

RULES – IMPLEMENTATION

JULY 22, 2021

GENERAL LIABILITY

LI-GL-2021-221

TENNESSEE GENERAL LIABILITY INCREASED LIMIT FACTORS TO BE IMPLEMENTED

KEY MESSAGE

The revised increased limit factors represent a combined change of +2.4% from the increased limit factors currently in effect.

UPGRADE TO WORD AND EXCEL DOCUMENTS

As previously noted, ISO is implementing changes to our authoring and delivery systems so that **newly created** documents will be delivered in Office 365 .docx/.xlsx format to be phased in by product/service. In addition to **form** documents, we are pleased to announce that during the third quarter 2021, you will be receiving **circular cover letter** and **Notice To Manualholders (NTM)** documents in .docx format delivered/accessed via Circulars, CLM, EFD, ERC, Filings, FIRST, Forms Library, PRM and Suite +. Changes continue for other document types to be phased in by product/service. Products impacted include, but are not limited to, documents delivered/accessed via Circulars, CLM, EFD, ERC, Filings, FIRST, Forms Library (including PolicyWriting Support Forms Instructional Supplement), PRM, Statistical Plans and Suite +.

BACKGROUND

In circular [LI-GL-2021-116](#), we provided you with information about the General Liability increased limit experience review.

CONSIDERATION OF COVID-19

While there will almost certainly be long-term behavioral, social and economic changes as a result of COVID-19, we expect, based on the information currently available, that those changes will have negligible effects on increased limit factors. Therefore, ISO is not making any explicit adjustment to the increased limit factors referenced in this filing due to COVID-19.

ISO ACTION

We are implementing GL-2021-IALL1, which revises the increased limits for Premises/Operations Liability (subline code 334) and Products/Completed Operations Liability (subline code 336) class tables in Rule 56. of Division Six of the Commercial Lines Manual.

Refer to the attached explanatory material for complete details about the filing.

IMPORTANT NOTE ON RISK LOAD REFLECTION

The increased limit factors in this document incorporate a procedure for reflecting the increased risk or variation in experience associated with higher limit policies in the increased limits ratemaking formula. For all General and Commercial Automobile Liability tables, this procedure generates increased limit factors that are on average (across all state groups) 6.0% higher than the factors would be if calculated without risk load. For the state group that includes this jurisdiction, the indicated increased limit factors are on average 4.2% higher for Premises/Operations and 10.2% higher for Products/Completed Operations Liability than such factors would be if calculated without risk load.

The inclusion of risk load in increased limit factors may have implications on basic limit loss cost multipliers. Specifically, assuming industrywide averages and the ISO increased limit factors in this document, the inclusion of risk load may result in additional revenue of 4.2% for Premises/Operations Liability and 10.2% for Products/Completed Operations Liability. All sources of revenue, including the revenue resulting from the risk load in these increased limit factors, should be kept in mind when determining loss cost multipliers.

EFFECTIVE DATE

The ISO revision is subject to the following rule of application:

These changes are applicable to all policies written on or after June 1, 2022.

COMPANY ACTION

If you have authorized us to file on your behalf and decide:

- To use our revision and effective date, you are not required to file anything with the Insurance Department.
- To use our revision with a different effective date, to use our revision with modification, or to not use our revision, you must make an appropriate submission with the Insurance Department.

For guidance on submission requirements, consult the ISO State Filing Handbook.

WE WILL SUBMIT THIS REVISION TO THE INSURANCE DEPARTMENT ON MAY 2, 2022. IF STATE FILING REQUIREMENTS DICTATE THAT YOU MAKE A SUBMISSION WITH THE INSURANCE DEPARTMENT, DO NOT SUBMIT IT PRIOR TO THIS DATE.

In all correspondence with the Insurance Department on this revision, you should refer to ISO Filing Designation Number GL-2021-IALL1, NOT this circular number. Communications with the regulator concerning a filing affecting multiple lines of business (i.e., CL, PL, AL filing designation) should specify the line(s) of business that you are addressing.

RATING SOFTWARE IMPACT

No new attributes are being introduced with this revision.

POLICYHOLDER NOTIFICATION

If you decide to implement this revision, you should check all applicable laws for the state(s) to which this revision applies, to determine whether or not a specific policyholder notice requirement may apply. Please note that circular [LI-CL-2021-004](#) contains the ISO Guide To Renewals With Changed Conditions For Commercial Lines, which is available only as a guide to assist participating companies in complying with various conditional renewal statutes or regulations, for the major commercial lines of insurance serviced by ISO. The information in the Guide does not necessarily reflect all requirements or exceptions that may apply, and it is not intended as a substitute for your review of all applicable statutes and regulations concerning policyholder notification.

REVISION DISTRIBUTION

We will issue a Notice to Manualholders with an edition date of 6-22 (or the earliest possible subsequent date), along with any new and/or revised manual pages.

REFERENCE(S)

- [LI-GL-2021-116](#) (03/11/2021) 2021 General Liability Increased Limits Experience Reviewed By Staff
- [LI-CL-2021-004](#) (02/17/2021) Revised Lead Time Requirements Listing

ATTACHMENT(S)

Filing [GL-2021-IALL1](#)

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DATA QUALITY

Statistical plan data reported to ISO is first processed through a system of rigorous automated data verification procedures so that only valid data would be used for ratemaking. Subsequent to this initial data submission review, additional analyses on the statistical plan data involving an even more customized data review for this line were performed by staff. During these processes, various data records were excluded from the review. The ISO staff responsible for this circular also reviewed the data for reasonableness.

ACKNOWLEDGMENT OF ACTUARIAL QUALIFICATIONS

The American Academy of Actuaries' "Qualifications Standards for Actuaries Issuing Statements of Actuarial Opinion in the United States" requires that an actuary issuing a Statement of Actuarial Opinion should include an acknowledgment with the opinion that he/she has met the qualification standards of the AAA. ISO considers this rules filing a Statement of Actuarial Opinion; therefore, we are including the following acknowledgment:

I, Stuart Gelwasser, am a Senior Manager and Actuary for ISO, and I, James Davidson, am a Senior Director of Commercial Lines Actuarial Products, including Increased Limits for ISO. We are jointly responsible for the content of this Statement of Actuarial Opinion. We are both members of the American Academy of Actuaries and we meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

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Callers outside the United States, Canada, and the Caribbean may contact us using our global toll-free number (International Access Code + 800 48977489). For information on all ISO products, visit us at www.verisk.com/iso. To keep abreast of the latest Insurance Lines Services updates, view www.verisk.com/ils.

TENNESSEE
GENERAL LIABILITY INCREASED LIMIT FACTORS

EXECUTIVE SUMMARY

PURPOSE

This document:

- revises increased limit factors (ILFs) for all Premises/Operations Liability and Products/Completed Operations Liability classes. These increased limit factors represent a +2.9% change on average from the Premises/Operations increased limit factors currently in effect and a +1.1% change on average from the Products/Completed Operations increased limit factors currently in effect. The General Liability combined effect is +2.4%.
 - provides the analyses used to derive the revised increased limit factors.
-

DEFINITION OF
INCREASED
LIMIT FACTORS

We publish liability loss costs at the basic limit. The basic limit for General Liability is \$100,000/\$200,000 (occurrence/aggregate). The loss cost for a given policy limit is the product of the basic limit loss cost and the increased limit factor for that policy limit.

