that qualify for prospective reinsurance accounting treatment.

Mr. Hay said he does not have proposed resolutions for at least two issues raised in the Statutory Accounting Principles (E) Working Group. Except for intercompany reporting, he does not see anything confusing in SSAP No. 62R for Schedule P presentations for members of the same group versus not in the same group. Also, the American Academy of Actuaries’ (Academy’s) Committee on Property and Liability Financial Reporting (COPLFR) observed variations in presentation to ambiguity in SSAP No. 62R. He said case studies did not validate this. Also, COPLFR thought better instructions and clarity would prevent distortions in the industry risk-based capital (RBC), but Mr. Hay also saw affiliated deals that on Schedule P would produce material sessions to entities outside the NAIC system. Therefore, improving instructions and adding clarity alone will not solve the problems.

Mr. Hay said he will seek input from Nebraska and the Catastrophe Risk (E) Subgroup, and he will collaborate with the Statutory Accounting Principles (E) Working Group.

6. **Heard a Report on the NAIC Rate Model Reviews**

Kris DeFrain (NAIC) presented three issues concerning rate model reviews by states and the NAIC. First, is a request for Task Force assistance about the regulatory review of tree-based models. The second issue is a professional and ethical question about how states should handle rate filings submitted by non-actuaries who are not subject to any professional standards. The third issue is to explain the NAIC tools available if states sign the NAIC Rate Review Support Services Agreement yet do not plan to ask the NAIC for a model review.

Most of the model reviews contain Generalized Linear Models (GLMs), and they are aligned with the Task Force’s Regulatory Review of Predictive Models white paper. Sam Kloese (NAIC) is taking the GLM information items and rankings of importance from the white paper’s appendix and modifying them via tracked changes for differences when reviewing a tree-based model. The Task Force will have to decide whether it wants to take the product forward for adoption or only use it as a reference for discussion with the NAIC to ensure the NAIC is conducting reviews the way state insurance regulators need. Mr. Kloese will present the product on the Task Force’s Nov. 12 call.

Next is a professionalism issue. Some rate filings are being submitted by non-actuaries; thus, while still subject to law and regulation, the filings are most likely not subject to professional or ethical standards. Most states do not have any type of
requirement for an actuary to prepare the filing or provide an expert opinion about the model. Ms. DeFrain said state insurance regulators are used to working with actuarial standards in place, and some requirements may need to be put in place to ensure the models are built in accordance with documentation, communication, ethical, and other requirements.

Last on the list is to discuss the Agreement, which 31 states have signed, and one more state is in the pipeline. While not all states need the NAIC rate review service, the Agreement also allows states access to the NAIC’s Shared Model Database and case studies. If one state finds that a company’s rate model has been reviewed by another state, the NAIC will conduct what is called a Comparison Report. NAIC staff will compare the filings between the two states, document any differences, track the objections made by the first state and answers received, and document the conclusions reached. If desired, the NAIC can also review any new issues. Ms. DeFrain added that the Agreement will place no burdens on the state, but if put in place now, it might be useful if state insurance regulators want to use the other NAIC services or have a short-term need to use the NAIC for model reviews after the loss of a key employee.

Having no further business, the Casualty Actuarial and Statistical (C) Task Force adjourned.
Comments of the Center or Economic Justice

To the NAIC Casualty Actuarial and Statistical Task Force

Blanks Referral for Proposal 2021-11BWG

October 11, 2021

In response to the Blanks Working Group referral to CASTF, CEJ urge CASTF to recommend adoption of Blanks Proposal 2021-11BWG for the following reasons.

1. The addition of two data elements – written exposures and earned exposures – to the current reporting of written premium and earned premium for the private passenger auto and homeowners lines of business will provide useful and relevant information for regulators, policymakers and the public by providing some of the same information in current CASTF reports but two or more years earlier..

2. Contrary to industry claims, the additional data elements – and average premium calculations generated – will not be misleading to regulators, policymakers or the public.

3. The additional data elements complement CASTF’s statistical reports which provide more granular and additional data analysis.

4. The additional data elements are financial information suited to reporting through the annual and quarterly financial statements. By reporting through the financial statement infrastructure, the data will be comprehensive, uniform and timely.

5. There is no meaningful alternative – speeding up reporting by statistical agents and states to produce the same limited information is not feasible with the current statistical agent infrastructure.


Additional Issue More Relevant for Blanks Working Group consideration

7. There will be a non-material cost burden on insurers to report the additional data elements.
The addition of two data elements – written exposures and earned exposures – to the current reporting of written premium and earned premium for the private passenger auto and homeowners lines of business will provide useful and relevant information for regulators, policymakers and the public by providing some of the same information in current CASTF reports but two or more years earlier.

The NAIC and individual states have determined that average personal auto premium and average homeowners premium are relevant and useful information for regulators, policymakers and the public, as evidenced by the publication of these values in the *Auto Insurance Database Report* and the *Dwelling, Fire, Homeowners Owner-Occupied, and Homeowners Tenant and Condominium/Cooperative Unit Owner’s Insurance Report*.

For example, on page 3 of the 2021 *Auto Insurance Database Report*, the average expenditure calculation is shown as total personal auto written premium divided by liability written exposures. This calculation can be exactly replicated with the data reported pursuant to 2021-11BWG – nearly two years sooner than the publication of the *Auto Insurance Database Report*.

Similarly, the average premium in the *Homeowners* report is calculated by dividing written premium by written exposures. Written exposures are expressed as house-years. The report includes a table aggregating written exposures by homeowners owner-occupied and homeowners tenants and condo/co-op. The report calculates total average premium by dividing written premium by written exposures for homeowners owner-occupied policy forms and for tenant/condo/coop policy forms. 2021-11BWG allows exact replication of the tenant/condo/coop calculation while permitting an owner-occupied calculation limited to homeowners policy forms – nearly two years sooner than the publication of the *Homeowners* report.

If the publication of average premium for personal auto and residential property insurance is sufficiently relevant and important for the NAIC to publish these values, it is equally or more relevant and important to provide data permitting these calculations in a far more timely manner.

Contrary to industry claims, the additional data elements – and average premium calculations generated – will not be misleading to regulators, policymakers or the public.

Some have argued that average premium calculations developed from data reported pursuant to 2021-11BWG would be misleading or confusing to consumers. This argument is logically and factually incorrect.
First, if the potential calculations with data reported pursuant to 2021-11BWG replicate calculations in the CASTF reports, it simply can’t be argued that the average premium values are misleading. In fact, by making an average premium value available much closer to the experience period, the average premium calculations generated from data reported pursuant to 2021-11BWG are more relevant and less misleading that values reported two years after the experience period.

For example, the NAIC issued a press release on March 9, 2021 announcing the release of the Auto Insurance Database Report. The release stated, “The national average annual expense per insured vehicle was $1,190 in 2018, a 20.87% increase from 2014.” When newspapers pick up this story, there is no caveat that the data are two to three years old and may not reflect current conditions. Rather, the logical response from media and consumers is that this information is relevant and current. By permitting the calculation of average premium values two years earlier than the CASTF reports, 2021-11BWG will reduce confusion and the potential for policymakers and consumers to be misled.

Second, some have argued that the CASTF reports are not misleading or confusing because the reports provide more detail and explanation about the tables in the reports. The additional data detail is important and useful for some purposes, but the fact remains that NAIC and state insurance department press releases and media coverage focus on the top line numbers, not the detailed analyses. Stated differently, providing a report with more detail and commentary is no guarantee that the detailed data or commentary will be used or relied upon.

Third, if confusion or misconception are a concern, there is nothing to prevent the NAIC – or state insurance departments – from issuing a press release or brief report with any caveats or commentary shortly after the 2021-11BWG data are reported.

Fourth, denying the collection and reporting of the additional data elements in 2021-11BWG based on false claims about misleading and confusing policymakers and consumers is simply censorship based on the implicit assumption that only insurers and regulators know how to analyze and present insurers’ financial information. This implicit assumption is forcefully disproved by the presence of scores of rating agencies, financial market analysis and academics who analyze and interpret insurers’ financial information.

The additional data elements complement CASTF’s statistical reports which provide more granular and additional data analysis.

As noted above, the CASTF reports contain far more and more detailed data than would be reported pursuant to 2021-11BWG. Consequently, 2021-11BWG complements the CASTF reports in the same way that Fast Track data reports complement annual reports from statistical agents or that quarterly financial statements complement annual financial statements.
The additional data elements are financial information suited to reporting through the annual and quarterly financial statements – comprehensive, uniform

Industry has incorrectly argued that the two additional data elements in 2021-11BWG are statistical data and not financial data and, consequently, do not belong in the quarterly and annual financial statements.

As evidenced by the recent efforts by the Statistical Working Group to explore the potential for timelier reporting by statistical agents of premium and exposure data, the defining characteristic of statistical reports is the provision of claims experience matched to exposures. It is this matching that requires statistical agents to wait 15 months after the end of the experience period to collect claims experience associated with exposures from that experience period.

In contrast written and earned premium and written and earned exposures are financial information available immediately after the end of the experience period. To understand why this is the case, consider how insurers calculate the written and earned premium values reported in the annual and quarterly financial statements.

Insurers maintain a database of sales transactions – records of when a new or renewal policy was issued and the amount of premium associated with that policy. When the insurer calculates written premium for an experience period, the insurer sums the premium on policies issued during the period and nets out return premium for net written premium during the period. When the insurer calculates the earned premium for the period, the insurer calculates the portion of the policy term occurring during the experience period, multiples this fraction times the policy premium and sums these amounts.

The calculation of written exposures and earned exposures is identical to the calculation of written and earned premium with the exception that instead of summing premium, the calculation sums vehicles insured and homes insured, respectively, for personal auto and homeowners. No claims information is involved and the same financial records used to calculated written and earned premium are used to calculate written and earned exposures.

There is no meaningful alternative – speeding up reporting by statistical agents and states to produce the same limited information is not feasible with current statistical agent infrastructure for statistical agents and states representing well over 50% of the market.

The Statistical Working Group investigated whether the statistical agents could speed up the delivery of their annual reports, generally, or just the premium and exposure data elements, specifically. The result of this investigation was clearly no.
It is important to set the baseline against which to compare the various stat agents’ and states’ responses. Insurers are required to submit the annual financial statement by March 1 and April 1, respectively, for key schedule and exhibits and remaining schedules and exhibits. Quarterly financial statements are due 45 days following the end of the first three experience quarters. This means that the by line by state data for the annual statement in 2021-11BWG is available to regulators shortly after the submission date and to the public about 30-45 days after the submission date. So, the by state by line data in the annual statement portion of 2021-11BWG is available to the public by around May 15 (though some purchases obtain annual statement data in April) and the by line data in the quarterly statement portion of 2021-11BWG is available to the public by around June 30, September 30 and December 30, respectively for Q1, Q2 and Q3 quarterly statements.

The Statistical Working Group received responses 15 statistical agents. Of the three main statistical agents – ISO, NISS and ISS, only ISO stated an ability to provide an earlier report of premiums and exposures – in May. NISS and ISS, who account for about 50% of the personal auto and homeowners statistical reporting, are not able to speed up delivery. While some state entities reported the ability to speed up delivery, most indicated they could not, including California with 11-12% of the total market.

Putting aside the obvious problems with usefulness of a minority of countrywide experience, even if the speeded up reporting was limited to the statistical agents and states who could provide the premium and exposure data sooner than the current schedule (and not all could meet a May deadline for full year reporting), the NAIC would have to collect and compile the information, which would take additional time.

The use of the annual and quarterly financial statement reporting reflected in 2021-BWG represents an extremely efficient method of collecting comprehensive and complete data in a uniform and consistent fashion in a timely manner.

**By virtue of financial statement reporting, 2021-11BWG includes some data quality checks.**

The instructions for reporting included 2021-11BWG require that the earned premium and written premium values tie to other exhibits in the annual and quarterly financial statements. These are core financial data points that, themselves, are typically used to verify and reconcile other data reports. For example, the statistical agent AAIA, in its response to the Statistical Working Group, states, “As far as how soon AAIS could get this data to the NAIC, our initial assessment is that if we started on the reconciliation when we get the preliminary annual statement data in May we should be able to finalize data by September.”
Additional Issue More Relevant for Blanks Working Group consideration: There will be a non-material cost burden on insurers to report the additional data elements.

Some have raised the argument that reporting of data pursuant to 2021-11BWG will be costly for insurers, although this claim of cost burden has not been supported by any evidence or logical explanation. In fact, it is demonstrable that any additional cost to insurers will be non-material.

Recall the discussion above about how insurers track sales transactions and calculate written and earned premium for financial statement reporting. With access to the transaction data that permits calculating written and earned premium, the analogous calculations of written and earned exposures are minor additions. This ease of calculation is evidenced by the response of ISO to the Statistical Working Group inquiry. Insurers reporting to ISO report transaction-detail data – similar to the data records maintained by insurers. By virtue of having transaction data, indicated the ability to report the premium and exposure data shortly after receipt from insurers.

2021-11BWG does not require insurers to collect any new data elements nor even to calculate new data elements. It simply asks insurers to report written and earned exposures at the same time and in the same detail and written and earned premiums are reported in financial statements.
Memo to: NAIC Casualty and Statistical Task Force (CASTF)

From: Ken Williams – CAS Staff Actuary

RE: CAS review of appointed actuary CE logs for NAIC compliance

The National Association of Insurance Commissioners (NAIC) developed new requirements for appointed actuaries associated with signing actuarial opinions for 2020 NAIC annual statements. Among these new requirements is that those appointed actuaries must include additional information on the type of continuing education (CE) obtained to meet applicable qualification standards. The information requested is related to meet the Specific Requirements for appointed actuaries from the American Academy of Actuary’s U.S. Qualification Standards (USQS). As part of this requirement, the CAS has agreed to submit an annual report to the NAIC summarizing the results of their review of appointed actuary records as part of the CAS’s normal CE compliance process.

As part of their annual cycle, the CAS has completed a review of 41 continuing education logs from those who indicated that they are meeting the Specific requirements of the USQS. Of these 41 logs, 34 used the excel template developed by the SOA and CAS under the guidance of the NAIC. Four submitted their CE in another excel form, and three submitted PDF copies of their CE logs.

Of the 41, four logs did not include the documentation of the required new NAIC categories. For the remaining 37, the results of the analysis are as follows.

Members meeting the appointed actuary requirement had an average of 41.5 total CE hours, and an average of 29.4 hours meeting the specific CE requirement. The range for specific CE was from 15.6 hours to 70.2 hours. The specific qualification requirements include a minimum of 30 CE hours, of which 15 must meet the specific requirements.

In terms of the seven primary NAIC categories, the percentage of actuaries reporting at least some CE in that category, and their average CE hours were:

<table>
<thead>
<tr>
<th>Primary Category</th>
<th>% Reporting some CE in this Category</th>
<th>Average CE hours in this Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Law &amp; Regulation</td>
<td>51%</td>
<td>2.6</td>
</tr>
<tr>
<td>Policy form, Coverage, Underwriting, &amp; Marketing</td>
<td>49%</td>
<td>7.1</td>
</tr>
<tr>
<td>Reinsurance</td>
<td>22%</td>
<td>1.6</td>
</tr>
<tr>
<td>Reserves</td>
<td>92%</td>
<td>9.4</td>
</tr>
<tr>
<td>Requirements &amp; Practice Notes</td>
<td>78%</td>
<td>7.1</td>
</tr>
<tr>
<td>Business Skills</td>
<td>30%</td>
<td>5.6</td>
</tr>
<tr>
<td>Other</td>
<td>76%</td>
<td>11.7</td>
</tr>
</tbody>
</table>

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Several of the above primary categories have secondary categories which further divide the type of CE learning. For those categories, the number reporting at least one instance of learning in the secondary categories and the average hours reported are:

<table>
<thead>
<tr>
<th>Policy form, Coverage, Underwriting &amp; Marketing</th>
<th>% Reporting some CE in this Category</th>
<th>Average CE hours in this Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form or Coverage</td>
<td>27%</td>
<td>4.1</td>
</tr>
<tr>
<td>Premium Rates or Ratemaking</td>
<td>27%</td>
<td>6.0</td>
</tr>
<tr>
<td>Underwriting and/or marketing</td>
<td>24%</td>
<td>2.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reinsurance</th>
<th>% Reporting some CE in this Category</th>
<th>Average CE hours in this Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reinsurance collateral</td>
<td>3%</td>
<td>1.2</td>
</tr>
<tr>
<td>Reinsurance collectability</td>
<td>3%</td>
<td>2.1</td>
</tr>
<tr>
<td>Reinsurance reserving</td>
<td>14%</td>
<td>1.4</td>
</tr>
<tr>
<td>Statutory accounting</td>
<td>16%</td>
<td>2.2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reserves</th>
<th>% Reporting some CE in this Category</th>
<th>Average CE hours in this Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reserving Data</td>
<td>46%</td>
<td>3.4</td>
</tr>
<tr>
<td>Reserving Adjustments</td>
<td>84%</td>
<td>5.9</td>
</tr>
<tr>
<td>Reserving Calculations</td>
<td>35%</td>
<td>2.4</td>
</tr>
<tr>
<td>Reserving Analysis</td>
<td>38%</td>
<td>2.7</td>
</tr>
<tr>
<td>Statutory accounting</td>
<td>16%</td>
<td>2.2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Requirements &amp; Practice Notes</th>
<th>% Reporting some CE in this Category</th>
<th>Average CE hours in this Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual Statement Instructions</td>
<td>43%</td>
<td>4.2</td>
</tr>
<tr>
<td>Practice Notes, ASOPs, etc.</td>
<td>8%</td>
<td>5.5</td>
</tr>
<tr>
<td>Statutory Accounting</td>
<td>57%</td>
<td>5.5</td>
</tr>
<tr>
<td>Solvency Calculations</td>
<td>16%</td>
<td>2.2</td>
</tr>
<tr>
<td>Company-specific</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Other</th>
<th>% Reporting some CE in this Category</th>
<th>Average CE hours in this Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accounting other than Statutory</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Analytics</td>
<td>16%</td>
<td>2.2</td>
</tr>
<tr>
<td>Emerging Issues</td>
<td>57%</td>
<td>8.0</td>
</tr>
<tr>
<td>Modeling</td>
<td>16%</td>
<td>3.9</td>
</tr>
<tr>
<td>Professionalism</td>
<td>30%</td>
<td>4.9</td>
</tr>
<tr>
<td>Risk Management</td>
<td>27%</td>
<td>4.0</td>
</tr>
<tr>
<td>Other - not otherwise classified</td>
<td>19%</td>
<td>2.9</td>
</tr>
</tbody>
</table>
Please let me know if you need more information or would like further clarification of the above results.

Ken Williams

Ken Williams, FCAS, MAAA, Staff Actuary
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703-562-1739 • kwilliams@casact.org

https://naiconline.sharepoint.com/:b:/r/sites/NAICS/SupportStaffHub/Member%20Meetings/Fall%202021/TF/CasAct/CAS%20review%20of%20Appointed%20Actuaries%20CE%20logs.pdf?csf=1&web=1&e=J92CqT
The Casualty Actuarial and Statistical (C) Task Force conducted an e-vote that concluded Aug. 20, 2021. The following Task Force members participated: Grace Arnold, Chair, represented by Phil Vigliaturo (MN); James J. Donelon, Vice Chair, represented by Nichole Torbla (LA); Jim L. Ridling represented by Daniel Davis (AL); Evan G. Daniels represented by Tom Zuppan (AZ); Ricardo Lara represented by Lynne Wehmueller (CA); Michael Conway represented by Mitchell Bronson (CO); Andrew N. Mais represented by Wanchin Chou (CT); Karima M. Woods represented by David Christhilf (DC); David Altmaier represented by Sandra Starnes (FL); Colin M. Hayashida represented by Randy Jacobson (HI); Doug Ommen represented by Travis Grassel (IA); Dana Popish Severinghaus represented by Judy Mottar (IL); Vicki Schmidt represented by Nicole Boyd (KS); Kathleen A. Birrane represented by Robert Baron (MD); Chlora Lindley-Myers and Cynthia Amann (MO); Mike Causey represented by Arthur Schwartz (NC); Barbara D. Richardson represented by Gennady Stolyarov (NV); Glen Mulready represented by Andrew Schallhorn (OK); Andrew R. Stolfi represented by David Dahl (OR); Doug Slape represented by Miriam Fisk (TX); Michael S. Pieciak represented by Rosemary Raszka (VT); and James A. Dodrill represented by Juanita Wimmer (WV).

1. **Adopted a Comment Letter on the *U.S. Qualification Standards***

The Task Force conducted an e-vote to consider adoption of a comment letter on the second exposure draft of the American Academy of Actuaries’ (Academy’s) *U.S. Qualification Standards* (Attachment Four-A) and send it to the Academy. The motion passed unanimously.

Having no further business, the Casualty Actuarial and Statistical (C) Task Force adjourned.
August 20, 2021

To:    The Board of Directors of the American Academy of Actuaries
       The Committee on Qualifications of the American Academy of Actuaries

From:  Phil Vigliaturo, ACAS
       Chair of the Casualty Actuarial and Statistical (C) Task Force

SENT VIA EMAIL TO USQSCOMMENTS@ACTUARY.ORG

Re:    Proposed revision of the Qualification Standards (including Continuing Education Requirements) for Actuaries Issuing Statements of Actuarial Opinion in the United States

To begin, the Casualty Actuarial and Statistical (C) Task Force (CASTF) would like to express its appreciation to the Academy for the thoughtful and reasonable ways in which the CASTF’s comments on the First Exposure Draft were reflected in the Second Exposure Draft. The following observations arose out of further discussions among CASTF members subsequent to their review of the Second Exposure Draft.

1. **Section 2.1(a):** It appears that, with the revisions in the Second Exposure Draft, there is no longer a membership requirement to be part of a U.S. or IAA professional actuarial organization. One must complete basic education and obtain one of the designations identified in Section 2.1(a), but then it appears there are no longer membership requirements once one has done so. On the other hand, the CASTF recognizes that footnote 2 in Section 1 of the U.S. Qualification Standards states that “The word ‘actuary’ as used herein means an actuary who is a member of any actuarial organization that requires its members to meet the USQS when practicing in the United States.” Therefore, the U.S. Qualification Standards are only binding upon members of actuarial organizations that require adherence to the U.S. Qualification Standards. This is, indeed, also the case today.

The CASTF considers it to be valuable for practicing actuaries in the U.S. to be members of an organization that agrees to require members to adhere to the Qualification Standards and be subject to professional counseling and discipline. It is hoped that insurers share this recognition of the value of actuarial designations and will not be disincentivized from supporting the membership dues for their employees who have become credentialed. Moreover, there are situations in which, to satisfy regulatory requirements, an actuary would need to be credentialed and remain a member of an actuarial organization. For example, the NAIC Annual Statement Instructions – Property/Casualty require an Appointed Actuary to have obtained and to maintain an Accepted Actuarial Designation, as defined therein. The CASTF brings this to the Academy’s
attention to underscore the continued importance of actuarial designations in fulfilling regulatory purposes such as issuing a Statement of Actuarial Opinion in connection with the NAIC Property/Casualty Annual Statement. Outside of those purposes, utilizing credentialed actuaries to comply with other regulatory requirements, such as providing support on rate filings, is also desirable and tends to improve the quality of an insurer’s work product. The CASTF would be interested in the Academy’s perspective regarding what kinds of incentives would remain for individuals who are subject only to the General Qualification Standard to maintain their actuarial designations subsequent to the revisions in the Second Exposure Draft.

2. Section 2.1(d): The CASTF previously stated that “it was reasonable and appropriate for the Academy to have removed the specific listing of current SOA specialty tracks (or the lack of specialty tracks in the CAS or ASPPA), since the absence of such references would be compatible with potential future additions or revisions to specialty tracks by the relevant actuarial societies without necessitating a revision to the Qualification Standards at each future time that such changes occur.” However, the CASTF would also like clarification from the Academy as to what requirements would apply, for example, to an actuary credentialed by the SOA who obtained his or her Fellowship in the SOA before the SOA established its General Insurance Track. Likewise, an analogous situation can be considered in an area such as life insurance, for which the CAS has not established any specialized education. Would a person who obtained his or her Fellowship in the CAS be eligible to practice in the life insurance area without passing any life-insurance-specific exams if all other requirements have been met?

It is stated that “if education relevant to the particular subject of the SAO was available when the actuary chose a specific area of practice and obtained their designation in that area of practice, the actuary must have completed such education.” It would appear that this would mean that, if at the time the actuary chose a specific area of practice, only one actuarial society offered specialized education in that area of practice, then this actuary would need to either have obtained that specialized education from that actuarial society, or else to have qualified pursuant to Section 4. Changes in Practice and Application. If this is the case, then the CASTF would request confirmation that the Academy interprets the Second Exposure Draft of the U.S. Qualification Standards in the same manner.

3. Section 3.1.1.2: Previously, the CASTF commented on Section 3.1.1.2 that “The addition of ‘the Society of Actuaries’ as one of the providers for relevant examinations for the Statement of Actuarial Opinion with regard to the NAIC Property and Casualty Annual Statement is important to achieve consistency with the recent revisions to the NAIC Statement of Actuarial Opinion Instructions. The revision proposed here by the Academy is therefore necessary and appropriate.”

However, the CASTF also considers it important to add a reference to the NAIC Statement of Actuarial Opinion (SAO) Instructions – Property/Casualty, since the revised Section 3.1.1.2 does not contain all of the NAIC requirements for signing an NAIC Property/Casualty Annual Statement SAO. The CASTF recognizes that there is a benefit to the Qualification Standards being more broadly worded than the NAIC Statement of Actuarial Opinion Instructions, since this would prevent a situation where the Qualification Standards would need to be amended every time the NAIC Statement of Actuarial Opinion Instructions would be amended. However, a revision
(shown in bold for this letter only) along the following lines would aid actuaries to understand there are additional qualification requirements placed upon Appointed Actuaries and also preserve the relevance of the Qualification Standards if the NAIC Statement of Actuarial Opinion Instructions are ever amended in the future:

“3.1.1.2 Statement of Actuarial Opinion, NAIC Property and Casualty Annual Statement — An actuary should successfully complete relevant examinations administered by the American Academy of Actuaries, the Casualty Actuarial Society, or the Society of Actuaries on the following topics: (a) policy forms and coverages, underwriting, and marketing, (b) principles of ratemaking, (c) statutory insurance accounting and expense analysis, (d) premium, loss, and expense reserves, and (e) reinsurance. **Moreover, an actuary should meet all of the requirements to be a Qualified Actuary as set forth in the NAIC Statement of Actuarial Opinion Instructions — Property/Casualty.**“

4. **UNDER THE REVIEW:** Referring to 2.1 d) 2; 2.1 d) 3; 2.1.1 b); and 3.2, It would be helpful if the phrase “under the review” could be clarified.

5. **Appendix 1, Section III:** While the CASTF recognizes that the Academy is not proposing to make any changes to Appendix 1 Section III – Application of U.S. Qualification Standards to Public Service Actuaries – the CASTF wishes to state for the record that there remains significant disagreement with Appendix 1 Section III among regulatory actuaries, both in regard to the existence of such an appendix as well as some of the specific activities enumerated therein as being SAOs. It remains the view of many regulatory actuaries that their authority as regulators derives from State law and may not be restricted by the standards of a private organization that is predominantly comprised of practitioners within the regulated industry. While the CASTF is supportive of many of the revisions proposed by the Academy within the U.S. Qualification Standards, the CASTF wishes to make this comment on Appendix 1 Section III to avoid the impression that absence of comment regarding this matter might signify any manner of implicit agreement. Further, CASTF prefers for this section to be deleted. By singling out the group of public service actuaries for a special set of standards, the general public may get the perception that public service actuaries are held to a different set of standards than all other actuaries.

If you have any questions, please contact Kris DeFrain (kdefrain@naic.org) at the NAIC.

Cc:  Kris DeFrain (NAIC)
The Actuarial Opinion (C) Working Group of the Casualty Actuarial and Statistical (C) Task Force conducted an e-vote that concluded Sept. 23, 2021. The following Working Group members participated: Anna Krylova, Chair (NM); Amy Waldhauer (CT); David Christhilf (DC); Judy Mottar (IL); Sandra Darby (ME); Gordon Hay (NE); Andrew Schallhorn (OK); and James DiSanto (PA).

1. **Adopted the 2021 Regulatory Guidance**


Having no further business, the Actuarial Opinion (C) Working Group adjourned.
REGULATORY GUIDANCE on Property and Casualty Statutory Statements of Actuarial Opinion, Actuarial Opinion Summaries, and Actuarial Reports for the Year 2021

Prepared by the NAIC Actuarial Opinion (C) Working Group of the Casualty Actuarial and Statistical (C) Task Force

The NAIC Actuarial Opinion (C) Working Group (Working Group) of the Casualty Actuarial and Statistical (C) Task Force believes that the Statement of Actuarial Opinion (Actuarial Opinion), Actuarial Opinion Summary (AOS), and Actuarial Report are valuable tools in serving the regulatory mission of protecting consumers. This Regulatory Guidance document supplements the NAIC Annual Statement Instructions – Property/Casualty (Instructions) in an effort to provide clarity and timely guidance to companies and Appointed Actuaries regarding regulatory expectations on the Actuarial Opinion, AOS, and Actuarial Report.

An Appointed Actuary has a responsibility to know and understand both the Instructions and the expectations of state insurance regulators. One expectation of regulators clearly presented in the Instructions is that the Actuarial Opinion, AOS, and supporting Actuarial Report and workpapers be consistent with relevant Actuarial Standards of Practice (ASOPs).

2021 Editorial Change to the Instructions
As a result of the Casualty Actuarial Society’s rescinding of the Statement of Reserving Principles this year, editorial changes were made to the Instructions to remove the reference to “principles.” The Appointed Actuary should be aware of this as it would impact the wording in item b. in the Opinion paragraph.

There have been changes to the Instructions for 2018 and 2019. As a result of these changes, the Instructions now:

- Include a new definition for “Accident & Health (A&H) Long Duration Contracts” in order to draw a distinction between these contracts and the Property and Casualty (P&C) Long Duration Contracts whose unearned premium reserves are reported on Exhibit A, Items 7 and 8,
- Add a reference to SSAP No. 65 in the definition of P&C Long Duration Contracts,
- Include a new disclosure item on Exhibit B for net reserves associated with A&H Long Duration Contracts,
- State that the Actuarial Report should disclose all reserve amounts associated with A&H Long Duration Contracts, and
- State that the Actuarial Report and workpapers summarizing the asset adequacy testing of long-term care contracts must be in compliance with Actuarial Guideline LI – The Application of Asset Adequacy Testing to Long-Term Care Insurance Reserves (AG 51) of the Accounting Practices and Procedures Manual.

Pursuant to efforts undertaken by the Task Force and the Executive (EX) Committee, the definition of “Qualified Actuary” is significantly revised and a new requirement called “qualification documentation” was added. These changes are described in this Regulatory Guidance document and additional guidance is offered to assist an Appointed Actuary in creating qualification documentation.
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I. General comments

A. Reconciliation between documents

If there are any differences between the values reported in the Actuarial Opinion, AOS, Actuarial Report, and Annual Statement, the Working Group expects Appointed Actuaries to include an explanation for these differences in the appropriate document (Actuarial Opinion, AOS, or Actuarial Report). The use of a robust peer review process by the Appointed Actuary should reduce reporting errors and non-reconciling items.

One situation in which a legitimate difference might arise is in the case of non-tabular discounting: The direct and assumed loss reserves on line 3 of the Actuarial Opinion’s Exhibit A come from Schedule P, Part 1, which is gross of non-tabular discounting, while the Actuarial Report and AOS might present the direct and assumed loss reserves on a net of discounting basis.

B. Role of illustrative language in the Instructions

While the Instructions provide some illustrative language, the Working Group encourages Appointed Actuaries to use whatever language they believe is appropriate to clearly convey their opinion and the basis for that opinion. In forming their opinion, Appointed Actuaries should consider company-specific characteristics such as intercompany pooling arrangements; recent mergers or acquisitions; and significant changes in operations, product mix, or reinsurance arrangements.