An increased limit factor is the ratio of two sums. The numerator is the cost to the insurer of writing a policy at the desired limit, including the average prospective indemnity, all loss adjustment expense and the risk load. The denominator is the sum of the same quantities at the basic limit. The average prospective indemnity in the published ILFs reflects per occurrence and aggregate limits.

INCREASED
LIMITS TABLES

We group classifications with similar increased limits experience into increased limits tables. Both Premises/Operations and Products/Completed Operations have three tables corresponding with low, medium and high loss severity. The tables are 1, 2 and 3 for Premises/Operations and A, B and C for Products/Completed Operations.

TENNESSEE
GENERAL LIABILITY INCREASED LIMIT FACTORS

EXECUTIVE SUMMARY

INCREASED
LIMIT FACTOR
CHANGES

The statewide per occurrence increased limit factor changes are:

<u>Premises/Operations</u>			<u>Products/Completed Operations</u>		
	<u>Indicated</u>	<u>Selected</u>		<u>Indicated</u>	<u>Selected</u>
Table 1	+6.0%	+6.0%	Table A	+0.7%	+0.7%
Table 2	+2.6%	+2.6%	Table B	+1.2%	+1.2%
Table 3	<u>+0.1%</u>	<u>+0.1%</u>	Table C	<u>+1.0%</u>	<u>+1.0%</u>
TOTAL	+2.9%	+2.9%	TOTAL	+1.1%	+1.1%
General Liability Combined				<u>Indicated</u>	<u>Selected</u>
				+2.4%	+2.4%

The overall General Liability change of +2.4% is based on a comparison of the average indicated and current General Liability increased limit factors. For the purpose of this calculation, the average General Liability increased limit factors are a weighted average of the overall Premises/Operations and Products/Completed Operations factors. The state group basic limit loss weights used are 0.7439 and 0.2561 for Premises/Operations and Products/Completed Operations, respectively.

In this document, the selected per occurrence factors are the indicated per occurrence factors. We judgmentally adjust some occurrence/aggregate factors developed from the per occurrence factors to maintain consistency between successive policy limits within each table.

PRIOR ISO
REVISIONS

The most recent Premises/Operations and Products/Completed Operations increased limits revisions were:

	<u>Premises/Operations</u>	<u>Products/Completed Operations</u>
Designation	GL-2020-IALL1	GL-2020-IALL1
Date Implemented	06/01/2021	06/01/2021
Indicated Change	+1.3%	+5.9%
Selected Change	+1.3%	+5.9%
Implemented Change	+1.3%	+5.9%

(The overall General Liability percentage change in filing GL-2020-IALL1 was +2.6%.)

TENNESSEE
GENERAL LIABILITY INCREASED LIMIT FACTORS

EXECUTIVE SUMMARY

RISK LOAD
PROCEDURE

The increased limit factors in this document incorporate a procedure for reflecting the increased risk or variation in experience associated with higher limit policies in the increased limits ratemaking formula. For all General and Commercial Automobile Liability tables, this procedure generates increased limit factors that are on average (across all state groups) 6.0% higher than the factors would be if calculated without risk load. For this state group, the indicated increased limit factors are on average 4.2% higher for Premises/Operations and 10.2% higher for Products/Completed Operations than such factors would be if calculated without risk load.

HISTORICAL
SOURCE DATA

For this filing, we used the following data:

- Experience from occurrence-coverage policies for risks subject to Premises/Operations and Products/Completed Operations increased limits tables as reported to ISO by companies that filed detailed statistics. This includes excess and umbrella data reported under the Commercial Statistical Plan, which adds greater credibility to the analysis of higher layers. Experience for risks reported in the ISO Annual Call for Excess and Umbrella Policy Claims supplements primary data for pricing higher policy limits.
- Experience for accident years ending December 31, 2006 to December 31, 2019, which were settled during calendar years 2015 to 2019.

Please note that for Premises/Operations, we review the data by state or state group. Only the largest states have sufficient volume to be reviewed individually. We have grouped all other states based on an analysis of their historical distributions. For certain calculations, we use multistate experience.

We reviewed Tennessee in State Group A, which includes Hawaii, Idaho, Iowa, Kansas, Kentucky, Maine, Maryland, Minnesota, Nebraska, North Dakota, Puerto Rico, Rhode Island, South Dakota, Tennessee and Vermont.

For Products/Completed Operations, we continue to review the data on a multistate basis. This is because the data is sparser and the loss exposure is more likely to encompass multiple states.

Overall and by-table indicated changes are calculated using state group weights. For consistency, both Premises/Operations and Products/Completed Operations use state group weights.

TENNESSEE
GENERAL LIABILITY INCREASED LIMIT FACTORS

EXECUTIVE SUMMARY

EFFECT ON
MANUAL PAGES

Upon implementation of this filing, which revises Premises/Operations and Products/Completed Operations increased limit factors, we will publish revised manual pages in Division Six of the Commercial Lines Manual. The revised increased limit factors will appear in Rule 56 as Tables 56.B.1., 56.B.2., 56.B.3., 56.B.4., 56.B.5. and 56.B.6..

COMPANY
DECISION

We encourage each insurer to decide independently whether the judgments made and the procedures or data used by ISO in developing increased limit factors are appropriate. We have included within this document the information upon which ISO relied in order to enable companies to make such independent judgments.

The data underlying the enclosed material comes from companies reporting to ISO. Therefore, the ISO statistical database is much larger than any individual company's. A broader database enhances the validity of the ratemaking analysis. At the same time, an individual company may benefit from a comparison of its own experience to the aggregate ISO experience and may reach valid conclusions with respect to the manner in which its own costs can be expected to differ from ISO's projections based on the aggregate data.

Some calculations included in this document involve areas of ISO staff judgment. Each company should carefully review and evaluate its own experience in order to determine whether the increased limit factors developed by ISO are appropriate for its use.

This material has been developed exclusively by the staff of ISO.

TENNESSEE
GENERAL LIABILITY INCREASED LIMIT FACTORS

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TENNESSEE
GENERAL LIABILITY INCREASED LIMIT FACTORS

SCOPE OF REVISION

SUMMARY OF
INCREASED
LIMIT FACTOR
CHANGES

Exhibits 1 and 2 (*Summary of Increased Limit Factor Changes*) provide a summary of the current, indicated and selected per occurrence increased limit factors for Premises/Operations and Products/Completed Operations, as well as the overall statewide average indicated and filed changes for General Liability combined.

SUMMARY OF
REVISED
INCREASED
LIMIT FACTORS

The first three pages in **Exhibit MP** (*Manual Pages*) at the end of this filing display the revised Premises/Operations increased limit factors as they will appear in Division Six of the Commercial Lines Manual for Tables 1, 2 and 3 (Tables 56.B.1., 56.B.2. and 56.B.3. in the manual rule pages, respectively). The subsequent three pages in the exhibit display the revised Products/Completed Operations increased limit factors as they will appear in the Commercial Lines Manual for Tables A, B and C (Tables 56.B.4., 56.B.5. and 56.B.6. in the manual rule pages, respectively).

The increased limit factors shown are the ratio of the sum of indemnity, allocated loss adjustment expense, unallocated loss adjustment expense and risk load at each specific limit to the same sum evaluated at the basic limit of \$100,000 per occurrence/\$200,000 aggregate. Therefore, the factor listed for the basic limit is 1.00.

Certain factors have been judgmentally modified to maintain consistency within the tables. This ensures that the relative incremental costs (as measured by the change in ILFs divided by change in policy limits) for progressively higher occurrence and/or aggregate limits do not increase (i.e., the marginal costs are either constant or decreasing).