C. Qualified Actuary definition

With the introduction of an additional educational track for property and casualty (P/C) actuaries, the NAIC needed to consider revisions to the definition of “Qualified Actuary.” Upon receiving advice from a consultant on the NAIC’s definition of a “Qualified Actuary,” the NAIC began a project to re-define a Qualified Actuary using objective criteria. Upon nomination by the Casualty Actuarial Society (CAS), Society of Actuaries (SOA), and the American Academy of Actuaries (Academy), many Appointed Actuaries and other subject matter experts volunteered to assist the NAIC. The NAIC’s P/C Appointed Actuary Job Analysis Project resulted in documentation of knowledge statements, or what an Appointed Actuary may need to know and do. The NAIC’s P/C Educational Standards and Assessment Project resulted in documentation of which elements in each knowledge statement should be included in basic education as a minimum standard, with the remaining elements achievable through experience or continuing education. Using the minimum educational standards, the NAIC and subject matter experts assessed the CAS and SOA syllabi and reading materials. The CAS and SOA have made or agreed to make specific changes to their syllabi and/or reading materials to meet the standards. The revised syllabi and reference materials are required to be in place by Jan. 1, 2021.

As a result of these NAIC projects, the definition of “Qualified Actuary” was crafted to include basic education requirements and professionalism requirements (e.g. application of U.S. Qualification Standards, Code of Conduct, and ABCD). The definition of Qualified Actuary replaces the requirement to be “a member in good standing of the Casualty Actuarial Society” with a requirement to obtain and maintain an “Accepted Actuarial Designation.” An Accepted Actuarial Designation is one that was considered by the NAIC to meet the NAIC’s minimum educational standards for an Appointed Actuary. See the Instructions for the list of Accepted Actuarial Designations. It is important to note that some designations are accepted as meeting the basic education standards only if certain specific exams and/or tracks are successfully completed (with exceptions noted in the exam substitutions table of the Instructions). The NAIC process requires a recurring assessment of the “Qualified Actuary” definition every 5-10 years.

The NAIC does not intend to retroactively change requirements for Appointed Actuaries. If an actuary previously met the 2018 qualified actuary definition but lacks the specific exams and/or tracks under the new definition, the Instructions provide a list of acceptable substitutions.

D. Qualification documentation

The 2019 Instructions require the Appointed Actuary to provide “qualification documentation” to the Board of Directors upon initial appointment and annually thereafter. The documentation provided to the Board must be available to the
regulator upon request and during a financial examination. Guidance on qualification documentation is in Section IV of this document.

E. Replacement of an Appointed Actuary

The Instructions require two letters when the Board replaces an Appointed Actuary: one addressed from the insurer to the domiciliary commissioner, and one addressed from the former Appointed Actuary to the insurer. The insurer must provide both of these letters to the domiciliary commissioner.

The detailed steps are as follows:

1. Within 5 business days, the insurer shall notify its domiciliary insurance department that the former Appointed Actuary has been replaced.
2. Within 10 business days of the notification in step 1, the insurer shall provide the domiciliary commissioner with a letter stating whether in the 24 months preceding the replacement, there were disagreements with the former Appointed Actuary. The Instructions describe the types of disagreements required to be reported in the letter.
3. Within the same 10 business days referred to in step 2, the insurer shall, in writing, request that its former Appointed Actuary provide a letter addressed to the insurer stating whether the former Appointed Actuary agrees with the statements contained in the insurer’s letter referenced in step 2.
4. Within 10 business days of the request from the insurer described in step 3, the former Appointed Actuary shall provide a written response to the insurer.
5. The insurer shall provide the letter described in step 2 and the response from the former Appointed Actuary described in step 4 to the domiciliary commissioner.

Regarding the disagreements referenced in step 2 above, regulators understand that there may be disagreements between the Appointed Actuary and the insurer during the course of the Appointed Actuary’s analysis that are resolved by the time the Appointed Actuary concludes the analysis. For instance, the Appointed Actuary’s analysis may go through several iterations, and an insurer’s comments on the Appointed Actuary’s draft Actuarial Report may prompt the Appointed Actuary to make changes to the report. While regulators are interested in material disagreements regarding differences between the former Appointed Actuary’s final estimates and the insurer’s carried reserves, they do not expect notification on routine discussions that occur during the course of the Appointed Actuary’s work.

F. Reporting to the Board of Directors

The Appointed Actuary is required to report to the insurer’s Board every year, and the Instructions were amended in 2016 to require the Board’s minutes to specify the manner in which the Appointed Actuary presented the required information. This may be done in a form of the Appointed Actuary’s choosing, including, but not limited to, an executive summary or PowerPoint presentation. The Working Group strongly encourages the Appointed Actuary to present his or her analysis in person so that the risks and uncertainties that underlie the exposures and the significance of the Appointed Actuary’s findings can be adequately conveyed and discussed. Regardless of how the Appointed Actuary presents his or her conclusions, the Actuarial Report must be made available to the Board.

Management is limited to reporting single values on lines 1 and 3 of the Liabilities, Surplus, and Other Funds page of the balance sheet. However, actuarial estimates are uncertain by nature, and point estimates do not convey the variability in the projections. Therefore, the Board should be made aware of the Appointed Actuary’s opinion regarding the risk of material adverse deviation, the sources of risk, and what amount of adverse deviation the Appointed Actuary judges to be material.
G. Requirements for pooled companies

Effective with the 2014 Instructions, requirements for companies that participate in intercompany pools are as follows:

For all intercompany pooling members:
- Text of the Actuarial Opinion should include the following:
  - Description of the pool
  - Identification of the lead company
  - A listing of all companies in the pool, their state of domicile, and their respective pooling percentages
- Exhibits A and B should represent the company’s share of the pool and should reconcile to the financial statement for that company

For intercompany pooling members with a 0% share of the pooled reserves:
- Text of the Actuarial Opinion should be similar to that of the lead company
- Exhibits A and B should reflect the 0% company’s values
  - Response to Exhibit B, Item 5 (materiality standard) should be $0
  - Response to Exhibit B, Item 6 (risk of material adverse deviation) should be “not applicable”
- Exhibits A and B of the lead company should be filed with the 0% company’s Actuarial Opinion
- Information in the AOS should be that of the lead company

Note the distinction between pooling with a 100% lead company with no retrocession and ceding 100% via a quota share reinsurance agreement. The regulator must approve these affiliate agreements as either an intercompany pooling arrangement or a quota share reinsurance agreement. The proper financial reporting is dependent on the approved filings, regardless of how company management regards its operating platform.

For intercompany pooling members with a greater than 0% share of the pooled reserves, regulators encourage the Appointed Actuary to display values in the AOS on a pooled (or consolidated) basis in addition to the statutory entity basis. This can be accomplished by displaying two tables of information.

H. Explanation of adverse development

1. Comments on unusual Insurance Regulatory Information System (IRIS) ratios in the Actuarial Opinion

   The Appointed Actuary is required to provide comments in the Actuarial Opinion on factors that led to unusual values for IRIS ratios 11, 12, or 13. The Working Group considers it insufficient to attribute unusual reserve development to “reserve strengthening” or “adverse development” and expects the Appointed Actuary to provide insight into the company-specific factors which caused the unusual value. Detailed documentation should be included in the Actuarial Report to support statements provided in the Actuarial Opinion.

2. Comments on persistent adverse development in the AOS

   The Appointed Actuary is required to comment on persistent adverse development in the AOS. Comments can reflect common questions that regulators have, such as:
   - Is development concentrated in one or two exposure segments, or is it broad across all segments?
   - How does development in the carried reserve compare to the change in the Appointed Actuary’s estimate?
   - Is development related to specific and identifiable situations that are unique to the company?
   - Does the development or the reasons for development differ depending on the individual calendar or accident years?
I. Revisions

When a material error in the Actuarial Opinion or AOS is discovered by the Appointed Actuary, the company, the regulator, or any other party, regulators expect to receive a revised Actuarial Opinion or AOS.

Regardless of the reason for the change or refiling, the company should submit the revised Actuarial Opinion in hard copy to its domiciliary state and electronically to the NAIC. The company should submit the revised AOS in hard copy to the domiciliary state but should not submit the document to the NAIC.

A revised Actuarial Opinion or AOS should clearly state that it is an amended document, contain or accompany an explanation for the revision, and include the date of revision.

II. Comments on Actuarial Opinion and Actuarial Report

A. Review date

The illustrative language for the Scope paragraph includes “… and reviewed information provided to me through XXX date.” This is intended to capture the ASOP No. 36 requirement to disclose the date through which material information known to the Appointed Actuary is included in forming the reserve opinion (the review date), if it differs from the date the Actuarial Opinion is signed. When the Appointed Actuary is silent regarding the review date, this can indicate either that the review date is the same as the date the Actuarial Opinion is signed or that the Appointed Actuary overlooked this disclosure requirement. When the Appointed Actuary’s review date is the same as the date the Actuarial Opinion is signed, regulators suggest the Appointed Actuary clarify this in the Actuarial Opinion by including a phrase such as “… and reviewed information provided to me through the date of this opinion.”

B. Making use of another’s work

If the Appointed Actuary makes use of the work of another not within the Appointed Actuary’s control for a material portion of the reserves, the Instructions say that the Appointed Actuary must provide the following information in the Actuarial Opinion:

- The person’s name;
- The person’s affiliation;
- The person’s credential(s), if the person is an actuary; and
- A description of the type of analysis performed, if the person is not an actuary.

Furthermore, Section 4.2.f of ASOP No. 36 says that the actuary should disclose whether he or she reviewed the other’s underlying analysis and, if so, the extent of the review. Though this is not mentioned in the ASOP, the Working Group encourages the Appointed Actuary to consider discussing his or her conclusions from the review.

Section 3.7.2 of ASOP No. 36 describes items the actuary should consider when determining whether it is reasonable to make use of the work of another. One of these items is the amount of the reserves covered by the other’s analyses or opinions in comparison to the total reserves subject to the actuary’s opinion. The Working Group encourages the Appointed Actuary to disclose these items in the Actuarial Opinion by providing the dollar amount of the reserves covered by the other’s analyses or opinions and the percentage of the total reserves subject to the Appointed Actuary’s opinion that these other reserves represent.

C. Points A and B of the Opinion paragraph when opinion type is other than reasonable

Regulators encourage Appointed Actuaries to think about their responses to point A (meet the requirements of the insurance laws of the state) and point B (computed in accordance with accepted actuarial standards) of the Opinion paragraph when they issue an Actuarial Opinion of a type other than “Reasonable.”
D. Conclusions on a net versus a direct and assumed basis

Unless the Appointed Actuary states otherwise, regulators will assume that the Appointed Actuary’s conclusion on the type of opinion rendered, provided in points C and D of the Opinion paragraph, applies to both the net and the direct and assumed reserves. If the Appointed Actuary reaches different conclusions on the net versus the direct and assumed reserves, the Appointed Actuary should include narrative comments to describe the differences and clearly convey a complete opinion. The response to Exhibit B, Item 4 should reflect the Appointed Actuary’s opinion on the net reserves.

Similarly, the materiality standard in Exhibit B, Item 5 and the RMAD conclusion in Exhibit B, Item 6 should pertain to the net reserves. If the Appointed Actuary reaches a different conclusion on the risk of material adverse deviation in the net versus the direct and assumed reserves, the Appointed Actuary should include a Relevant Comments paragraph to address the differences. Regulators understand that a net versus a direct and assumed RMAD will have different meanings and, potentially, different materiality standards.

E. Unearned premium for P&C Long Duration Contracts

Exhibit A, Items 7 and 8 require disclosure of the unearned premium reserve for P&C Long Duration Contracts. The Instructions require the Appointed Actuary to include a point D in the Opinion paragraph regarding the reasonableness of the unearned premium reserve when these reserves are material.

The Working Group expects that the Appointed Actuary will include documentation in the Actuarial Report to support a conclusion on reasonableness whenever point D is included in the Actuarial Opinion. This documentation may include the three tests of SSAP No. 65 or other methods deemed appropriate by the Appointed Actuary to support his or her conclusion.

Regulators see many opinions where dollar amounts are included in Exhibit A, Items 7 and 8; some opinions include a Relevant Comments paragraph discussing these amounts and some do not. Regulators would prefer at a minimum that Appointed Actuaries include some discussion in Relevant Comments on these amounts including an explicit statement as to whether these amounts are material or immaterial.

F. Other premium reserve items

With regard to “Other Premium Reserve Items” in Exhibit A, Item 9, the Appointed Actuary should include an explanatory paragraph about these premium reserves in Relevant Comments and state whether the amounts are material or immaterial. If the amounts are material, and the Appointed Actuary states the amounts are reasonable in an Opinion paragraph, regulators would expect the actuarial documentation to support this conclusion in the Actuarial Report.

Typical items regulators see listed as “Other Premium Reserve Items” are Medical Professional Liability Death, Disability & Retirement (DD&R) unearned premium reserves (UPR) and Other Liability Claims DD&R UPR. Depending on the nature of these exposures, these items may be also listed on Exhibit B, Line 12.2 as claims made extended UPR.

G. The importance of Relevant Comments paragraphs

The Working Group considers the Relevant Comments paragraphs to be the most valuable information in the Actuarial Opinion. Relevant Comments help the regulator interpret the Actuarial Opinion and understand the Appointed Actuary’s reasoning and judgment. In addition to the required Relevant Comments, the Appointed Actuary should consider providing information on other material items such as reinsurance with affiliates, mergers or acquisitions, other premium reserves, and catastrophe risk.

H. Risk of Material Adverse Deviation

The Relevant Comments paragraphs on the Risk of Material Adverse Deviation (RMAD) are particularly useful to regulators. The first two RMAD comments below respond to questions that Appointed Actuaries have posed to regulators. The second two stem from regulators’ reviews of Actuarial Opinions.
1. No company-specific risk factors – The Appointed Actuary is asked to discuss company-specific risk factors regardless of the RMAD conclusion. If the Appointed Actuary does not believe that there are any company-specific risk factors, the Appointed Actuary should state that.

2. Mitigating factors – Regulators generally expect Appointed Actuaries to comment on significant company-specific risk factors that exist prior to the company’s application of controls or use of mitigation techniques. The company’s risk management behaviors may, however, affect the Appointed Actuary’s RMAD conclusion.

3. Consideration of carried reserves, materiality standard, and reserve range when making RMAD conclusion – When deciding whether RMAD exists, the Appointed Actuary should consider the materiality standard in relation to the range of reasonable estimates and the carried reserves. For example, RMAD should likely exist when the sum of the materiality standard plus the carried reserves is within the range of reasonable estimates. Regardless, the Appointed Actuary should support the conclusion of whether RMAD exists.

4. Materiality standards for intercompany pool members – With the exception of intercompany pooling members that retain a 0% share, each statutory entity is required to have a separate Actuarial Opinion with its own materiality standard. Where there are no unusual circumstances to consider, it may be acceptable to determine a standard for the entire pool and assign each member its proportionate share of the total. It is not appropriate to use the entire amount of the materiality threshold for the pool as the standard for each individual pool member.

I. Regulators’ use of the Actuarial Report

Regulators should be able to rely on the Actuarial Report as an alternative to developing their own independent estimates. A well-prepared and well-documented Actuarial Report that complies with ASOP No. 41 can provide a foundation for efficient reserve evaluation during a statutory financial examination. This expedites the examination process and may provide cost savings to the company.

1. Schedule P reconciliation

The Working Group acknowledges that myriad circumstances (such as mergers, acquisitions, changes in claim systems, and the use of underwriting year data in the analysis) may make it difficult for the Appointed Actuary to reconcile the analysis data to Schedule P. The Working Group encourages Appointed Actuaries to disclose reconciliation issues in the Actuarial Report. If the data cannot be reconciled, the Appointed Actuary should document the reasons.

The Working Group believes that:

- A summary reconciliation that combines all years and all lines is an insufficient demonstration of data integrity. A reconciliation should include enough detail to reflect the segmentation of exposures used in the reserve analysis, the accident years of loss activity and the methods used by the Appointed Actuary. While it is important that the Appointed Actuary is provided with complete and accurate data, reconciling the data provided to the Appointed Actuary to Schedule P is not sufficient to demonstrate that the data used by the Appointed Actuary reconciles to Schedule P. It is important for the Appointed Actuary to demonstrate that in the process of performing the actuarial analysis, data was neither created nor destroyed. This is commonly accomplished by showing a clear mapping from the Appointed Actuary’s analysis exhibits to the actuarial data shown in the Schedule P reconciliation.

- The Appointed Actuary should map the data groupings used in the analysis to Schedule P lines of business and should provide detailed reconciliations of the data at the finest level of segmentation that is possible and practical. The Working Group recognizes that the Appointed Actuary chooses the data segmentation for the analysis and that there is often not a direct correspondence between analysis segments and Schedule P lines of business.

- The Appointed Actuary should reconcile all data material to the analysis, including claim counts and earned premium if appropriate. If the Appointed Actuary chooses not to reconcile certain data elements used in the analysis, such as claim counts, a brief explanation should be included in the Actuarial Report to make it clear that these elements were not inadvertently overlooked.
• Schedule P reconciliations are expected to be performed on both a Direct & Assumed basis and a Net of Reinsurance basis. If circumstances specific to the company lead the Appointed Actuary to perform the reconciliation on only one basis, the rationale for this decision should be explained in the Actuarial Report. Similarly, while the reconciliation of the loss-related elements, such as Defense & Cost Containment and Adjusting & Other expenses, is generally expected to be on the same level as used in the analysis underlying the Actuarial Opinion, the Appointed Actuary has the discretion to deviate as long as the rationale is explained in the Actuarial Report.

• The Instructions require that the Appointed Actuary include an explanation for any material differences in the Schedule P Reconciliation. When differences appear in the reconciliation but are viewed as immaterial by the Appointed Actuary, the Appointed Actuary should acknowledge the immateriality of the differences in the Actuarial Report in order to assure regulators that the Appointed Actuary is aware of the differences and has considered the potential impact of the differences on the analysis underlying the Actuarial Opinion.

The Working Group draws a distinction between two types of data checks:
• The Schedule P reconciliation performed by the Appointed Actuary. The purpose of this exercise is to show the user of the Actuarial Report that the data significant to the Appointed Actuary’s analysis ties to the data in Schedule P.
• Annual testing performed by independent CPAs to verify the completeness and accuracy of the data in Schedule P or the analysis data provided by the company to the Appointed Actuary.

One key difference is that independent CPAs generally apply auditing procedures to loss and loss adjustment expense activity that occurred in the current calendar year (for example, tests of payments on claims for all accident years that were paid during the current calendar year). Projection methodologies used by Appointed Actuaries, on the other hand, often use cumulative loss and loss adjustment expense data, which may render insufficient a testing of activity during the current calendar year alone.

Along similar lines, regulators encourage Appointed Actuaries to consider whether a reconciliation of incremental payments during the most recent calendar year for all accident/report years combined provides sufficient assurance of the integrity of the data used in the analysis, given that development factors are generally applied to cumulative paid losses by accident/report year.

2. Change in estimates

The Working Group expects the Appointed Actuary to discuss any significant change in the Appointed Actuary’s total estimates from the prior Actuarial Report. However, an explanation should also be included for any significant fluctuations within accident years or segments. When preparing the change-in-estimates exhibits, the Appointed Actuary should choose a level of granularity that provides meaningful comparisons between the prior and current year’s results.

3. Narrative

The narrative section of the Actuarial Report should clearly convey the significance of the Appointed Actuary’s findings and conclusions, the uncertainty in the estimates, and any differences between the Appointed Actuary’s estimates and the carried reserves.

4. Support for assumptions

Appointed Actuaries should support their assumptions. The use of phrases like “actuarial judgment,” either in the narrative comments or in exhibit footnotes, is not sufficient. A descriptive rationale is needed.

The selection of expected loss ratios could often benefit from expanded documentation. When making their selection, Appointed Actuaries should consider incorporating rate changes, frequency and severity trends, and other adjustments needed to on-level the historical information. Historical loss ratio indications have little value if items such as rate actions, tort reform, schedule rating adjustments, or program revisions have materially affected premium adequacy.
5. Support for roll forward analyses

The Working Group recognizes that the majority of the analysis supporting an Actuarial Opinion may be done with data received prior to year-end and “rolled forward” to year-end. By reviewing the Actuarial Report, the regulator should be able to clearly identify why the Appointed Actuary made changes in the ultimate loss selections and how those changes were incorporated into the final estimates. A summary of final selections without supporting documentation is not sufficient.

J. Exhibits A and B

1. “Data capture format”

The term “data capture format” in Exhibits A and B of the Instructions refers to an electronic submission of the data in a format usable for computer queries. This process allows for the population of an NAIC database that contains qualitative information and financial data. Appointed Actuaries should assist the company in accurately completing the electronic submission.

2. Scope of Exhibit B, Item 12

Exhibit B, Item 12 requests information on extended loss and unearned premium reserves for all property/casualty lines of business, not just medical professional liability. The Schedule P Interrogatories referenced in the parenthetical only address reserves associated with yet-to-be-issued extended reporting endorsements offered in the case of death, disability, or retirement of an individual insured under a medical professional liability claims-made policy.

3. Exhibit B, Item 13

The Working Group added disclosure item Exhibit B, Item 13 in 2018. This item requests information on reserves associated with “A&H Long Duration Contracts,” defined in the Instructions as “A&H contracts in which the contract term is greater than or equal to 13 months and contract reserves are required.”

This disclosure item was added for several reasons:

- **A desire by regulators to gain a greater understanding of property and casualty insurers’ exposure to A&H Long Duration Contracts.**
  - This guidance does not specify how P&C insurers should report the liabilities associated with A&H Long Duration Contracts on the annual statement. Through work performed on financial examinations, regulators have found that P&C insurers may include the liabilities in various line items of the Liabilities, Surplus and Other Funds page. SSAP No. 54R provides accounting guidance for insurers.
  - Regardless of where the amounts are reported on the annual statement, the materiality of the amounts, and whether the insurer is subject to AG 51, the Appointed Actuary should disclose the amounts associated with A&H Long Duration Contracts on Exhibit B, Item 13. The Appointed Actuary should provide commentary in a Relevant Comments paragraph in accordance with paragraph 6.C of the Instructions. The Appointed Actuary should also disclose all reserve amounts associated with A&H Long Duration Contracts in the Actuarial Report.

- **The adoption of AG 51 in 2017.** On August 9, 2017, the NAIC’s Executive (EX) Committee and Plenary adopted AG 51 requiring stand-alone asset adequacy analysis of long-term care (LTC) business. The text of AG 51 is included in the March 2019 edition of the NAIC’s Accounting Practices and Procedures Manual. The effective date of AG 51 was December 31, 2017, and it applies to companies with over 10,000 inforce lives covered by LTC insurance contracts as of the valuation date. The Instructions state that the Actuarial Report and workpapers summarizing the asset adequacy testing of LTC business must be in compliance with AG 51 requirements.

- **Recent adverse reserve development in LTC business.** Regulators expect Appointed Actuaries to disclose company-specific risk factors in the Actuarial Opinion. Given the recent adverse experience for LTC
business, Appointed Actuaries should consider whether exposure to A&H Long Duration Contracts poses a risk factor for the company.

The Appointed Actuary is not asked to opine on the reasonableness of the reserves associated with A&H Long Duration Contracts except to the extent that the reserves are included within the amounts reported on Exhibit A of the Actuarial Opinion. For this reason, the Working Group intentionally excluded Items 13.3 and 13.4 from this sentence in paragraph 4 of the Instructions: “The Appointed Actuary should state that the items in the SCOPE, on which he or she is expressing an opinion, reflect Disclosure items 8 through 13.2 in Exhibit B.”

Exhibit B, Item 13.1 asks the Appointed Actuary to disclose the reserves for A&H Long Duration Contracts that the company carries on the Losses line of the Liabilities, Surplus and Other Funds page. The Appointed Actuary is not asked to opine on the reasonableness of the reserves disclosed on Exhibit B, Item 13.1 in isolation, but these reserves are a subset of the amount included on Exhibit A, Item 1, and Exhibit A lists amounts with respect to which the Appointed Actuary is expressing an opinion. The same is true for Exhibit B, Item 13.2, whose reserves are a subset of the amount included on Exhibit A, Item 2.

A&H Long Duration Contracts are distinct from P&C Long Duration Contracts. There were no changes to the opinion requirements in 2018 regarding P&C Long Duration Contracts, but the Working Group added a reference to SSAP No. 65 in the definition of “P&C Long Duration Contracts” to clarify the difference between “A&H Long Duration Contracts” and “P&C Long Duration Contracts.” The newly-added mention of SSAP No. 65 in the Instructions is not intended to change the Appointed Actuary’s treatment of P&C Long Duration Contracts in the Actuarial Opinion or the underlying analysis, but insurers and Appointed Actuaries may refer to SSAP No. 65, paragraphs 21 through 33 for a description of the three tests, a description of the types of P&C contracts to which the tests apply, guidance on the minimum required reserves, and instructions on the Actuarial Opinion and Actuarial Report.
III. Comments on AOS

A. Confidentiality

The AOS is a confidential document and should be clearly labeled and identified prominently as such. The AOS is not submitted to the NAIC. The Working Group advises the Appointed Actuary to provide the AOS to company personnel separately from the Actuarial Opinion and to avoid attaching the related Actuarial Opinion to the AOS.

B. Different requirements by state

Not all states have enacted the NAIC Property and Casualty Actuarial Opinion Model Law (#745), which requires the AOS to be filed. Nevertheless, the Working Group recommends that the Appointed Actuary prepare the AOS regardless of the domiciliary state’s requirements, so that the AOS will be ready for submission should a foreign state – having the appropriate confidentiality safeguards – request it.

Most states provide the Annual Statement contact person with a checklist that addresses filing requirements. The Working Group advises the Appointed Actuary to work with the company to determine the requirements for its domiciliary state.

C. Format

The purpose of the AOS is to show a comparison between the company’s carried reserves and the Appointed Actuary’s estimates. Because the AOS is a synopsis of the conclusions drawn in the Actuarial Report, the content of the AOS should reflect the analysis performed by the Appointed Actuary. Therefore, all of the Appointed Actuary’s calculated estimates, including actuarial central estimates and ranges, are to be presented in the AOS consistent with estimates presented in the Actuarial Report.

The American Academy of Actuaries’ Committee on Property and Liability Financial Reporting provides illustrative examples in its annual practice note “Statements of Actuarial Opinion on Property and Casualty Loss Reserves” that show how the Appointed Actuary might choose to display the required information. These examples present the numerical data in an easy-to-read table format.

IV. Guidance on qualification documentation

The Instructions have been modified for 2019 to require the Appointed Actuary to document qualifications in what is called “qualification documentation.” The qualification documentation needs to be provided to the Board of Directors at initial appointment and annually thereafter.

The following provides guidance Appointed Actuaries may find useful in drafting qualification documentation. Appointed Actuaries should use professional judgment when preparing the documentation and need not use the sample wording or format provided below. As a general principle, Appointed Actuaries should provide enough detail within the documentation to demonstrate that they satisfy each component of the ‘Qualified Actuary’ definition. In crafting the qualification documentation it may be helpful to think about what is important for the Board of Directors to know about their Appointed Actuary’s qualifications, and to remember that documentation should be relevant to the subject of the Actuarial Opinion being issued.

A. Brief biographical information

- The Appointed Actuary may provide resume-type information.
- Information may include the following:
  - professional actuarial designation(s) and year(s) first attained
  - insurance or actuarial coursework or degrees;
  - actuarial employment history: company names, position title, years of employment, and relevant information regarding the type of work (e.g., reserving, ratemaking, ERM)
B. “Qualified Actuary” definition

The Appointed Actuary should provide a description of how the definition of “Qualified Actuary” in the Instructions is met or expected to be met (in the case of continuing education) for that year. The Appointed Actuary should provide information similar to the following. Items (i) through (iii) below correspond with items (i) through (iii) in the Qualified Actuary definition.

(i) “I meet the basic education, experience and continuing education requirements of the Specific Qualification Standards for Statements of Actuarial Opinion, NAIC Property and Casualty Annual Statement, as set forth in the Qualification Standards for Actuaries Issuing Statements of Actuarial Opinion in the United States (U.S. Qualification Standards), promulgated by the American Academy of Actuaries (Academy). The following describes how I meet these requirements:

a. Basic education:”

[Option 1] “met through relevant examinations administered by the Casualty Actuarial Society;” or
[Option 2] “met through alternative basic education.” The Appointed Actuary should further review documentation necessary per section 3.1.2 of the U.S. Qualification Standards.

b. “Experience requirements: met through relevant experience as described below.”

• To describe the Appointed Actuary’s responsible experience relevant to the subject of the Actuarial Opinion, information may include specific actuarial experiences relevant to the company’s structure (e.g., insurer, reinsurer, RRG), lines of business, or special circumstances.
• Experiences may include education (through organized activities or readings) about specific types of company structures, lines of business, or special circumstances.

c. “Continuing education: met (or expected to be met) through a combination of [industry conferences; seminars (both in-person and webinar); online courses; committee work; self-study; etc.], on topics including _______ (provide a brief overview of the CE topics. For example, ‘trends in workers’ compensation’ or ‘standards of actuarial practice on reserving.’). A detailed log of my continuing education credit hours is available upon request.”

• Section 3.3 of the Specific Qualification Standards for Statements of Actuarial Opinion, NAIC Property and Casualty Annual Statement requires the Appointed Actuary to earn 15 hours of CE on topics mentioned in Section 3.1.1.2. The Appointed Actuary should consider providing expanded detail on the completion (or planned completion) of these hours in the CE documentation.

(ii) “I have obtained and maintain an Accepted Actuarial Designation.” One of the following statements may be made, depending on the Appointed Actuary’s exam track:

• “I am a Fellow of the CAS (FCAS) and my basic education includes credit for Exam 6 – Regulation and Financial Reporting (United States).”
• “I am an Associate of the CAS (ACAS) and my basic education includes credit for Exam 6 – Regulation and Financial Reporting United States) and Exam 7 – Estimation of Policy Liabilities, Insurance Company Valuation, and Enterprise Risk Management.”
• “I am a Fellow of the SOA (FSA) and my basic education includes completion of the general insurance track, including the following optional exams: the United States’ version of the Financial and Regulatory Environment Exam and the Advanced Topics in General Insurance Exam.”
Alternatively, if the actuary was evaluated by the Academy's Casualty Practice Council and determined to be a Qualified Actuary, the Appointed Actuary may note such and identify any restrictions or limitations, including those for lines of business and business activities.

(iii) “I am a member of [professional actuarial association] that requires adherence to the same Code of Professional Conduct promulgated by the Academy, requires adherence to the U.S. Qualification Standards, and participates in the Actuarial Board for Counseling and Discipline when its members are practicing in the U.S.”

C. CE logging procedure

The Casualty Actuarial and Statistical (C) Task Force continues to work with the CAS and SOA to identify types of learning that P/C Appointed Actuaries are using to meet continuing education (CE) requirements for ‘Specific Qualification Standards’ today and whether more specificity should be added to the P/C Appointed Actuaries' CE requirements to ensure CE is aligned with the educational needs for a P/C Appointed Actuary.

The Task Force has adopted a project plan that includes requirements for 1) categorization of CE in the Appointed Actuaries' CE log and 2) CE log reviews by the CAS/SOA of a percentage of Appointed Actuaries. Starting with year-end 2020, Appointed Actuaries selected for review by the CAS or SOA must either use a specific logging format for their CE logs or add a column to one’s current log. Appointed actuaries are encouraged to categorize their CE throughout the year, since waiting until the review (if selected) may compromise the accuracy of categorization. While selected Appointed Actuaries will submit their individual logs, the CAS and SOA will only share aggregated information with the NAIC. Please refer to the CAS and SOA for information on CE logging and submission instructions, CE categories, and categorization rules.

D. Proposed deadline for qualification documentation

The Working Group is considering establishing a deadline for the Appointed Actuary to submit its qualification documentation to the Board of Directors. The deadline is expected to be in the latter part of the year. If this revision is affirmed, it is expected to become effective for the 2022 Opinion, meaning that Appointed Actuaries should plan to provide their qualification documentation to the Board no later than the deadline to be announced in the 2022 Instructions.

V. COVID-19

COVID-19 and related economic events have had a significant impact on insurance liabilities for some lines of business. Furthermore, the effects of COVID-19 could extend to other aspects of the company’s operations and the claims process. The Appointed Actuary should consider the direct impacts to loss and unearned premium reserves, claims patterns and loss trends, collectability of reinsurance and/or premiums, exposure, etc., as well as indirect impacts such as claims handling delays and procedural changes resulting from public health orders. It is important for the Appointed Actuary to understand the company’s treatment of any changes stemming from COVID-19, for example premium refunds or rate reductions, in the annual financial statement. The impact of such financial reporting on assumptions and methods used in the actuarial analysis should be discussed within the Actuarial Report.