Exhibits 3 and 4 (*Comparison of Current and Revised Occurrence/Aggregate Increased Limit Factors*) compare the current and revised occurrence/aggregate increased limit factors for Premises/Operations and Products/Completed Operations, respectively.

Exhibits 5 and 6 (*Selected Occurrence/Aggregate Increased Limit Factors*) show the selected occurrence/aggregate increased limit factors in a matrix format for Premises/Operations and Products/Completed Operations, respectively.

TENNESSEE
GENERAL LIABILITY INCREASED LIMIT FACTORS

SCOPE OF REVISION

OCCURRENCE/
AGGREGATE
SIMULATION

To generate the occurrence/aggregate increased limit factors, we begin with the calculation of indicated per occurrence increased limit factors, displayed in **Exhibits 7-12**. We reflect the aggregate policy limit by combining an indemnity severity distribution (determined from the parameters provided in **Exhibit 16**) to determine the loss size, and a mixed negative binomial distribution to calculate the number of occurrences per policy. We use the frequency distribution to simulate occurrence counts (for a large number of simulated policies), and the severity distribution to generate the losses for the simulated occurrences. This combined distribution produces limited losses at various combinations of occurrence and aggregate limits.

We use a weighted mixture of negative binomial distributions to generate the number of occurrences for each simulated policy. The probability of k occurrences is equal to

$$p_k = \sum_j w_j p_{kj}$$

where:

w_j is the weight of each component negative binomial distribution j ;

and p_{kj} is the probability of k occurrences for each component distribution, such that:

$$p_{kj} = \frac{\Gamma(k + r_j)}{k! \Gamma(r_j)} \left(\frac{\beta_j}{1 + \beta_j} \right)^{r_j} \left(\frac{1}{(1 + \beta_j)^k} \right)$$

The grand mean of the mixture distribution is equal to:

$$m = \sum_j w_j m_j$$

where m_j is the mean for component distribution j , calculated as:

$$m_j = \frac{r_j}{\beta_j}$$

Exhibit 23 (*Mixed Negative Binomial Frequency Parameters*) shows the frequency parameters for Premises/Operations and Products/Completed Operations, determined on a multistate basis.

TENNESSEE
GENERAL LIABILITY INCREASED LIMIT FACTORS

SUPPORTING MATERIAL

OVERVIEW
OF INCREASED
LIMIT FACTOR
CALCULATIONS

This section describes the methods we use to calculate increased limit factors for policies that are subject to occurrence limits, but not annual aggregate limits. Section A describes the aggregate method by which we determine our occurrence/aggregate increased limit factors. The per-occurrence loss distributions and loss adjustment expense provisions that are described in this section are key components of this aggregate process. Also, the calculation of increased limit factors for occurrence-only limits illustrates the principles underlying the calculation for occurrence/aggregate limits.

ISO defines an increased limit factor (ILF) as the ratio of the expected cost (to the insurer) of a higher limit policy divided by the expected cost of a basic limit policy. The cost components of the occurrence-limit increased limit factor calculation are:

- Limited Average Severity (LAS)

The average indemnity per occurrence, limited to a given policy limit, at ultimate settlement value, and reflecting trend to the average accident date in the prospective experience period.

In this document, we use the term “indemnity” to mean the amount paid to the claimant (excluding all loss adjustment expense). Indemnity is subject to policy limits. We construct an occurrence-size distribution that describes the indemnity before the effect of policy limits. By using this distribution, we can calculate expected future indemnity for any given policy limit.

- Allocated Loss Adjustment Expense (ALAE)

The average claim settlement expense per occurrence for those expenses in the settlement process that can be assigned to an individual claim. The largest component of ALAE is legal defense costs.

- Unallocated Loss Adjustment Expense (ULAE)

The average claim settlement expense per occurrence for those expenses in the settlement process that cannot be assigned to an individual claim (e.g., the salaries of claims adjusters).

TENNESSEE
GENERAL LIABILITY INCREASED LIMIT FACTORS

SUPPORTING MATERIAL

OVERVIEW
OF INCREASED
LIMIT FACTOR
CALCULATIONS
(continued)

- Risk Load (RL)

A loading that varies by policy limit and reflects the greater risk of issuing higher limit policies, with the fundamental purpose of making each policy limit being written equally attractive to insurers. The ISO risk load approach accomplishes this by offsetting the greater risk associated with higher limit policies with an appropriate risk load provision that increases as the policy limit increases. The procedure recognizes two kinds of risk:

Process Risk – the inherent variability of the insurance process, reflected in the difference between actual losses and expected losses.

Parameter Risk – the inherent variability of the estimation process, reflected in the difference between theoretical (true but unknown) expected losses and the estimated expected losses.

The ISO increased limit factor is the ratio of these costs at a specified limit divided by the corresponding costs at the basic limit. Given a basic limit b , the factor at occurrence policy limit PL is as follows:

$$ILF(PL) = \left[\frac{LAS(PL) + ALAE(PL) + ULAE(PL) + RL(PL)}{LAS(b) + ALAE(b) + ULAE(b) + RL(b)} \right]$$

Exhibits 7 through 12 (*Calculation of Increased Limit Factors*) show the indicated and selected occurrence-limit increased limit factors for each of the increased limits tables from ISO's 2021 General Liability increased limits review. Also shown are the underlying components of the calculation by limit. An overview of these four components of the occurrence-limit increased limit factor calculation follows.

STATE GROUPS

For Premises/Operations, we review the data by state or state group. Only the largest states have sufficient volume to review individually. The largest 15 states are reviewed individually. The remaining 37 jurisdictions are grouped into a three-tiered state group structure to accommodate relatively low, medium and high ILF state groups - State Groups A, B and C. State Group A is comprised of the lowest ILF jurisdictions, State Group C includes of the highest ILF jurisdictions, and State Group B contains the remainder of the jurisdictions.

To generate the complements of credibility, we group each of the individually reviewed states with either State Group A, B or C, creating three larger state group complements encompassing all states. State group experience is combined with the corresponding state group complement experience at each layer of loss to enhance the stability of the increased limit factors. This is an application of the standard actuarial practice of credibility weighting. We provide a definition of the state group complements (referred to as A', B' and C') and discuss credibility weighting in more detail in the Combining State Group Data with State Group Complement Data subsection later in this document.

TENNESSEE
GENERAL LIABILITY INCREASED LIMIT FACTORS

SUPPORTING MATERIAL

STATE GROUPS
(continued)

For Premises/Operations, this state is reviewed in State Group A, which includes Hawaii, Idaho, Iowa, Kansas, Kentucky, Maine, Maryland, Minnesota, Nebraska, North Dakota, Puerto Rico, Rhode Island, South Dakota, Tennessee and Vermont.

For Products/Completed Operations, we continue to review the data on a multistate basis. This is because the data is sparser and the loss exposure is more likely to encompass multiple states. Overall and by-table indicated changes for Premises/Operations and Products/Completed Operations are calculated using state group weights.

Additionally, we use multistate (all state groups) experience for the following calculations for both Premises/Operations and Products/Completed Operations:

- unallocated loss adjustment expense, and
- severity trend.

DATA FOR
INDEMNITY
ANALYSIS

The limited average severity in this increased limits review is determined using loss data reported to ISO under the Commercial Statistical Plan via prior (“pre-CGL”) and current (“CGL”) applicable subline codes. We also include excess and umbrella data reported under the Commercial Statistical Plan, to add greater credibility to higher layer analysis. We include additional data from the ISO Annual Call for Excess and Umbrella Policy Claims. This data enhances the credibility of our ILFs in the highest layers of loss that we evaluate.

The data is comprised of paid (settled) occurrences on occurrence coverage policies with accident dates between January 1, 2006 and December 31, 2019, and average payment dates between January 1, 2015 and December 31, 2019. The data is evaluated as of March 31, 2020.

We consider an occurrence to be settled if it has no outstanding reserve. If there are multiple payments, we consider the average payment date to be the dollar-weighted average of the dates of the individual payments.

We use “payment lag” or “lag” to measure the amount of time between the occurrence and the payments made towards the loss settlement. A lag of 1 indicates that the average payment date is in the same accident year as the occurrence. A lag of 2 indicates that the average payment date falls in the following year, and so on.

For each occurrence we determine the severity table, accident year, payment lag, indemnity amount, policy limit, and any applicable deductible or attachment point.

COMPOSITE-
RATED RISKS

Insurers report composite-rated risk (CRR) data to ISO without detailed classification information. However, since a significant portion of our data is composite-rated and using it also would enhance credibility, we traditionally have employed an allocation approach to include CRR data in our calculation of increased limit factors by table.

TENNESSEE
GENERAL LIABILITY INCREASED LIMIT FACTORS

SUPPORTING MATERIAL

COMPOSITE-
RATED RISKS
(continued)

As implemented in our 2019 review Premises/Operations filing, we assign CGL CRR data to tables outright as with experience from typically mapped classes, based on empirical severity analysis performed during the 2019 review. The Premises/Operations CRR table assignments are:

Table	CRR Classifications
1	40050, 52050, 52350, 52450, 52950, 70350, 70650, 71150, 80050, 80150
2	12950, 15150, 20150, 20250, 20350, 49950, 50050, 60050, 70050, 70250, 70450, 70550, 94050, 98050, 98550
3	01050, 10050, 12150, 12250, 15050, 15250, 15350, 20050, 20450, 20550, 48050, 49050, 52250, 93050, 98750

The Products/Completed Operations CRR table assignments are:

Table	CRR Classifications
A	12250, 15150, 20250, 49950, 52350, 70250, 70350, 70650, 71150
B	10050, 12150, 12950, 15250, 20150, 20350, 48050, 50050, 52050, 52250, 52950, 70050, 70450, 80050, 98050, 98550, 98750
C	01050, 15050, 15350, 20050, 20450, 20550, 40050, 49050, 52450, 60050, 70550, 80150, 93050, 94050

We continue to allocate pre-CGL CRR data to the individual tables as in past reviews: using the accident year, payment lag and indemnity amount of a given pre-CGL CRR occurrence, we can make a Bayesian estimate of the probability it belongs in each table based on its known characteristics.

We then allocate part of each such occurrence to the various tables using this Bayesian analysis. Thus, we might consider a single \$100,000 occurrence to be 1/3 of a “Table 1” occurrence, 1/2 of a “Table 2” occurrence, and 1/6 of a “Table 3” occurrence. In each case, the amount of the (fractional) occurrence would remain \$100,000. We describe this process further in the Bayesian-related sections later in this document.

EXCESS AND
UMBRELLA
DATA

As stated, along with the umbrella and excess data reported to ISO under the Commercial Statistical Plan, we include additional data from the ISO Annual Call for Excess and Umbrella Policy Claims. This data enhances the credibility of our increased limit factors but does not affect the lowest layers.

TENNESSEE
GENERAL LIABILITY INCREASED LIMIT FACTORS

SUPPORTING MATERIAL

EXCESS AND
UMBRELLA
DATA
(continued)

These excess and umbrella policies have attachment points that exclude smaller losses much the same way as a large deductible would. While we can reconstruct the full size of loss for those occurrences greater than the attachment point of their policy, occurrences below the attachment point are not reported.

When we construct the empirical survival distribution, we exclude occurrences where the attachment points do not meet certain criteria, to avoid bias. We describe this in more detail later in this document. Also, because excess and umbrella data is not reported in class detail, we allocate the data to each table using the same Bayesian procedure that we apply for pre-CGL CRR data.

MIXED
EXPONENTIAL
METHODOLOGY

For each table, we fit a continuous distribution to the lag-weighted occurrence-size distribution from the data. The resulting distribution produces the limited average severity component of the increased limit factor.

Using a continuous distribution (such as the mixed exponential) offers several advantages over using a purely empirical fit, including:

- calculation of limited average severity for all possible limits,
- smoothing of data,
- simplified handling of trend, and
- calculation of higher moments used in risk load.

The fitting procedure uses a mixture of exponential distributions to calculate indemnity. ISO found that the mixed exponential distribution provides a good fit to empirical data over a wide range of loss sizes, is flexible and is simple to use.

OVERVIEW OF
MIXED
EXPONENTIAL
PROCESS

The major steps in the calculation of the limited average severities of the indemnity are:

1. Trend

Trending the indemnity amount of each occurrence to reflect the expected conditions during the period when the increased limit factors are assumed to be in effect.

2. Construction of the Empirical Survival Distributions

Using the trended data to calculate the empirical survival distributions by payment lag for each table and (for Premises/Operations) state group.

3. Payment Lag Process

Combining the empirical distributions for each payment lag to produce an overall empirical survival distribution for each table and (for Premises/Operations) state group.

4. Tail of the Distribution

Smoothing the tail of the lag-weighted empirical survival distribution for each table, separately for each of the larger state group complements for Premises/Operations.

TENNESSEE
GENERAL LIABILITY INCREASED LIMIT FACTORS

SUPPORTING MATERIAL

OVERVIEW OF
MIXED
EXPONENTIAL
PROCESS
(continued)

5. Combining State Group data with State Group Complement data
Credibility-weighting the Premises/Operations state group experience with the experience of the corresponding state group complement.

6. Fitting a Mixed Exponential Distribution
Fitting a mixed exponential curve to the empirical survival distribution.

7. Final Limited Average Severities
Using the fitted mixed exponential distribution to generate limited average severities.

INDEMNITY
SEVERITY
TREND

For a given payment lag, we expect severity to increase by the inflation rate from accident year to accident year.

If annual inflation is 4.0%, an injury that resulted in a \$100,000 paid claim in 2019 should cost 1.04 x \$100,000 in 2020. The probability of that particular accident stays the same – only the nominal value of it changes.

To bring different accident years to the same level, we project each occurrence from the average date of its accident year to December 1, 2022, one year beyond the assumed effective date of December 1, 2021. In this filing, we select an annual trend of +6.5% for Premises/Operations and for Products/Completed Operations. We used 6.0% for Premises/Operations trend and 6.5% for Products/Completed Operations trend in the most recently filed 2020 review.

We selected the annual severity trend factor based on the data from the underlying paid loss development triangles from this increased limits review. Trend indications are currently reviewed on a multistate basis. Manually-rated classes and A-rated classes as well as CRR classes are included in the increased limits development triangles for all significant types of loss related to General Liability.

Exhibit 13 (*Indemnity Severity Trend Selections*) provides the annual paid basic limit and total limits severity trend indications, separately for Premises/Operations and Products/Completed Operations. We also provide a measure of the goodness-of-fit statistic for each of the various multi-year trend fits.