If the impact on reserves is significant, the actuary should make relevant comments on COVID-19 impacts and discuss the corresponding actuarial assumptions in the Statement of Actuarial Opinion. Otherwise, Appointed Actuaries are still strongly encouraged to mention their review of COVID-19 effects on the company in the Statement of Actuarial Opinion, to demonstrate that it has not been overlooked or disregarded.
Actuaries may refer to the Statement of Actuarial Opinion Instructions, ASOPs, and Statutory Accounting Principles Working Group documents (particularly INT 20-08) for further instruction. The COVID-19 FAQ document, published by COPLFR and available on the American Academy of Actuaries website, can serve as an additional resource for practical consideration.
The Actuarial Opinion (C) Working Group of the Casualty Actuarial and Statistical (C) Task Force met Sept. 2 and Sept. 8, 2021. The following Working Group members participated: Anna Krylova, Chair (NM); Miriam Fisk, Vice Chair (TX); Susan Andrews, Qing He, and Amy Waldhauer (CT); David Christhilf (DC); Chantel Long, Reid McClintock, and Judy Mottar (IL); Sandra Darby (ME); Gordon Hay (NE); Tom Botsko (OH); Andrew Schallhorn (OK); and James Di Santo (PA). Also participating were: Kevin Dyke (MI); and Arthur Schwartz (NC).

1. **Discussed the 2021 Regulatory Guidance**

Ms. Krylova led discussions on the draft *Regulatory Guidance on Property and Casualty Statutory Statements of Actuarial Opinion, Actuarial Opinion Summaries, and Actuarial Reports for the Year 2021* (Regulatory Guidance). She said she used comments submitted by Stephen J. Koca (Milliman) and Michelle L. Iarkowski (Risk & Regulatory Consulting LLC) to compile a list of issues (Attachment Six-A).

The Working Group agreed to make some changes to the Schedule P reconciliation section. Guidance will be added to say a reconciliation of the data provided to the actuary to Schedule P is not sufficient; rather, reconciliation of the data used by the actuary to Schedule P is needed. Additional guidance about documentation and explanations will also be added to the Schedule P reconciliation section.

In the continuing education (CE) logging procedure and the COVID-19 sections, the Working Group agreed to make some editorial changes.

The Working Group discussed potential guidance on whether the qualification documentation should be provided for each individual entity or whether it could be provided to the group. Ms. Krylova said this might not be an actuarial issue, but rather a financial issue to ask for feedback. Every annual statement is required to be accompanied by a statement from a Certified Public Accountant (CPA), so the Working Group might wish to replicate requirements of the CPA’s opinion as to whether it is done on a company or group basis. Ralph Blanchard (Travelers) said the Board of Directors is defined in the annual statement to include the designated board of directors, its equivalent, or an appropriate committee reporting to the Board. Kathleen C. Odomirok (American Academy of Actuaries—Academy) requested that the Statement of Actuarial Opinion (SAO) instructions be clear so actuaries will not have to wait for a financial reprimand. The Working Group will discuss the SAO instructions on a future call.

Mr. Schwartz asked if the historical instruction changes could be eliminated, acronyms could be revised, and the introductory paragraph could be revised. The Working Group discussed proposed changes and agreed to postpone further discussion until next year’s Regulatory Guidance is drafted.

Ms. Mottar suggested adding a paragraph about the Working Group’s future plan to potentially add a deadline for filing submission of qualification documentation to the Board. Ms. Krylova will add that information. The Working Group will hold an e-vote after receiving a final version of the Regulatory Guidance.

Having no further business, the Actuarial Opinion (C) Working Group adjourned.
<table>
<thead>
<tr>
<th>Issue/Comment</th>
<th>Response/Proposed Change</th>
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<tr>
<td><strong>(Stephen K)</strong></td>
<td>To be discussed.</td>
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<td>“The Appointed Actuary should clearly demonstrate to a regulator or other user of the Actuarial Report how the actuarial data shown in the Schedule P reconciliation is aggregated from the liability groupings in the supporting actuarial analysis prior to reconciliation of that data to Schedule P.” This sentence is applicable in the situation where the actuarial analysis groupings are more granular than Schedule P line of business groupings. The opposite situation is also possible where the actuarial analysis groupings are more broad. In the latter situation, is the expectation that the Appointed Actuary would a) disaggregate the data used in their analysis to match the individual Schedule P lines of business; b) aggregate the Schedule P data to match the groupings used in their analysis.</td>
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<td><strong>(Stephen K)</strong></td>
<td>To be discussed.</td>
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<td>“If the Appointed Actuary chooses not to reconcile certain data elements used in their analysis, such as claim counts or other commonly used data that regulators may expect to see, a brief explanation should be included in the Actuarial Report to make it clear that these elements were not inadvertently overlooked.” Suggested addition to the above sentence (underlined). In addition, clarification of what is meant by “other commonly used data” would be helpful.</td>
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<td><strong>(Stephen K)</strong></td>
<td>Suggested revision:</td>
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<td>“Schedule P reconciliations may be performed on a Direct and Assumed basis, Net of Reinsurance basis, or both. Selecting the basis is left to the Appointed Actuary’s discretion, but the rationale for choosing one way over the other should be explained in the Actuarial Report.” My interpretation of the Instructions is that both Direct and Assumed basis and Net basis data are to be reconciled to Schedule P. This sentence implies there is an option and regulators do not expect to see both as long as the rationale is disclosed. Is it possible to provide examples of rationale that may be acceptable for doing the reconciliation only on a net basis, or only on a direct and assumed basis?</td>
<td>“Schedule P reconciliations are expected to be performed on both a Direct &amp; Assumed basis and a Net of Reinsurance basis. If circumstances specific to the company lead the Appointed Actuary to perform the reconciliation on only one basis, the reasoning for this decision should be explained in the Actuarial Report.”</td>
</tr>
<tr>
<td><strong>(Stephen K)</strong></td>
<td>Suggested Revision:</td>
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| “Schedule P reconciliations resulting in differences that are not minimal should be addressed in the Actuarial Report discussion, even if they are immaterial to the analysis, in order to assure regulators that the Appointed Actuary is aware of the differences and has sought an explanation for them.” I believe this sentence places more requirements on the Appointed Actuary than the Instructions state: “An explanation should be provided for any material differences.” | “The Instructions require that the Appointed Actuary include an explanation for any material differences in the Schedule P Reconciliation. When differences appear in the reconciliation but are viewed as immaterial by the Appointed Actuary, the Appointed Actuary should acknowledge the immateriality of the differences in the Actuarial Report in order to assure
- Can further clarification be provided for what “not minimal” means? Perhaps an example of a situation that would qualify?

| regulators that the Appointed Actuary is aware of the differences and has considered the potential impact of the differences on the analysis underlying the Actuarial Opinion.” |

(Michelle I)
The Instructions can’t be changed until 2022 to remove the reference to “principles” in this language:
The OPINION paragraph should include a sentence that at least covers the points listed in the following illustration:
“In my opinion, the amounts carried in Exhibit A on account of the items identified:
A. Meet the requirements of the insurance laws of (state of domicile).
B. Are computed in accordance with accepted actuarial standards and principles.
C. Make a reasonable provision for all unpaid loss and loss adjustment expense obligations of the Company under the terms of its contracts and agreements.”

So that means the 2021 Instructions are going to ask for the “and principles” language in item B – even though we know that the reserving principles were repealed and that they therefore won’t be in effect when actuaries sign their 2021 opinions. So the 2021 Instructions are asking the AA to make a statement that isn’t really true (which is why it would be changed in 2022...).

We’ve submitted a request to the Blanks WG to remove the reference to the principles in this paragraph. Since this change is an editorial one, they should be able to make it for the 2022 Instructions.
Schedule P Reporting for Retroactive Reinsurance Accounting Exceptions

CASTF response to SAPWG Ref 2019-49

December 7, 2021, Draft

• CASTF Subgroup
  • Gordon Hay, FCAS, MAAA, CPCU – Nebraska
  • Miriam Fisk, FCAS, FCAS, MAAA, ASA – Texas
  • Tom Botsko, ACAS – Ohio

• NAIC Staff
  • Robin Marcotte
  • Kris DeFrain, FCAS, MAAA, CPCU

COPLFR’s May 2019 Letter to CASTF and SAPWG

• Asserted ambiguity in the accounting/reporting requirements for affiliated retroactive reinsurance agreements that meet the requirements for “Prospective Reinsurance Accounting” treatment

• Attributed materially different presentations in Schedule P by different companies to that ambiguity

• Recommended that this asserted ambiguity be addressed by improved clarity in SSAP 62R and the Annual Statement Instructions, “given that industry Schedule P is utilized for risk-based capital (RBC) purposes as well as other purposes”

SSAP 62R
P&C Reinsurance Accounting (SSAP 62R)

- **Deposit Accounting (paragraphs 40-41)**
  - Used when the agreement does not transfer risk
  - Paragraph 47 requires a modified version of deposit accounting to be used for offshored retroactive reinsurance involving a gain in surplus to the cedant – does not allow the deposit asset to be admitted

- **Prospective Reinsurance Accounting (paragraph 33-38)**
  - Net premium - loss ratio - added premium
  - Net loss and LAE - Gross loss and LAE – Ceded loss and LAE

- **Retroactive Reinsurance Accounting (paragraphs 33-38)**
  - Coding entity: loss and LAE reserves. Exhibits & Schedules do not take credit for retroactive reinsurance
  - Accounting entity: loss and LAE reserves. Exhibits & Schedules must assume retroactive reinsurance
  - Balance sheet write-in amounts:
    - Amounts of retroactive reinsurance neither (contra) liability nor assumed liability
    - Special surplus from retroactive reinsurance
  - Income statement write-in: Retroactive reinsurance gains/loss included under Other Income

36.a: Structured settlement annuities

- **Definition & Requirements**
  - Annuities for individual claims purchased to implement settlements of policy obligations

- **Accounting**
  - Accounting guidance is provided in SSAP 21R (Other Admitted Assets) and SSAP 65 (P&C Contracts)
  - Not specified in SSAP 62R, other than being an exception to retroactive reinsurance accounting

36.b: Novations

- **Definition & Requirements**
  - Original insurer’s obligations are completely extinguished, resulting in no further exposure to loss arising on the business novated
  - Parties are not affiliates (or if affiliates, that the transaction has the prior approval of the domiciliary regulators of the parties)
  - The accounting for the original reinsurance agreement will not be altered from retroactive to prospective

- **Prospective Reinsurance Accounting**
  - SSAP 62R, paragraph 39
  - Original insurer reports amounts paid as reduction of written and earned premiums, and unearned premiums to the extent that premiums have not been earned
  - Novated loss and LAE reserves are written off through accounts, exhibits, and schedules in which they were originally recorded
  - Assuming insurer reports amounts received as written and earned premiums, and obligations assumed as incurred losses
### 36.c: Commutations

**Definition & Requirements**
- Complete and final settlement and discharge of all present and future obligations between the parties arising out of the (commuted portion of the) original agreement

**Accounting**
- **SSAP 62R, paragraphs 94-97**
  - Commuted balances are written off through accounts, exhibits, and schedules in which they were originally recorded
  - Any net gain or loss (to either party) is reported as underwriting income
  - Ceding in the commuted agreement records cash received as negative paid loss

### 36.d: Intercompany reinsurance, without surplus gain

**Definition & Requirements**
- Companies are 100% owned by a common parent or ultimate controlling person.
- There is no surplus gain to the ceding entity as a result of the transaction.

**Prospective Reinsurance Accounting**
- **Note:** This exception is the focus of the COPLFR letter.
- Explicitly “shall be accounted for as prospective reinsurance agreements”

### 37: Cession to an affiliate, with surplus gain

**Definition & Requirements**
- Companies are affiliated or under common control (as defined in Appendix A-440)
- Retroactive reinsurance results in surplus gain to the ceding entity (with or without risk transfer)

**Accounting**
- **SSAP 62R, paragraph 37**
  - Requires **transfer** version of deposit accounting
  - Consideration paid is recorded as a deposit and reported as a non-admitted asset
  - No deduction made from ceding entity’s loss and LAE reserves

### 36.e: Property/casualty run-off agreements

**Definition & Requirements**
- Can only cover liabilities relating to line(s) of business or specific market segments no longer actively marketed by the transferring entity
- Transferring entity remains primarily liable to the policyholder under the original contract
- Agreements between affiliates of insurers under common control are **eligible** for this exception
- Accounting treatment must be approved by the domiciliary regulators of the transferring entity and the assuming entity
- Cannot be cancelable by either party for any reason

**Accounting**
- **SSAP 62R, paragraphs 102-105**
  - Transferring entity records consideration received as a paid loss
  - Assuming entity records consideration received as negative paid loss
  - Transferring entity records increase to ceded reinsurance reserves for the amount of the transferred reserve
  - Assuming entity reports the business in the same lines of business and same level of detail as reported by the original insurer
Schedule P Instructions

Premium and Losses

Earned premium is on a calendar-year basis. Losses incurred should be assigned to the year in which the event occurred that triggered coverage under the contract. This may be a date of accident (occurrence policies), a date of report (claims-made policies), a policy issue date (tail policies), or a date of discovery (fidelity and surety).

Retroactive Reinsurance

Retroactive reinsurance should not be reflected in Schedule P. The transferor in such an agreement must record, without recognition of the retroactive reinsurance, its loss and loss adjustment expense reserves on a gross basis on its balance sheet and in all schedules and exhibits. The transferee in such an agreement must exclude the retroactive reinsurance from its loss and loss expense reserves and from its schedules and exhibits.

Note: This is consistent with SSAP 62R, paragraph 34.

Intercompany Pooling

If the reporting entity participates in a pooling agreement, show only its share of the business, not the total for all participants.

When changes to pooling agreements impact prior accident years, historical data values in Schedule P Parts, 1 through 6 should be restated based on the new pooling percentage. This should be done to present meaningful development patterns in Schedule P. When pooling changes only impact future accident years, no restatement of historical values should be made.

Note: This differs from SSAP 62R, paragraphs 36d and 37.
CASTF Discussion

Applying Retroactive Reinsurance Exception in Schedule P

- Schedule P Instructions are explicit for Intercompany Pooling Agreements, including when the agreement has a retroactive component
  - "When changes to pooling agreements impact prior accident years, historical data values in Schedule P Parts 1 through 6 should be restated based on the new pooling percentage."
- Schedule P Instructions provide no explicit guidance for any of the SSAP 62R, paragraph 36 exceptions
- Esp., paragraph 36.d. LPT’s create Schedule P distortions
  - LPT ceded losses are reported by accident year
  - Schedule P Instructions note premium should be calendar year earned premium (not allocated to prior years)
  - Agree with COPUS that 6 Dekko companies did allocate Cal year 2014 ceded LPT premium to prior years on Schedule P - 100% ceded loss ratios with larger ceded balances in most recent Acc Year, produced a very favorable-looking net loss ratio trend.
  - Most have recorded LPT premium in current calendar year on Schedule P. Cedant’s result is largely favorable prior years’ development offset by high current Acc Year net loss ratio. Reinsurer’s result is abrupt adverse prior years’ development offset by low current Acc Year net loss ratio.

Proposal: Clarify Schedule P Instructions for “prospective reporting exceptions”

- The Schedule P Instructions are silent regarding novations and paragraph 36d agreements, which both receive prospective accounting treatment.
- Schedule P Instructions should provide explicit guidance for the SSAP 62R, paragraph 36c and 36d exceptions.
- There will be distortions in Schedule P when applying prospective accounting to retroactive reinsurance.

Disconnect between Schedule P Pooling Instructions and SSAP 62R

- Intercompany pooling agreements with a retroactive component generally reallocate surplus among the members.
- SSAP 62R, paragraph 36d only allows prospective accounting if there is no gain in surplus to the ceding entity.
- To prevent surplus manipulation amongst the group and/or backdoor dividends, SSAP 62R, paragraph 37 requires harsher method of deposit accounting if there is a gain in surplus to the ceding entity.

CASTF Discussion

- Do we want to address this disconnect? If so, how?