¹ S. A. Klugman, H.H. Panjer, and G. E. Willmot, *Loss Models: From Data to Decisions*, John Wiley and Sons, New York, 2004

TENNESSEE
GENERAL LIABILITY INCREASED LIMIT FACTORS

SUPPORTING MATERIAL

CONSTRUCTION
OF THE
EMPIRICAL
SURVIVAL
DISTRIBUTIONS

The construction of the empirical survival distributions is based on the Product-Limit Estimator described in Loss Models: From Data to Decisions¹. First, paid (settled) occurrences are organized by accident year and payment lag and trended to the average accident date for which the loss distribution is desired.

Payment lags seven and beyond generally have similar loss sizes and are combined to increase credibility. Other lags are handled individually. We further define payment lag and explain the reasons for its use later in the explanatory materials.

Next, a survival distribution is constructed for each payment lag using discrete loss size layers. The probability that an occurrence exceeds the upper bound of a discrete layer given that it exceeds the lower bound of the layer is known as the conditional survival probability (CSP). The ground-up survival distribution is generated by multiplying the successive CSPs of the discrete layers.

This procedure allows for the easy inclusion of censored losses as well as excess, umbrella and deductible data. Two conditions must be met for an occurrence to be used in the calculation of the conditional survival probability in a particular layer of loss.

These conditions are:

- The policy limit (plus attachment point or deductible) must be greater than or equal to the upper bound of the layer of loss. This avoids a downward severity bias by excluding losses that are precluded by their policy limit from penetrating the upper bound of a layer of loss.
- Only those occurrences with attachment points or deductibles less than or equal to the lower bound of the layer of loss are included. This condition is necessary to avoid an upward severity bias since loss information below the attachment point or deductible is unknown.

ILLUSTRATION

An illustration should aid in the conceptual understanding of this construction.

Assume we have twelve occurrences, all for a single payment lag. We will calculate the empirical survival probabilities for three layers using combinations of conditional survival probabilities. The three layers used are \$10,000, \$20,000 and \$40,000 (in practice we begin with layers as small as \$10, but larger layers better illustrate the handling of deductibles and policy limits). The following two pages display sample calculations for these three layers.

TENNESSEE
GENERAL LIABILITY INCREASED LIMIT FACTORS

SUPPORTING MATERIAL

Illustrative Data (Trended) for One Payment Lag

<u>Occurrence ID Number</u>	<u>Occurrence Size</u>	<u>Attachment Point</u>	<u>Policy Limit</u>	<u>Comment</u>
1	5,000	0	15,000	
2	5,000	0	15,000	
3	15,000	0	15,000	Censored Data
4	5,000	7,500	15,000	Deductible Data
5	5,000	0	30,000	
6	15,000	0	30,000	
7	25,000	0	30,000	
8	10,000	15,000	30,000	Excess Data
9	15,000	0	100,000	
10	25,000	0	100,000	
11	30,000	0	100,000	
12	50,000	15,000	100,000	Excess Data

Where attachment point is non-zero, we define policy limit as the maximum payment.

Conditional Survival Probabilities

	<u>Condition:</u>
CSP _{e1} (10,000 0) = P(X ≥ 10,000 X > 0)	PL + AP ≥ 10,000 AP = 0
CSP _{e1} (20,000 10,000) = P(X ≥ 20,000 X ≥ 10,000)	PL + AP ≥ 20,000 AP ≤ 10,000
CSP _{e1} (40,000 20,000) = P(X ≥ 40,000 X ≥ 20,000)	PL + AP ≥ 40,000 AP ≤ 20,000

where AP = attachment point, PL = policy limit, X= loss size, e₁ = empirical lag 1

Calculation of Conditional Survival Probability at \$10,000

<p>CSP_{e1} (10,000 0) = P(X ≥ 10,000 X > 0) = number of occurrences with: occurrence size + AP ≥ 10,000, <u>policy limit + AP ≥ 10,000, and AP = 0</u> number of occurrences with: occurrence size + AP > 0, policy limit + AP ≥ 10,000, and AP = 0 = $\frac{6 \text{ (occurrences 3, 6, 7, 9, 10, 11)}}{9 \text{ (occurrences 1, 2, 3, 5, 6, 7, 9, 10, 11)}}$</p>

Only occurrences with policy limit plus attachment point greater than or equal to 10,000 are used. Only occurrences with attachment point equal to zero are used.

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Calculation of Conditional Survival Probability at \$20,000

$$\begin{aligned} \text{CSP}_{e1}(20,000 | 10,000) &= P(X \geq 20,000 | X \geq 10,000) = \text{number of occurrences with:} \\ &\quad \text{occurrence size + AP} \geq 20,000, \\ &\quad \text{policy limit + AP} \geq 20,000, \text{ and AP} \leq 10,000 \\ &\quad \text{number of occurrences with:} \\ &\quad \text{occurrence size + AP} \geq 10,000, \\ &\quad \text{policy limit + AP} \geq 20,000, \text{ and AP} \leq 10,000 \\ &= \frac{3 \text{ (occurrences 7, 10, 11)}}{6 \text{ (occurrences 4, 6, 7, 9, 10, 11)}} \end{aligned}$$

Only occurrences with policy limit plus attachment point greater than or equal to 20,000 are used. Only occurrences with attachment point less than or equal to 10,000 are used.

Calculation of Conditional Survival Probability at \$40,000

$$\begin{aligned} \text{CSP}_{e1}(40,000 | 20,000) &= P(X \geq 40,000 | X \geq 20,000) = \text{number of occurrences with:} \\ &\quad \text{occurrence size + AP} \geq 40,000, \\ &\quad \text{policy limit + AP} \geq 40,000, \text{ and AP} \leq 20,000 \\ &\quad \text{number of occurrences with:} \\ &\quad \text{occurrence size + AP} \geq 20,000, \\ &\quad \text{policy limit + AP} \geq 40,000, \text{ and AP} \leq 20,000 \\ &= \frac{1 \text{ (occurrence 12)}}{4 \text{ (occurrences 8, 10, 11, 12)}} \end{aligned}$$

Only occurrences with policy limit plus attachment point greater than or equal to 40,000 are used. Only occurrences with attachment point less than or equal to 20,000 are used.

Calculation of Empirical Survival Distribution

The CSPs generate the following empirical survival probabilities:

$$\begin{aligned} S_{e1}(10,000) &= P(X \geq 10,000) = \text{CSP}_{e1}(10,000 | 0) = P(X \geq 10,000 | X > 0) \\ &= 6/9 \end{aligned}$$

$$\begin{aligned} S_{e1}(20,000) &= P(X \geq 20,000) = \text{CSP}_{e1}(10,000 | 0) * \text{CSP}_{e1}(20,000 | 10,000) \\ &= P(X \geq 10,000 | X > 0) * P(X \geq 20,000 | X \geq 10,000) \\ &= 6/9 * 3/6 = 1/3 \end{aligned}$$

$$\begin{aligned} S_{e1}(40,000) &= P(X \geq 40,000) = \text{CSP}_{e1}(10,000 | 0) * \text{CSP}_{e1}(20,000 | 10,000) * \text{CSP}_{e1}(40,000 | 20,000) \\ &= P(X \geq 10,000 | X > 0) * P(X \geq 20,000 | X \geq 10,000) * P(X \geq 40,000 | X \geq 20,000) \\ &= 6/9 * 3/6 * 1/4 = 1/12 \end{aligned}$$

In practice, to generate the trended empirical loss distribution for each lag, we use sixty-eight discrete loss size layers to allow for a refined selection of the tail-smoothing parameters, discussed in the Tail of the Distribution section.

TENNESSEE
GENERAL LIABILITY INCREASED LIMIT FACTORS

SUPPORTING MATERIAL

PAYMENT LAG
PROCESS

Development for paid (settled) data has two aspects. One aspect is that many occurrences are paid within a short period of time after the accident, with a small number taking longer – sometimes much longer – to be paid. The second aspect is the tendency of larger occurrences to take longer to be paid.

To properly reflect an accident year at ultimate, we must include each payment lag with its appropriate weight. We do this by:

- accounting for the rate of payment using the probability-of-payment-lag process, and
- constructing severity distributions by payment lag.

A “lag weighting” procedure then combines the by-lag empirical loss distributions to generate an overall distribution. This procedure implicitly accounts for development as all possible payment lags are represented and given weight at the prospective average accident date. We refer to the distribution of the overall survival probabilities by size of loss as the “empirical survival distribution function (SDF)”.

PAYMENT LAG

Payment lag is the length of time between when an accident occurs and the date when the associated indemnity is paid. In the mixed exponential approach, the payment date is the dollar-weighted average of the dates of the indemnity payments. ISO calculates payment lag based on the year in which an accident occurs and the year in which the occurrence is paid:

$$\text{Payment Lag} = (\text{Payment Year} - \text{Accident Year}) + 1$$

Payment lag can vary considerably by line of business and by type of claim. While most property claims are paid quickly, liability claims generally take longer to settle, particularly those involving protracted litigation. Among liability claims, there is considerable variation in payment lag.

DIFFERENCES
IN LOSS SIZES BY
PAYMENT LAG

Generally, occurrences with longer payment lags involve higher loss sizes. For example, the average loss size for occurrences paid in lag 4 will tend to be considerably higher than the average loss size for those paid in lag 1.

The Mixed Exponential Methodology reflects this by fitting (the continuous mixed exponential distribution) to a lag-weighted empirical survival distribution. We do not directly fit to the severity distributions of individual lags.

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PAYMENT LAG
DISTRIBUTION

The payment lag distribution is determined to avoid distortions that may otherwise result from:

- differing exposure amounts by accident year,
- an asymmetrical experience period with fewer than five accident years for lags eleven through fourteen, and
- a finite number of lags (no data for lags beyond fourteen).

The lag-weighting procedure implicitly accounts for ultimate development, as all possible payment lags are represented and given weight at the prospective average accident date.

The payment lag process uses three parameters (R1, R2 and R3) to generate the weights given to the severity distribution associated with each payment lag. The parameters can be represented as follows:

$$R1 = \frac{\text{expected percentage of occurrences paid in lag 2}}{\text{expected percentage of occurrences paid in lag 1}}$$

$$R2 = \frac{\text{expected percentage of occurrences paid in lag 3}}{\text{expected percentage of occurrences paid in lag 2}}$$

$$R3 = \frac{\text{expected percentage of occurrences paid in lag (n+1)}}{\text{expected percentage of occurrences paid in lag (n)}}, \text{ for all } n \geq 3$$

The weights for each lag are then determined as follows:

$$\text{lag 1 weight} = 1 / k, \text{ where } k = \{1 + R1 + [R1 \cdot R2] / [1 - R3]\}$$

$$\text{lag 2 weight} = R1 / k$$

$$\text{lag 3 weight} = R1 \cdot R2 / k$$

$$\text{lag 4 weight} = R1 \cdot R2 \cdot R3 / k$$

$$\text{lag 5 weight} = R1 \cdot R2 \cdot R3^2 / k$$

$$\text{lag 6 weight} = R1 \cdot R2 \cdot R3^3 / k$$

$$\text{lag 7 weight} = R1 \cdot R2 \cdot [R3^4 / (1 - R3)] / k,$$

Note that the lag 7 weight includes lag 7 and all subsequent lags.

The lag weights represent the percentage of ground-up occurrences in each lag. Therefore, occurrences from deductible, umbrella or excess policies with non-zero attachment points are not included.

METHOD OF
ESTIMATION:
PAYMENT LAG
PARAMETERS

For stability, we calculate the payment lag parameters (R1, R2 and R3) via maximum likelihood. Except for pre-CGL CRR data, an occurrence with accident year *a* and payment lag *l* is reflected in the likelihood function by the probability that the lag equals *l* given that the accident year equals *a*. This conditional probability can be easily expressed in terms of the payment lag parameters.

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SUPPORTING MATERIAL

METHOD OF ESTIMATION: PAYMENT LAG PARAMETERS (continued)

For a pre-CGL CRR occurrence, the probability that the loss comes from a given table is computed by the procedure described later in the Bayesian-related sections. Each pre-CGL CRR occurrence generates several probabilities, one for each table. These probabilities are treated as fractional occurrences in the likelihood function.

Exhibits 14 and 15 (*Payment Lag Parameters and Lag Weights*) show the resulting values of these parameters.

TAIL OF THE DISTRIBUTION

For the higher limits of liability, experience may be sparse in the tail of the distribution. To account for this, and to limit random fluctuations in the higher limits between consecutive reviews, we implicitly smooth the tails of the empirical state group distributions by smoothing the tails of the larger state group complement distributions (referred to as A', B' and C'). We select truncation points above which the state group complements' empirical survival distribution functions can be relatively less stable. The truncation points in this filing are:

Line/State Group	Table 1/A	Table 2/B	Table 3/C
Prem/Ops. A'	2,250,000	5,000,000	1,400,000
Products CW	2,000,000	3,500,000	1,400,000

Then we select a parametric curve family that successfully projects the behavior of the empirical distributions in the layers around the truncation point. During this process, we examine which curve parameters would minimize the overall severity difference between the empirical and smoothed distributions. The resulting curve is used to extrapolate the empirical distributions above the truncation point. The state group complements' empirical distributions below the truncation point are unaffected by this procedure.

This procedure smooths the tail of the state group complements' empirical distributions by extending relationships from the highest credible limits (those limits around the truncation point) to those limits above the truncation point. For each state group, we use the shape of the appropriate extrapolated larger state group complement distribution to extend the credibility-weighted state group distribution above the truncation point. Essentially, this smooths the tail of the distribution for each state group and table. We then fit a mixed exponential distribution to the resulting SDF for each increased limits table.

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GENERAL LIABILITY INCREASED LIMIT FACTORS

SUPPORTING MATERIAL

COMBINING
STATE GROUP
DATA WITH
STATE GROUP
COMPLEMENT
DATA

For Premises/Operations, we construct the empirical survival distribution by state or state group for each table. State or state group conditional survival probabilities (CSPs) are weighted with the larger, more representative state group complements' CSPs at each layer. Grouping states or state groups with larger state groupings of similar experience produces more consistent and intuitive complements of credibility. To generate the complements of credibility, we grouped each of the individually reviewed states with either State Group A, B or C, creating three larger state group complements. The sum of these larger state group complements by definition includes all multistate data.

The definitions of the state group complements (referred to as A', B' and C') are as follows:

- A': State Group A, NC, OH, VA, WI
- B': State Group B, FL, GA, IN, MA, MI, NJ, PA, TX
- C': State Group C, CA, IL, NY

The weight assigned to each state group's CSP in each layer is an increasing function of the number of occurrences for that state group in that layer. Thus, greater weight is given to state group experience in lower layers where greater volume contributes to stability for experience by state group.

The formula used is:

Weighted $CSP_i = (Z_i) \times \text{State Group } CSP_i + (1 - Z_i) \times \text{State Group Complement } CSP_i$,
where:

- $Z_i = N_i / (N_i + K)$,
- i is the i^{th} loss size layer, and
- N_i is the number of occurrences that can be used to evaluate CSP_i for the state group, and $K=300$ for state group complement A', 200 for state group complement B', and 100 for state group complement C'.