One Potential Proposal

- Add intercompany pooling agreements to the exceptions listed in SSAP 62R, paragraph 36.
Caveats

- Clarity in SSAP 62R and Schedule P Instructions should reduce but will not eliminate variations in Schedule P presentation or distortions to (industry) RBC.
  - Intentional variations observed in Schedule P presentation for paragraph 36d exceptions were due to states’ direction, not ambiguity in SSAP 62R.
  - Variations may be unintentional, particularly when the cedant and its domicile are not accustomed to prescribed accounting treatment for exceptions.
  - Paragraph 36d agreements have been used to cede material portfolios to an affiliate with the same ultimate owner, but outside the NAIC financial reporting system, where:
    - Subsequent development is omitted from the Industry Schedule P data
    - Retrocession may proceed without deferred surplus recognition

Other Possible Actions

- Related to SSAP 62R, paragraph 36d exceptions:
  - Stop prescribing prospective reinsurance accounting
  - Specify a method for allocation of premium to prior years instead of being reported in the current calendar year
  - Expand Schedule P interrogatories or Note 23 disclosures to provide more information about these agreements
  - Add a Schedule P line of business
  - Unacceptable option: Specify that the consideration paid is reported as loss (positive paid loss by cedant, negative paid loss by assuming entity) instead of premium
    - This is commutation accounting and is not consistent with prospective accounting, although it has been advocated by some companies.
  - Add Schedule P reporting instructions for the SSAP 62R, paragraph 36 exceptions that don’t receive prospective accounting treatment (Structured Settlements, Commutations, and qualifying Run-off agreements)
  - Discuss whether SSAP 62R, paragraph 37 is overly punitive
Introduction

- GLMs are industry standard
- The CASTF White Paper for Predictive Models is focused primarily on GLMs
- Some companies are experimenting with more sophisticated models
  - GAM - Similar to GLMs, but with non-parametric "smoothed" terms
  - Tree Based Models - Based on a collection of multiple decision trees
  - Neural Networks - Mostly for generating scores based on images
- The NAIC model review team has reviewed the above model types without CASTF guidance
- The NAIC model review team would like to discuss how reviews should vary for these differing model types
- Today's focus is on Random Forests (a type of Tree Based Model)

Tree Based Models

- Models that can be represented as a decision tree or a collection of decision trees
- Types of Tree Based Models
  - Single decision Tree
  - "Bagged" Trees
  - Random Forest
  - Gradient Boosting Machine (XGBoost)
- Supervised Model
  - There is still a target variable
    - Classification: Renew/Non-renew, Claim/No Claim, Fraud/No Fraud
    - Regression: Frequency, Severity, Pure Premium
  - Today's focus will be on Random Forest Models
Tree Based Model

- Single Decision Tree
- Easy to Understand
- Mimics how people make decisions
- Easily interpreted
- Classification returns a likelihood

Prior Claim?

Age < 20?

10%

8%

7%

3%

Terminology

- Nodes
- Root
- Sub-Node
- Parent/Child
- Splitting
- Branch
- Sub-Tree

Regression returns a predicted amount

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Bagged Trees

- Most Tree-Based Models are an “ensemble” of models.
- “Bagged” Trees are based on multiple trees.
- “Bagged” comes from “bootstrap aggregated.”
- Each tree is grown the same way.
- The difference is each tree is based on a different bootstrap sample.
- The same variables are considered in each tree.
- Final prediction is the average of each tree’s prediction.

Random Forest

- Random Forest
  - Each tree is based on a different bootstrap sample (still).
  - Additionally: Randomly chosen variables considered at each split.
  - Each tree is grown the same way.
  - Final prediction is the average of each tree’s prediction.

Advantages

- Trees are substantially different.
- Each tree not based on the same sample.
- Each split not based on the same variables.

Random Forest Example

- 22 year old driver, no prior claims.
- 5 year old vehicle, $15,000 vehicle.
- ($10 + $15) / 2 = $12.5

Random Forest Interpretation

- Interpretation gets difficult.
- Trees can get very deep.
- There can be 100’s or 1,000’s of trees.
- Many GLM statistical tests no longer apply.
- There are many hyperparameters.
- Selections may materially impact the model.
- Selections should be checked for reasonability.
Random Forest

- Hyperparameters
  - Number of trees
  - Criteria on which to split
  - When to stop splitting
  - Bootstrap sample size (% of rows)
  - Max Tree Depth
  - Minimum Node Size
  - Max Leaf Nodes
  - Random Variables for each split (# of columns)

Number of Trees
- More trees makes the models more complex
- The number of trees should be "tuned" to reduce error on either:
  - Separate test dataset
  - Out-Of-Bag data from training dataset
- Different software may have different "early stopping" rules. Companies should be able to explain these rules.

Random Forest Challenges

- Interpretability
- Prone to Overfit
- Auditability

Challenges - Interpretability

- GLM's
  - Produce one set of model output
  - P-values provide a measure of statistical significance
  - Higher values can be prioritized for further review
  - Log-link model coefficients are easy to understand
    - Beta < 0 is a discount, Beta > 0 is surcharge

- RF's
  - It is hard to digest the net impact of a collection of trees
  - Variable Importance Plots highlight which variables are relatively less important
  - Interpretability plots help understand the impact of a variable upon the model
**Variable Triaging**

- Variable Importance Plots
  - Provide a measure of which variables are relatively more important than others
  - Variables with low importance measures aren’t necessarily unimportant, but they might be
  - Further scrutiny may be appropriate for variables with a low importance measure
  - Similar to looking at variables with high p-values in a GLM
- Types of variable importance
  - Gain: improvement in prediction accuracy from feature
  - Cover: Number of observations influenced
  - Frequency: Number of times used to split data

**Interpretability Plots**

- Partial Dependence Plots
  - Computes the marginal effect of a given feature on the prediction
  - Fixes the value of the predictor variable of interest, calculating the model prediction for each observation using the fixed value
  - Repeat for all values of the predictor variable
- Accumulated Local Effects
  - Better option in the case of correlated features
  - Calculates and accumulates incremental changes in the feature effects
  - Shows the expected and centered effects of a feature, like a coefficient in a GLM
- Shapely Additive Explanations
  - How much that feature moves the prediction away from the overall average prediction.
  - Feature increases predicted value higher than average value.
  - Feature decreases predicted value lower than average value.
Challenges - Prone to Overfit

- Review Hyperparameters
  - Number of trees should be large enough, but no larger
  - Look at plot to minimize 0.632/Out of Bag Error or Deviance
- Tree Complexity
  - Minimum node size should be set high enough for reasonable credibility
  - Rule of Thumb: Max depth of ~8 may be too high
- Other hyperparameters should be disclosed and briefly commented on
  - Bootstrap sample size (% of rows)
  - Random Variables tried for each split (# of columns)
  - Criteria to split should match the model purpose (classification, regression)
- Review lift charts on test/holdout data

Challenges - Auditability

- GLM’s
  - Indicated factors are reproducible if you have the coefficients and link function
  - Indicated factors can be stored in lookup tables
  - Auditing model predictions could easily be done, even for a large number of risks
- RF’s
  - Complete documentation means diagrams or if statements representing every component tree
  - Sample calculations would include input variable values, each tree’s result, and the final result (average of the component trees)
  - A full audit of the logic would likely involve a significant amount of coding

Sample Risk Driver Age Prior Claims Vehicle Age … Tree 1 Tree 2 Tree 3 … Model Prediction

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Random Forest Documentation
- Exhibits could be made for spot-checking against tree documentation
- Input Predictors
- Individual Tree Predictions
- Overall Model Prediction (average)

However, auditing every prediction for a book of business would still be extremely difficult

Draft Random Forest Appendix For Discussion

- Sending out 2 versions
- Track Changes: Highlights removed, changed, and added items to the GLM Appendix
- Final: Updated with the tracked changes for easy reading
- Looking for feedback for future Random Forest reviews
References

- Basic Decision Tree Terminology: https://medium.datadriveninvestor.com/the-basics-of-decision-trees-e5837e2aba7
- Theoretical Introduction to Random Forest
  - Introduction to Statistical Learning (Chapter 8 – 8.2.2): http://web.stanford.edu/~hastie/ISLRv2_website.pdf
- Interpretable Machine Learning (Variable Importance and Interpretability Plots)
- Book Club Presentation: https://www.youtube.com/watch?v=Mj4TAt5hxk
- Tree-Based Models Book Club: https://youtu.be/6UCbpAr4r9M

https://naiconline.sharepoint.com/:b/r/sites/NAICSsupportStaffHub/Member%20Meetings/Fall%202021/TF/CasAct/cej_comments_castf_211011_blanks_exposure_counts.pdf?csf=1&web=1&e=LTYWBg
### A. SELECTING MODEL INPUT

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<tr>
<td>1. Available Data Sources</td>
<td>Review the details of sources for both insurance and non-insurance data used as input to the model (only need sources for filed input characteristics included in the filed model).</td>
<td>1</td>
<td>Request details of data sources, whether internal to the company or from external sources. For insurance experience (policy or claim), determine whether data are aggregated by calendar, accident, fiscal, or policy year and when it was last evaluated. For each data source, get a list of all data elements used as input to the model that came from that source. For insurance data, get a list all companies whose data is included in the datasets. Request details of any non-insurance data used (customer-provided or other), whether the data was collected by use of a questionnaire/checklist, whether data was voluntarily reported by the applicant, and whether any of the data is subject to the federal Fair Credit Reporting Act (FCRA). If the data is from an outside source, find out what steps were taken to verify the data was accurate, complete, and unbiased in terms of relevant and representative time frame, representative of potential exposures, and lacking in obvious correlation to protected classes. <strong>Note:</strong> Reviewing source details should not make a difference when the model is new or refreshed; refreshed models would report the prior version list with the incremental changes due to the refresh.</td>
</tr>
<tr>
<td>A.1.a</td>
<td>Reconcile aggregated insurance data underlying the model with available external insurance reports.</td>
<td>4</td>
<td>Accuracy of insurance data should be reviewed. It is assumed that the data in the insurer’s data banks is subject to routine internal company audits and reconciliation. “Aggregated data” is straight from the insurer’s data banks without further modification (i.e., not scrubbed or transformed for the purposes of modeling). In other words, the data would not have been specifically modified for the purpose of model building. The company should provide some form of reasonability check that the data makes sense when checked against other audited sources.</td>
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### Section Information Element

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<tr>
<td>A.1.c</td>
<td>Review the geographic scope and geographic exposure distribution of the raw data for relevance to the state where the model is filed.</td>
<td>2</td>
<td>Many models are developed using a countrywide or a regional dataset. The company should explain how the data used to build the model makes sense for a specific state. The regulator should inquire which states were included in the data underlying the model build, testing, and validation. The company should explain why any states were excluded from the countrywide data. The company should provide an explanation where the data came from geographically and that it is a good representation for a state; i.e., the distribution by state should not introduce a geographic bias. However, there could be a bias by peril or wind-resistant building codes. Evaluate whether the data is relevant to the loss potential for which it is being used. For example, verify that hurricane data is only used where hurricanes can occur. The company should provide a demonstration that the model fits well on the specific state or surrounding region.</td>
</tr>
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</table>

### 2. Sub-Models

| A.2.a   | Consider the relevance of (i.e., whether there is bias) of overlapping data or variables used in the model and sub-models. | 3                                            | Check if the same variables/datasets were used in the model, a sub-model, or as stand-alone rating characteristics. Random Forest models handle redundant variables by splitting on only one of the variables within each component tree. By contrast, GLM’s struggle with redundant variables as they try to include redundant variables simultaneously. However, best actuarial practice is to keep models as parsimonious as possible and only include additional variables that contribute significant additional predictive power.                                                                                                                                                                                                 |
| A.2.b   | Determine if the sub-model was previously approved (or accepted) by the regulatory agency. | 1                                            | If the sub-model was previously approved/accepted, that may reduce the extent of the sub-model’s review. If approved, obtain the tracking number(s) (e.g., state, SERFF) and verify when and if it was the same model currently under review.                                                                                     |

**Note:** A previous approval does not necessarily confer a guarantee of ongoing approval; e.g., when statutes and/or regulations have changed or if a model’s indications have been undermined by subsequent empirical experience. However, knowing whether a model has been previously approved can help focus the regulator’s efforts and determine whether the prior decision needs to be revisited. In some circumstances, direct dialogue with the vendor could be quicker and more useful.
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<td>A.2.c</td>
<td>Determine if the sub-model output was used as input to the Random Forest; obtain the vendor name, as well as the name and version of the sub-model.</td>
<td>1</td>
<td>To accelerate the review of the filing, it may be desirable to request (from the company), the name and contact information for a vendor representative. The company should provide the name of the third-party vendor and a contact in the event the regulator has questions. The “contact” can be an intermediary at the insurer (e.g., a filing specialist), who can place the regulator in direct contact with a subject-matter expert (SME) at the vendor. Examples of such sub-models include credit/financial scoring algorithms and household composite score models. Sub-models can be evaluated separately and in the same manner as the primary model under evaluation. A sub-model contact for additional information should be provided. Sub-model SMEs may need to be brought into the conversation with regulators (whether in-house or third-party sub-models are used).</td>
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<tr>
<td>A.2.d</td>
<td>If using catastrophe model output, identify the vendor and the model settings/assumptions used when the model was run.</td>
<td>1</td>
<td>To accelerate the review of the filing, get contact information for the SME that ran the model and an SME from the vendor. The “SME” can be an intermediary at the insurer (e.g., a filing specialist), who can place the regulator in direct contact with the appropriate SMEs at the insurer or model vendor. For example, it is important to know hurricane model settings for storm surge, demand surge, and long-term/short-term views.</td>
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<tr>
<td>A.2.e</td>
<td>Obtain an explanation of how catastrophe models are integrated into the model to ensure no double-counting.</td>
<td>1</td>
<td>If a weather-based sub-model is input to the Random Forest under review, loss data used to develop the model should not include loss experience associated with the weather-based sub-model. Doing so could cause distortions in the modeled results by double-counting such losses when determining relativities or loss loads in the filed rating plan. For example, redundant losses in the data may occur when non-hurricane wind losses are included in the data while also using a severe convective storm model in the actuarial indication. Such redundancy may also occur with the inclusion of fluvial or pluvial flood losses when using a flood model or inclusion of freeze losses when using a winter storm model.</td>
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<td>A.2.f</td>
<td>If using output of any scoring algorithms, obtain a list of the variables used to determine the score and provide the source of the data used to calculate the score.</td>
<td>1</td>
<td>Any sub-model should be reviewed in the same manner as the primary model that uses the sub-model’s output as input. Depending on the result of item A.2.b, the importance of this item may be decreased.</td>
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<tr>
<td>A.3.a</td>
<td>Determine if premium, exposure, loss, or expense data were adjusted (e.g., on-leveled, developed, trended, adjusted for catastrophe experience, or capped). If so, how? Do the adjustments vary for different segments of the data? If so, identify the segments and how the data was adjusted.</td>
<td>2</td>
<td>The rating plan or indications underlying the rating plan may provide special treatment of large losses and non-modeled large loss events. If such treatments exist, the company should provide an explanation how they were handled. These treatments need to be identified and the company/regulator needs to determine whether model data needs to be adjusted. For example, should large bodily injury (BI) liability losses in the case of personal automobile insurance be excluded, or should large non-catastrophe wind/hail claims in home insurance be excluded from the model’s training, test and validation data? Look for anomalies in the data that should be addressed. For example, is there an extreme loss event in the data? If other processes were used to load rates for specific loss events, how is the impact of those losses considered? Examples of losses that can contribute to anomalies in the data are large losses or flood, hurricane, or severe convective storm losses for personal automobile comprehensive or home insurance. Premium should be brought to current rate level if the target variable is calculated with a premium metric, such as loss ratio. Premium can be brought to current rate level with the extension of exposures method or the parallelogram method. Note that the premium must be on-leveled at a granular variable level for each variable included in the new model if the parallelogram method is used. Statewide on-level factors by coverage are typically sufficient for statewide rate indication development but not sufficient for models that determine rates by variable level.</td>
</tr>
<tr>
<td>A.3.b</td>
<td>Identify adjustments that were made to aggregated data (e.g., transformations, binning and/or categorizations). If any, identify the name of the characteristic/variable and obtain a description of the adjustment.</td>
<td>1</td>
<td>Pre-modeling binning may be unnecessary in a random forest model. The tree model will naturally segment numerical values in the splitting process of the trees. However, if the insurer does bin variables before modeling, the reason should be understood.</td>
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<tr>
<td>A.3.c</td>
<td>Ask for aggregated data (one dataset of pre-adjusted/scrubbed data and one dataset of post-adjusted/scrubbed data) that allows the regulator to focus on the univariate distributions and compare raw data to adjusted/binned/transformed/etc. data.</td>
<td>This is most relevant for variables that have been “scrubbed” or adjusted. Though most regulators may never ask for aggregated data and do not plan to rebuild any models, a regulator may ask for this aggregated data or subsets of it. It would be useful to the regulator if the percentage of exposures and premium for missing information from the model data by category are provided. This data can be displayed in either graphical or tabular formats.</td>
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<tr>
<td>A.3.d</td>
<td>Determine how missing data was handled.</td>
<td>1</td>
<td>This is most relevant for variables that have been “scrubbed” or adjusted. The regulator should be aware of assumptions the modeler made in handling missing, null, or “not available” values in the data. For example, it would be helpful to the reviewer if the modeler were to provide a statement as to whether there is any systemic reason for missing data. If adjustments or recoding of values were made, they should be explained. It may also be useful to the regulator if the percentage of exposures and premium for missing information from the model data are provided. This data can be displayed in either graphical or tabular formats. The modeler should describe the way the tree fitting process handled missing values. The modeler should specify if missing values are treated before running the tree model or if they are allowed to be handled by the tree model.</td>
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<tr>
<td>A.3.e</td>
<td>If duplicate records exist, determine how they were handled.</td>
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<td>A.3.f</td>
<td>Determine if there were any material outliers identified and subsequently adjusted during the scrubbing process.</td>
<td>3</td>
<td>Look for a discussion of how outliers were handled. If necessary, the regulator may want to investigate further by getting a list (with description) of the types of outliers and determine what adjustments were made to each type of outlier. To understand the filer’s response, the regulator should ask for the filer’s materiality standard.</td>
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### 4. Data Organization