The values of K were selected based on an evaluation of the total variability of CSPs by layer compared to the variability across all state groups within the state group complement. This is an application of Bühlmann-Straub credibility procedures to CSPs. Bühlmann-Straub credibility procedures are described in a number of actuarial texts, including Loss Models: From Data to Decisions³.

As stated in the Tail of the Distribution section, for the highest layers of loss, we first extrapolate the CSPs for the three larger state group complements A', B' and C' through the tail smoothing process.

Please note that because Products/Completed Operations increased limit factors are reviewed on a multistate basis, the credibility procedure is not applicable.

³ S. A. Klugman, H.H. Panjer, and G. E. Willmot, *Loss Models: From Data to Decisions*, John Wiley and Sons, New York, 2004

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GENERAL LIABILITY INCREASED LIMIT FACTORS

SUPPORTING MATERIAL

FITTING A MIXED EXPONENTIAL DISTRIBUTION ISO generates a best-fitting mixed exponential distribution to approximate the lag-weighted empirical survival distribution for each table. The lag-weighted SDFs reflect smoothing and, if applicable, credibility weighting. The resulting mixed exponential distribution produces the limited average severity component of the increased limit factor.

THE SIMPLE EXPONENTIAL DISTRIBUTION To understand the mixed exponential distribution, first consider the simple exponential distribution. The simple exponential is a one-parameter distribution. The formulas for the survival distribution function (SDF(x)) and the limited average severity (LAS) at a given policy limit (PL) for an exponential distribution with mean parameter μ are given by:

$$\text{SDF}(x) = e^{-\left(\frac{x}{\mu}\right)} = 1 - \text{CDF}(x)$$

$$\text{LAS}(\text{PL}) = \mu \left[1 - e^{-\left(\frac{\text{PL}}{\mu}\right)} \right]$$

THE MIXED EXPONENTIAL DISTRIBUTION The mixed exponential distribution is a weighted average of exponential distributions. Each exponential distribution has two parameters, a mean μ_i and a weight w_i . Note that the SDF at zero is unity, and the weights sum to 1.000000.

The formulas for the survival distribution function and limited average severity for the mixed exponential distribution are the weighted averages of the respective single exponential formulas:

$$\text{SDF}(x) = \sum_i \left[w_i e^{-\left(\frac{x}{\mu_i}\right)} \right]$$

$$\text{LAS}(\text{PL}) = \sum_i w_i \mu_i \left[1 - e^{-\left(\frac{\text{PL}}{\mu_i}\right)} \right]$$

ISO found that the mixed exponential distribution is flexible and simple to use and provides a good fit to empirical data over a wide range of loss sizes. In fact, any distribution whose probability density function (pdf) has alternating derivatives:

$$\begin{aligned} \text{pdf}(x) &> 0, \\ d \text{ pdf}(x)/dx &< 0, \\ d^2 \text{ pdf}(x)/dx^2 &> 0, \\ d^3 \text{ pdf}(x)/dx^3 &< 0, \text{ etc., for all } x > 0, \end{aligned}$$

can be constructed as a mixture of exponentials with positive means and weights. Such distributions (including the mixed Pareto, if it has a finite mean) can be thought of as special cases of the mixed exponential distribution.

TENNESSEE
GENERAL LIABILITY INCREASED LIMIT FACTORS

SUPPORTING MATERIAL

THE MIXED
EXPONENTIAL
DISTRIBUTION
SEVERITY
PARAMETERS

ISO estimates the mixed exponential distribution parameters using minimum distance estimation. We compare the fitted SDF to the empirical SDF at each of the discrete loss size layers resulting from the construction.

We seek a mixed exponential distribution that minimizes the weighted sum of the square of the differences of these survival probabilities (fitted minus empirical) taken at each loss size layer. This procedure is known as the “minimum distance” method.

The number of exponential distributions needed to produce an optimal fit to the empirical SDF may vary by table and can be as large as necessary.

For General Liability, we allow means up to \$100 million, to follow the smoothed empirical distribution in layers above \$10 million more closely. Allowing means up to \$100 million tends to increase the number of means (and weights) for the fitted distribution in a given table, while having minimal effect on limits up to \$10 million, the highest limit for which we publish increased limit factor information.

Exhibit 16 (*Parameters for Mixed Exponential Distributions*) displays the mixed exponential parameters (means and weights) for each increased limits table.

MAY NOT BE
APPLICABLE FOR
ALL POLICY
LIMITS

ISO’s standard increased limits tables (shown in **Exhibits 7 through 12**) provide increased limit factors up to the \$10,000,000 per occurrence policy limit. **We encourage the use of supplemental sources of information for analysis of layers above \$10,000,000.**

FINAL LIMITED
AVERAGE
SEVERITIES

ISO calculates the limited average severities using the fitted mixed exponential distributions for each table. The *Mixed Exponential Distribution* section gives the formula for the limited average severity of a mixed exponential distribution. **Exhibit 16** (*Parameters for Mixed Exponential Distributions*) shows the individual by-table severity parameters used in this formula for each increased limits table.

Exhibits 17 and 18 (*Comparison of Limited Average Severities*) compares the fitted limited average severities to the empirical limited average severities. The empirical limited average severities are constructed in a manner analogous to the empirical survival distributions. The same conditions and assumptions are used in combination with actual trended loss amounts in each layer.

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GENERAL LIABILITY INCREASED LIMIT FACTORS

SUPPORTING MATERIAL

BAYESIAN
ANALYSIS

As stated, we utilize a Bayesian approach to allocate pre-CGL CRR, excess and umbrella occurrences to each increased limits table. For each payment lag, the Bayesian analysis is as follows:

$$P(\text{Table} | \text{Indemnity}) = \frac{P(\text{Indemnity} | \text{Table}) \times P(\text{Table})}{\sum P(\text{Indemnity} | \text{Table}) \times P(\text{Table})}$$

The sum in the denominator is over all tables.

Here $P(\text{Table} | \text{Indemnity})$ is the conditional probability (within the payment lag) that an occurrence comes from the specified table, given the indemnity amount.

$P(\text{Table})$ is the marginal probability (within the payment lag) that an occurrence comes from the specified table.

Clearly, the table probabilities sum to one:

$$\sum P(\text{Table} | \text{Indemnity}) = 1;$$

that is, 100% of each occurrence is allocated.

We estimate $P(\text{Table})$ as the ratio of two sums:

$$P(\text{Table}) = \frac{\# \text{ of occurrences with known table in this table}}{\# \text{ of occurrences with known table in all tables}}$$

Here we restrict both the numerator and denominator to the payment lag under consideration.

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GENERAL LIABILITY INCREASED LIMIT FACTORS

SUPPORTING MATERIAL

BAYESIAN
ALLOCATION
AND EMPIRICAL
SURVIVAL
DISTRIBUTIONS

For an occurrence with unknown table not censored by policy limits, we use:

$$P(\text{Indemnity} \mid \text{Table}) = f(\text{Indemnity Layer}),$$

where $f(\text{Indemnity Layer})$ is the empirical probability of an occurrence being in the indemnity layer. This empirical probability is the difference of the empirical SDF (for the table-payment lag combination) between the top and the bottom of the layer.

For an occurrence with unknown table censored by policy limits, we use:

$$P(\text{Indemnity} \mid \text{Table}) = \text{SDF}(\text{Indemnity Layer}),$$

where $\text{SDF}(\text{Indemnity Layer})$ is the empirical SDF evaluated at the bottom of a layer, for the table-payment lag combination.