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<tr>
<td>A.4.a</td>
<td>Obtain documentation on the methods used to compile and organize data, including procedures to merge data from different sources or filter data based on particular characteristics and a description of any preliminary analyses, data checks, and logical tests performed on the data and the results of those tests.</td>
<td>2</td>
<td>This should explain how data from separate sources was merged and/or how subsets of policies, based on selected characteristics, are filtered to be included in the data underlying the model and the rationale for that filtering.</td>
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<td>A.4.b</td>
<td>Obtain documentation on the insurer’s process for reviewing the appropriateness, reasonableness, consistency, and comprehensiveness of the data, including a discussion of the rational relationship the data has to the predicted variable.</td>
<td>2</td>
<td>An example is when by-peril or by-coverage modeling is performed; the documentation should be for each peril/coverage and make rational sense. For example, if “murder” or “theft” data are used to predict the wind peril, the company should provide support and a rational explanation for their use.</td>
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<td>A.4.c</td>
<td>Identify material findings the company had during its data review and obtain an explanation of any potential material limitations, defects, bias, or unresolved concerns found or believed to exist in the data. If issues or limitations in the data influenced modeling analysis and/or results, obtain a description of those concerns and an explanation how modeling analysis was adjusted and/or results were impacted.</td>
<td>1</td>
<td>“None” or “N/A” may be an appropriate response.</td>
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## B. BUILDING THE MODEL

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<td>B.1.a</td>
<td>Identify the type of model underlying the rate filing (e.g., Random Forest, GLM, decision tree, Bayesian GLM, gradient-boosting machine, neural network, etc.). Understand the model’s role in the rating system and provide the reasons why that type of model is an appropriate choice for that role.</td>
<td>1</td>
<td>It is important to understand if the model in question is a Random Forest and, therefore, these information elements are applicable; or if it is some other model type, in which case other reasonable review approaches may be considered. There should be an explanation of why the model (using the variables included in it) is appropriate for the line of business. If by-peril or by-coverage modeling is used, the explanation should be by-peril/by-coverage. <strong>Note:</strong> If the model is not a Random Forest, the information elements in this white paper may not apply in their entirety.</td>
</tr>
<tr>
<td>B.1.b</td>
<td>Identify the software used for model development. Obtain the name of the software vendor/developer, software product, and a software version reference used in model development.</td>
<td>3</td>
<td>Changes in software from one model version to the next may explain if such changes, over time, contribute to changes in the modeled results. The company should provide the name of the third-party vendor and a “contact” in the event the regulator has questions. The “contact” can be an intermediary at the insurer (e.g., a filing specialist) who can place the regulator in direct contact with the appropriate SME at the vendor. Open-source software/programs used in model development should be identified by name and version the same as if from a vendor.</td>
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<p>|         | Obtain a description how the available data was divided between model training, test, and/or validation datasets. The description should include an explanation why the selected approach was deemed most appropriate, whether the company made any further subdivisions of available data, and reasons for the subdivisions (e.g., a portion separated from training data to support testing of components during model building). Determine if the validation data was accessed before model training was completed and, if so, obtain an explanation of why that came to occur. Obtain a discussion of whether the model was rebuilt using all the data or if it was only based on the training data. | 1                                        | The reviewer should be aware that modelers may break their data into three or just two datasets. Although the term “training” is used with little ambiguity, “test” and “validation” are terms that are sometimes interchanged, or the word “validation” may not be used at all. The reviewer should note whether a company employed cross-validation techniques instead of a training/test/validation dataset approach. If cross-validation techniques were used, the reviewer should request a description of how cross-validation was done and confirm that the final model was not built on any particular subset of the data, but rather the full dataset. The discussion of training, test, and/or validation datasets is a separate discussion from the % of observations (rows of data) or % of features (columns of data) used within each tree. These splits are based on hyperparameters and are commented on in other sections. |
| B.1.d   | Obtain a brief description of the development process, from initial concept to final model and filed rating plan.                                                                                                                                                                                                                                                                                                                                                                                        | 1                                        | The narrative should have the same scope as the filing.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| B.1.e   | Obtain a narrative on whether loss ratio, pure premium, or frequency/severity analyses were performed and, if separate frequency/severity modeling was performed, how pure premiums were determined.                                                                                                                                                                                                                                                                                                                                                                                  | 1                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| B.1.f   | Identify the model’s target variable.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1                                        | A clear description of the target variable is key to understanding the purpose of the model. It may also prove useful to obtain a sample calculation of the target variable in Excel format, starting with the “raw” data for a policy, or a small sample of policies, depending on the complexity of the target variable calculation.                                                                                                                                                                                                                                                                                                                                                                          |
| B.1.g   | Obtain a description of the candidate variable selection process prior to the model building.                                                                                                                                                                                                                                                                                                                                                                                                     | 1                                        | Candidate variables are the variables used as input to the modeling process. Certain variables may not end up used in the final model if none of the component trees of the model split on the variable. The narrative regarding the candidate variable selection process may address matters such as the criteria upon which variables were selected or omitted, identification of the number of preliminary variables considered in developing the model versus the number of variables that remained, and any statutory or regulatory limitations that were taken into account when making the selection process.                                                                                                                                                   |
| | | the decisions regarding candidate variable selection. The modeler should comment on the use of automated feature selection algorithms to choose candidate predictor variables and explain how potential overfitting that can arise from these techniques was addressed. |</p>
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<tbody>
<tr>
<td>B.1.h</td>
<td>In conjunction with variable selection, obtain a narrative on how the company determined the granularity of the rating variables during model development.</td>
<td>3</td>
<td>The narrative should include discussion of how credibility was considered in the process of determining the level of granularity of the variables selected. Minimum data volume constraints can be applied to a tree based model, such that the trees will not create a split that would result in terminal nodes with volume below a set amount. The modeler should comment on how the threshold was chosen.</td>
</tr>
<tr>
<td>B.1.i</td>
<td>Determine if model input data was segmented in any way (e.g., by-coverage, by-peril, or by-form basis). If so, obtain a description of data segmentation and the reasons for data segmentation.</td>
<td>1</td>
<td>The regulator would use this to follow the logic of the modeling process.</td>
</tr>
<tr>
<td>B.1.j</td>
<td>If adjustments to the model were made based on credibility considerations, obtain an explanation of the credibility considerations and how the adjustments were applied.</td>
<td>2</td>
<td>If there was no minimum data volume threshold applied to the trees, or if the threshold was very small, obtain an explanation of any post modeling adjustments the modeler made to address the credibility considerations and how the adjustments were applied.</td>
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2. Medium-Level Narrative for Building the Model

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<tbody>
<tr>
<td>B.2.a</td>
<td>At crucial points in model development, if selections were made among alternatives regarding model assumptions, techniques, or hyperparameters, obtain a narrative on the judgment used to make those selections.</td>
<td>2</td>
<td>Evaluate the addition or removal of variables and the model fitting. It is not necessary for the company to discuss each iteration of adding and subtracting variables, but the regulator should gain a general understanding of how these adjustments were done, including any statistical improvement measures relied upon.</td>
</tr>
<tr>
<td>B.2.b</td>
<td>If post-model adjustments were made to the data and the model was rerun, obtain an explanation on the details and the rationale for those adjustments.</td>
<td>2</td>
<td></td>
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<td>Section</td>
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<td>Level of Importance to Regulator’s Review</td>
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<tr>
<td>B.2.d</td>
<td>Identify which distribution was used for the model (e.g., Regression based on Poisson, Gamma, Logistic, or Tweedie are common choices). Obtain an explanation of why the distribution was chosen. Certain distribution assumptions will involve numerical parameters, for example regression with a Tweedie assumed distribution will have a p power value. Obtain the specific numerical parameters associated with the distribution.</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>B.2.e</td>
<td>Obtain a narrative on how the predictions from the component trees are combined to arrive at a final model prediction.</td>
<td>2</td>
<td>Tree based methods combine predictions from multiple component trees and aggregate them into a final prediction for each observation. Common methods for combining random forest model predictions include the arithmetic or geometric mean of all the component trees.</td>
</tr>
<tr>
<td>B.2.f</td>
<td>If there were data situations in which weights were used, obtain an explanation of how and why they were used.</td>
<td>3</td>
<td>Investigate whether identical records were combined to build the model.</td>
</tr>
<tr>
<td>New B.3.1</td>
<td>Obtain the number of component trees comprising the Random Forest model. Obtain a narrative on how this number was chosen.</td>
<td>1</td>
<td>Random Forest models should contain enough trees to reduce error to an acceptable level. Random forest models should balance this with the concept of parsimony. A model with fewer trees that achieves relatively similar reduction in error is preferable to a model with more trees. Checking the error on a test dataset or out of bag error for different numbers of trees.</td>
</tr>
</tbody>
</table>
can reveal at what value the error on test data starts to level off.

Modelers might rely on early stopping rules within modeling software to arrive at the final number of trees. The narrative on the number of trees should discuss the stopping criterion, which defines what condition is met when the model stopped adding more trees.

**New B.3.2**

<table>
<thead>
<tr>
<th>Obtain the sampling parameters that apply to both the percent of observations used in each component tree and the number of features tested for each split within each tree. Obtain a narrative on how the sampling parameters were selected.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1</strong> Random forest models often sample both the observations (typically rows of modeling data) with replacement and sample the features (typically columns of modeling data) This means that each tree has a bootstrapped dataset. The company should discuss the bagging fraction (aka sample size) applied to observations (typically rows of data). This is often expressed as a percent. For example: perhaps each tree is based on a bootstrapped sample which is 50% of the original dataset. The company should discuss the number of features considered at each split. This is often expressed as an integer, A common choice for the number of features is equal to roughly the square root of the total number of candidate variables. For example: perhaps each split is based on 10 randomly selected features (typically columns of data) when there are 100 candidate variables.</td>
</tr>
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</table>

**New B.3.3**

<table>
<thead>
<tr>
<th>Obtain the maximum depth that applies to the component trees in the model. Obtain a narrative on how this number was chosen.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1</strong> The depth of a tree is the number of splits that are allowed to occur between the root node and the terminal nodes. This number can be set explicitly in modeling software or may be implicitly set if the company applies a splitting constraint, such as a minimum observations per node. Maximum tree depths of 8 or higher are considered extremely high.</td>
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<td>Section</td>
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<tr>
<td>3. Predictor Variables</td>
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<tr>
<td>B.3.a</td>
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<td>B.3.b</td>
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<td></td>
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<tr>
<td>B.3.c</td>
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<td></td>
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<tr>
<td>B.3.d</td>
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### Section Information Element

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<tbody>
<tr>
<td>B.3.e</td>
<td>If the modeler made use of one or more dimensionality reduction techniques, such as a principal component analysis (PCA), obtain a narrative about that process, an explanation why that technique was chosen, and a description of the step-by-step process used to transform observations (usually correlated) into a set of linearly uncorrelated variables. In each instance, obtain a list of the pre-transformation and post-transformation variable names, as well as an explanation of how the results of the dimensionality reduction technique was used within the model.</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>New B.3.f</td>
<td>Obtain variable importance plots. Obtain a description of how variable importance was calculated.</td>
<td>1</td>
<td>Variable Importance Plots for tree based methods highlight which variables contributed most to the model. There are multiple ways to calculate variable importance. Variables with the lowest importance measures should be prioritized when reviewing predictor variables for significance.</td>
</tr>
</tbody>
</table>

### 4. Adjusting Data, Model Validation, and Goodness-of-Fit Measures

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<tbody>
<tr>
<td>B.4.a</td>
<td>Obtain a description of the methods used to assess the statistical significance/goodness-of-fit of the model to validation data, such as lift charts and statistical tests. Compare the model’s projected results to historical actual results and verify that modeled results are reasonably similar to actual results from validation data.</td>
<td>1</td>
<td>For models that are built using multistate data, validation data for some segments of risk is likely to have low credibility in individual states. Nevertheless, some regulators require model validation on state-only data, especially when analysis using state-only data contradicts the countrywide results. State-only data might be more applicable but could also be impacted by low credibility for some segments of risk. <strong>Note:</strong> It may be useful to consider geographic stability measures for territories within the state.</td>
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<tr>
<td>B.4.e</td>
<td>Obtain evidence that the model fits the training data well by variable and for the overall model.</td>
<td>2</td>
<td>The regulator should ask for the company to provide exhibits or plots that show the fitted average makes sense when compared to the observed average for variables of interest. Regulators would ideally review this comparison for every variable, but time constraints may limit the focus to just variables of interest. Variables of interest should include those with a low importance measure according to diagnostic tests, variables without an intuitive relationship to loss, or variables that may be a proxy for a protected class attribute.</td>
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<tr>
<td>B.4.g</td>
<td>Obtain a description how the model was tested for stability over time.</td>
<td>2</td>
<td>Evaluate the build/test/validation datasets for potential time-sensitive model distortions (e.g., a winter storm in year 3 of 5 can distort the model in both the testing and validation datasets). Obsolescence over time is a model risk (e.g., old data for a variable or a variable itself may no longer be relevant). If a model being introduced now is based on losses from years ago, the reviewer should be interested in knowing whether that model would be predictive in the proposed context. Validation using recent data from the proposed context might be requested. Obsolescence is a risk even for a new model based on recent and relevant loss data. The reviewer may want to inquire as to the following: What steps, if any, were taken during modeling to prevent or delay obsolescence? What controls exist to measure the rate of obsolescence? What is the plan and timeline for updating and ultimately replacing the model? The reviewer should also consider that as newer technologies enter the market (e.g., personal automobile) their impact may change claim activity over time (e.g., lower frequency of loss). So, it is not necessarily a bad thing that the results are not stable over time.</td>
</tr>
<tr>
<td>B.4.h</td>
<td>Obtain a narrative on how potential concerns with overfitting were addressed.</td>
<td>2</td>
<td>Tree based models such as Random Forest models are notorious for over-fitting. The company should provide a narrative on how overfitting was addressed. The company should provide lift charts on training data and testing data that is separate from the training data.</td>
</tr>
<tr>
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<tr>
<td>B.4.i</td>
<td>Obtain support demonstrating that the Random Forest assumptions are appropriate.</td>
<td>3</td>
<td>A visual review of plots of actual errors is usually sufficient. The reviewer should look for a conceptual narrative covering these topics: How does this particular Random Forest work? Why did the rate filer do what it did? Why employ this design instead of alternatives? Why choose this particular distribution function and this particular link function? A company response may be at a fairly high level and reference industry practices. If the reviewer determines that the model makes no assumptions that are considered to be unreasonable, the importance of this item may be reduced.</td>
</tr>
<tr>
<td>B.4.j</td>
<td>Obtain 5-10 sample records with corresponding output from the model for those records.</td>
<td>2</td>
<td>The company should provide 5-10 sample records with corresponding input variable values, the prediction from each component tree in the model, and the final ensemble model prediction. The company should describe how the final model prediction aggregates the individual tree model predictions.</td>
</tr>
<tr>
<td>New B.4.k</td>
<td>Obtain a deviance analysis by number of trees</td>
<td>2</td>
<td>The company should provide a plot showing that the deviance of the overall model decreases after each iteration (each additional tree)</td>
</tr>
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</table>

5. “Old Model” Versus “New Model”

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<tbody>
<tr>
<td>B.5.a</td>
<td>Obtain an explanation of why this model is an improvement to the current rating plan. If it replaces a previous model, find out why it is better than the one it is replacing; determine how the company reached that conclusion and identify metrics relied on in reaching that conclusion. Look for an explanation of any changes in calculations, assumptions, parameters, and data used to build this model from the previous model.</td>
<td>2</td>
<td>The regulator should expect to see improvement in the new class plan’s predictive ability or other sufficient reason for the change.</td>
</tr>
<tr>
<td>B.5.b</td>
<td>Determine if two Gini coefficients were compared and obtain a narrative on the conclusion drawn from this comparison.</td>
<td>3</td>
<td>This information element requests a comparison of the Lorenz curve and Gini coefficient from the prior model to the Gini coefficient of proposed model. It is expected that there should be improvement in the Gini coefficient. A higher Gini coefficient indicates greater differentiation produced by the model and how well the model fits that data. This is relevant when one model is being updated or replaced. The regulator should expect to see improvement in the new class plan’s predictive ability. One example of a comparison might be sufficient. Note: This comparison is not applicable to initial model introduction. Reviewer can look to CAS monograph, “Generalized Linear Models for Insurance Rating.”</td>
</tr>
</tbody>
</table>
| B.5.c | Determine if double-lift charts were analyzed and obtain a narrative on the conclusion drawn from this analysis. | 3 | One example of a comparison might be sufficient. 
**Note:** “Not applicable” is an acceptable response. |
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<tr>
<td>B.5.d</td>
<td>If replacing an existing model, obtain a list of any predictor variables used in the old model that are not used in the new model as candidate variables. Obtain an explanation of why these variables were dropped from the new model. Obtain a list of all new predictor variables in the new model that were not in the prior old model.</td>
<td>2</td>
<td>It is useful to differentiate between old and new variables, so the regulator can prioritize more time on variables not yet reviewed.</td>
</tr>
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6. Modeler Software

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<tr>
<td>B.6.a</td>
<td>Request access to SMEs (e.g., modelers) who led the project, compiled the data, and/or built the model.</td>
<td>4</td>
<td>The filing should contain a contact that can put the regulator in touch with appropriate SMEs and key contributors to the model development to discuss the model.</td>
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</table>
## C. THE FILED RATING PLAN

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</thead>
<tbody>
<tr>
<td>1. General Impact of Model on Rating Algorithm</td>
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<tr>
<td>C.1.a</td>
<td>In the actuarial memorandum or explanatory memorandum, for each model and sub-model (including external models), look for a narrative that explains each model and its role (i.e., how it was used) in the rating system.</td>
<td>1</td>
<td>The “role of the model” relates to how the model integrates into the rating plan as a whole and where the effects of the model are manifested within the various components of the rating plan. This is not intended as an overarching statement of the model’s goal, but rather a description of how specifically the model is used. This item is particularly important, if the role of the model cannot be immediately discerned by the reviewer from a quick review of the rate and/or rule pages. (Importance is dependent on state requirements and ease of identification by the first layer of review and escalation to the appropriate review staff.)</td>
</tr>
<tr>
<td>C.1.b</td>
<td>Obtain an explanation of how the model was used to adjust the filed rating algorithm.</td>
<td>1</td>
<td>The regulator should consider asking for an explanation of how the model was used to adjust the rating algorithm.</td>
</tr>
<tr>
<td>C.1.c</td>
<td>Obtain a complete list of characteristics/variables used in the proposed rating plan, including those used as input to the model (including sub-models and composite variables) and all other characteristics/variables (not input to the model) used to calculate a premium. For each characteristic/variable, determine if it is only input to the model, whether it is only a separate univariate rating characteristic, or whether it is both input to the model and a separate univariate rating characteristic. The list should include transparent descriptions (in plain language) of each listed characteristic/variable.</td>
<td>1</td>
<td>Examples of variables used as inputs to the model and used as separate univariate rating characteristics might be criteria used to determine a rating tier or household composite characteristic.</td>
</tr>
</tbody>
</table>
### Section 2. Relevance of Variables and Relationship to Risk of Loss

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<tbody>
<tr>
<td>C.2.a</td>
<td>Obtain a narrative regarding how the characteristics/rating variables included in the filed rating plan relate to the risk of insurance loss (or expense) for the type of insurance product being priced.</td>
<td>2</td>
</tr>
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</table>

### Section 3. Comparison of Model Outputs to Current and Selected Rating Factors

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<tr>
<td>C.3.b</td>
<td>Obtain documentation and support for all calculations, judgments, or adjustments that connect the model’s indicated values to the selected rates filed in the rating plan.</td>
<td>1</td>
</tr>
<tr>
<td>C.3.c</td>
<td>For each characteristic/variable used as both input to the model (including sub-models and composite variables) and as a separate univariate rating characteristic, obtain a narrative regarding how each characteristic/variable was tempered or adjusted to account for possible overlap or redundancy in what the characteristic/variable measures.</td>
<td>2</td>
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<tr>
<td>4. Responses to Data, Credibility, and Granularity Issues</td>
<td>C.4.a Determine what, if any, consideration was given to the credibility of the output data.</td>
<td>2</td>
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<td></td>
<td>C.4.b If the rating plan is less granular than the model, obtain an explanation of why.</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>C.4.c If the rating plan is more granular than the model, obtain an explanation of why.</td>
<td>2</td>
</tr>
<tr>
<td>5. Definitions of Rating Variables</td>
<td>C.5.a Obtain a narrative regarding adjustments made to model output (e.g., transformations, binning and/or categorizations). If adjustments were made, obtain the name of the characteristic/variable and a description of the adjustment.</td>
<td>2</td>
</tr>
<tr>
<td>6. Supporting Data</td>
<td>C.6.a Obtain aggregated state-specific, book-of-business-specific univariate historical experience data, separately for each year included in the model, consisting of loss ratio or pure premium relativities and the data underlying those calculations for each category of model output(s) proposed to be used within the rating plan. For each data element, obtain an explanation of whether it is raw or adjusted and, if the latter, obtain a detailed explanation for the adjustments.</td>
<td>4</td>
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<tr>
<td>C.7.a</td>
<td>Obtain a listing of the top five rating variables that contribute the most to large swings in renewal premium, both as increases and decreases, as well as the top five rating variables with the largest spread of impact for both new and renewal business.</td>
<td>4</td>
</tr>
<tr>
<td>C.7.b</td>
<td>Determine if the company performed sensitivity testing to identify significant changes in premium due to small or incremental change in a single risk characteristic. If such testing was performed, obtain a narrative that discusses the testing and provides the results of that testing.</td>
<td>3</td>
</tr>
<tr>
<td>C.7.c</td>
<td>For the proposed filing, obtain the impacts on renewal business and describe the process used by management, if any, to mitigate those impacts.</td>
<td>2</td>
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<tr>
<td>C.7.d</td>
<td>Obtain a rate disruption/dislocation analysis, demonstrating the distribution of percentage and/or dollar impacts on renewal business (created by rerating the current book of business) and sufficient information to explain the disruptions to individual consumers.</td>
<td>2</td>
</tr>
<tr>
<td>C.7.e</td>
<td>Obtain exposure distributions for the model’s output variables and show the effects of rate changes at granular and summary levels, including the overall impact on the book of business.</td>
<td>3</td>
</tr>
<tr>
<td>C.7.f</td>
<td>Identify policy characteristics, used as input to a model or sub-model, that remain “static” over a policy’s lifetime versus those that will be updated periodically. Obtain a narrative on how the company handles policy characteristics that are listed as “static,” yet change over time.</td>
<td>3</td>
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<tr>
<td>C.7.g</td>
<td>Obtain a means to calculate the rate charged a consumer.</td>
<td>3</td>
</tr>
<tr>
<td>C.7.h</td>
<td>In the filed rating plan, be aware of any non-insurance data used as input to the model (customer-provided or other). In order to respond to consumer inquiries, it may be necessary to inquire as to how consumers can verify their data and correct errors.</td>
<td>1</td>
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### 8. Accurate Translation of Model into a Rating Plan

<table>
<thead>
<tr>
<th>Section</th>
<th>Information Element</th>
<th>Level of Importance to Regulator’s Review</th>
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<tbody>
<tr>
<td>C.8.a</td>
<td>Obtain sufficient information to understand how the model outputs are used within the rating system and to verify that the rating plan’s manual, in fact, reflects the model output and any adjustments made to the model output.</td>
<td>1</td>
<td>The regulator can review the rating plan’s manual to see that modeled output is properly reflected in the manual’s rules, rates, factors, etc.</td>
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<td>9. Efficient and Effective Review of Rate Filing</td>
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<tr>
<td>C.9.a</td>
<td>Establish procedures to efficiently review rate filings and models contained therein.</td>
<td>1</td>
<td>“Speed to market” is an important competitive concept for insurers. Although the regulator needs to understand the rate filing before accepting the rate filing, the regulator should not request information that does not increase his/her understanding of the rate filing. The regulator should review the state’s rate filing review process and procedures to ensure that they are fair and efficient.</td>
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<tr>
<td>C.9.b</td>
<td>Be knowledgeable of state laws and regulations in order to determine if the proposed rating plan (and models) are compliant with state laws and/or regulations.</td>
<td>1</td>
<td>This is a primary duty of state insurance regulators. The regulator should be knowledgeable of state laws and regulations and apply them to a rate filing fairly and efficiently. The regulator should pay special attention to prohibitions of unfair discrimination.</td>
</tr>
<tr>
<td>C.9.c</td>
<td>Be knowledgeable of state laws and regulations in order to determine if any information contained in the rate filing (and models) should be treated as confidential.</td>
<td>1</td>
<td>The regulator should be knowledgeable of state laws and regulations regarding confidentiality of rate filing information and apply them to a rate filing fairly and efficiently. Confidentiality of proprietary information is key to innovation and competitive markets.</td>
</tr>
<tr>
<td>C.10.d</td>
<td>Obtain complete documentation of all component trees and how the individual predictions are aggregated together into a final prediction</td>
<td>1</td>
<td>The company should provide either tree diagrams for each component tree or comprehensive if-else statements that would replicate the logic of the trees. The company should state how the individual component tree predictions are combined into a final prediction.</td>
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</tbody>
</table>
New Glossary Terms:

**Accumulated Local Effects Plots:** A type of interpretability plot. Accumulated Local Effects plots calculate smaller, incremental changes in the feature effects. ALE shows the expected and centered effects of a variable.

**Bagged Trees:** An ensemble of trees model where each tree is based on a “bootstrap aggregated” sample.

**Branch:** A connection on a decision tree between a parent node and a child node. A relationship based on a predictor variable is checked at each node, determining which branch applies.

**Candidate Variables:** The variables specified by the modeler to be used within the full model. The random variable selection by a random forest means that component trees might only use a subset of these variables in each tree.

**Child node:** The node below a parent node. The child node is the result of a split that occurs based on a predictor variable. The node above the child node, which is where the split occurred resulting in the creation of the child nodes, is called the parent note. There is 1 parent node for every child node. The root node is the only node which is not a child node.

**Component Tree:** An individual tree within an ensemble of trees based method such as random forest or gradient boosting machine.

**Deviance:** A measure of model fit. Deviance is based on the difference between the log-likelihood of the saturated model and the log-likelihood of the proposed model being evaluated. Smaller values of deviance demonstrate that a model’s predictions fit closer to actual. Deviance on training data will always decrease as model complexity increases.

**Hyperparameter:** A model hyperparameter is a model setting specified by the modeler that is external to the model and whose value cannot be estimated from data.

**Node:** A point on a decision tree. Nodes are either root nodes (the top node), leaf nodes (a terminal node at which point no further splitting occurs), or a internal node which appears in the middle of the tree while splitting is still taking place.

**Out-of-Bag Error:** Error calculated for observations based on the trees that did not include them in the set of training observations. Out-of-Bag Error is calculable when bootstrapping is used to generate different datasets for each component tree in an ensemble tree method.

**Parent node:** The node above a child node. The parent node is where a split occurs based on a predictor variable. The nodes below the parent node, which are a direct result of the parent node’s split, are called child nodes. There are typically 2 child nodes for every parent node. Terminal nodes can not be parent nodes.

**Partial Dependence Plots:** A type of interpretability plot. The partial dependence plot computes the marginal effect of a given variable on the prediction.

**Pruning:** The process of scaling back a tree to reduce it’s complexity. This results in trees with fewer branches and terminal nodes appearing higher on the tree. Pruning is more common on models built on
a single decision tree rather than on ensemble models such as random forests or Gradient Boosting Machines.

**Random Forest:** An ensemble of trees model where each tree is based on a bootstrap aggregated sample and each split is based on a random sample of the candidate variables.

**Root node:** The first (top) node in a decision tree. This node contains the entire set of data used by the tree as no splits have occurred yet.

**Shapley Additive Explanation Plots:** A type of interpretability plot. Shapley plots investigate the effect of including a variable in the model by the order in which it is added. The Shapley value represents the amount the variable of interest contributes to the prediction.

**Splitting:** The process of dividing a node into two or more sub-nodes, starting from the root node. Splitting occurs at every node up until the terminal (leaf) nodes when the stopping criterion is met.

**Stopping Criterion:** A criterion applied to the splitting process that informs the node when it is ineligible to split any further. Volume of data is often used as a stopping criterion, such that each leaf node is based on at least a pre-determined amount of data.

**Terminal Node:** An end node containing no child nodes, because the node has met the stopping criterion. The terminal node is associated with a prediction for one of the component trees. The terminal node is also known as a “leaf” node, the resulting endpoint of a decision tree.

**Tree Based Model:** Models that can be represented as a decision tree or a collection of decision trees.

**Tree Depth:** The maximum number of splits between the root node and a leaf node for a tree.

**Variable Importance:** A measure of how the variables (aka features) contribute to the overall model. There are multiple ways to measure variable importance.

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Casualty Practice Council (CPC) Update

- Comment Letters
  - Response to Federal Insurance Office (FIO) on availability and affordability of automobile insurance
  - Response to Federal Insurance Office (FIO) on climate-related insurance financial risk in the insurance sector
- Auto
  - Consumer Cost of Automobile Insurance
  - Auto Insurance and COVID-19
- Cyber Toolkit (Expansion in early January)
- DE&I Efforts
  - Presentation to NAIC Special (EX) Committee on Race and Insurance Workstream 3
  - Colorado Department of Insurance Comment Letter (December)
  - Causation-Correlation Issue Brief (Early January)
  - Protected Class Data Issue Brief (Early January)
- Medical Professional Liability Issue Brief on COVID-19 impact
- Wildfire Paper Update (December)

Questions?

Contact: Rob Fischer, Casualty Policy Analyst, fischer@actuary.org
Newly formed research council
• Focus on Covid, climate and cyber

Disparate impact
• 4 papers to be published in Jan. 2022

Social inflation
• Final draft of Schedule P analysis received
  • Text analysis of claims data nearing completion

Technology survey final draft complete
Cannabis research w/CIA
CASCOR IFRS 17
Wildfire geospatial modeling Q1 2022
Wildfire mitigation Q1/Q2 2022
Professional Education

Recent and Future PE Events

- Casualty Loss Reserve Seminar
- 2021 In Focus Virtual Seminar: Bridging the Gap: Technical Analysis on Business Strategy for Tomorrow’s Culturally Empowered Actuary
- 2021 Annual Meeting hybrid virtual and in-person
- Python virtual workshops to be repeated in 2022
- Live Python workshop planned for March 2022

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