ALLOCATED
DATA IN
PROBABILITY-
OF-PAYMENT-
LAG PROCESS

We allocate pre-CGL CRR data to tables within an accident year and payment lag using the Bayesian analysis described in the previous section. We then have revised occurrence counts by accident year, payment lag, and table. These counts include fractional occurrences from the pre-CGL CRR data. These counts are the raw data for our probability-of-payment-lag process.

We do not include excess and umbrella data, or deductible data, in the probability-of-payment-lag process. This avoids bias from not including unreported occurrences smaller than the policy attachment points or deductibles.

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GENERAL LIABILITY INCREASED LIMIT FACTORS

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ALLOCATED
LOSS
ADJUSTMENT
EXPENSE

The standard liability policy contains a policy limit which represents the maximum amount an insurer will pay for any loss for which the insured is liable. However, the limit does not apply to the loss adjustment expenses. For this reason, we estimate ALAE per occurrence as a single amount that does not vary by policy limit.

For each table, we estimate allocated loss adjustment expense (ALAE) per occurrence as the product of two numbers. The first number is the ratio of paid ALAE to paid total limits (all limits combined) indemnity. The second number is the average (across all policy limits) limited average severity calculated from the mixed exponential approach.

To calculate the ALAE per occurrence, we first calculate the ratio of dollars of ALAE to dollars of total limits indemnity for the seven next-to-latest available accident years (the latest accident year is excluded from the average because its development tends to be less stable). We develop these ratios to ultimate maturity.

To further enhance stability, we use a best 5-of-7 criterion and eliminate the lowest and highest paid ratios. We then average the best 5-of-7 paid ratios to determine the overall ALAE to total limits indemnity ratio for each table.

The fitted total limits average severity for each table is a weighted average of the limited average severities at the different policy limits. The weights used are occurrences from the second, third and fourth latest accident years.

For each table, the multi-year average ALAE to total limits indemnity ratio is then multiplied by the final fitted total limits average severity to calculate the ALAE per occurrence provision for use in computing increased limit factors. The total limits average severity reflects trend to the average prospective accident date. This effectively contemplates trend in ALAE in a more stable manner than relying on a separate trend analysis of ALAE.

Exhibit 19 and 20 (*Calculation of Allocated Loss Adjustment Expense per Occurrence*) show the calculation of the allocated loss adjustment expense component for Premises/Operations Liability and Products/Completed Operations Liability, respectively.

UNALLOCATED
LOSS
ADJUSTMENT
EXPENSE

We calculate the unallocated loss adjustment expense at each limit of liability as a percentage of the sum of the limited average severity and the ALAE at that liability limit. For this filing, we select the ULAE load of 8.0% based on a five-year average of multistate financial data reported to ISO.

Exhibit 21 (*Development of Unallocated Loss Adjustment Expense Factor*) shows the derivation of this factor.

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GENERAL LIABILITY INCREASED LIMIT FACTORS

SUPPORTING MATERIAL

RISK LOAD

Our increased limits methodology incorporates a procedure to reflect the relatively higher risk or variation in experience associated with higher limit policies. The approach that we use, the Competitive Market Equilibrium Risk Load Model¹, assumes that the insurance marketplace is competitive and efficient. In a competitive marketplace, individual insurers cannot influence the marketplace price. While individual insurers cannot influence the risk associated with a given policy limit, they will attempt to maximize their expected net revenue by choosing which lines and policy limits to write. This assumption is consistent with rational economic behavior and is reinforced by solvency regulation.

In an efficient marketplace, the supply of insurance matches the demand. ISO uses the distribution of basic limit losses by policy limit to represent the market demand for insurance at each limit. The method determines a set of risk loads that match supply and demand at each policy limit.

The variability of losses is caused by process risk and parameter risk:

- Process risk reflects the inherent uncertainty of the insurance process. Even if one could estimate expected losses exactly, actual losses will almost certainly differ from the expected. We derive the process risk component from the parameters of the indemnity severity distribution.
- Parameter risk reflects the risk of not estimating expected losses accurately. The derivation of the parameter risk component is based on the historical variation of losses.

These two risk elements combined comprise the total risk load at each policy limit.

ISO's risk load formulas use a parameter, lambda (λ), which governs the total amount of risk load over all policy limits for (non-professional) commercial liability tables. We determine lambda so that the ratio of the average indicated increased limit factor with risk load to the average indicated increased limit factor without risk load is equal to 1.06 for all General and Commercial Automobile Liability tables combined. For this state group, this ratio is 1.042 and 1.102 for Premises/Operations and Products/Completed Operations Liability, respectively.

Exhibit 22 (*Risk Load Parameters*) shows parameters used in the calculation of risk load.

¹ G. G. Meyers, *Competitive Market Equilibrium Risk Load Model for Increased Limits Ratemaking*, Proceedings of the Casualty Actuarial Society, Volume LXXVIII, 1991

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GENERAL LIABILITY INCREASED LIMIT FACTORS

SUPPORTING MATERIAL

RISK LOAD FORMULAS AND PARAMETERS

The following are the formulas underlying ISO's risk load approach.

The risk load formulas incorporate parameter risk using a parameter transformation. In the following formulas, we use the notation $AVSEV(PL, \alpha)$ and $SECM(PL, \alpha)$ to represent the limited moments of a transformed loss size distribution. The distribution is transformed by multiplying all occurrences by the constant " α ". $AVSEV$ represents the limited average severity and $SECM$ represents the limited second moment of the transformed distribution. The following formulas represent an approximation of the effect of parameter risk on the severity distribution:

$$AVSEV(PL, \alpha) = \alpha \times LAS(PL/\alpha)$$

$$SECM(PL, \alpha) = \alpha^2 \times SECM(PL/\alpha)$$

The formulas for the $LAS(PL)$ and $SECM(PL)$ of a mixed exponential are as follows:

$$LAS(PL) = \sum_i w_i \mu_i [1 - \exp(-PL / \mu_i)]$$
$$SECM(PL) = \sum_i 2 w_i \mu_i^2 \left[1 - \left(1 + \frac{PL}{\mu_i} \right) \exp\left(-\frac{PL}{\mu_i} \right) \right]$$

TENNESSEE
GENERAL LIABILITY INCREASED LIMIT FACTORS

SUPPORTING MATERIAL

RISK LOAD FORMULAS AND PARAMETERS

(1) *Total Risk Load*

The vector of risk load amounts for a particular increased limits table, R , is:

$$R = \lambda[U + 2(V^a \cdot \bar{n}^a + V^c \cdot \bar{n}^c)]$$

where

λ = the factor which reflects the overall impact of risk load over General and Commercial Automobile Liability. ISO selected this parameter so that the average increased limit factor with risk load divided by the average increased limit factor without risk load equals 1.06.

U = the vector of risk elements corresponding to process risk. Its j^{th} component is u_j , corresponding to the j^{th} policy limit.

V^a = the matrix describing severity parameter risk.

V^c = the matrix describing frequency parameter risk.

Premises/Operations Liability (state group):

\bar{n}^a = the vector of the expected number of occurrences per insurer in the particular increased limits table (within its state group). The j^{th} component of \bar{n}^a is computed as follows: the basic limit loss weight for that policy limit in the increased limits table (as a percentage) is multiplied by n_{bara} , the expected number of occurrences per insurer per state group, in the particular increased limits table, for all limits combined.

Products/Completed Operations Liability (multistate):

\bar{n}^a = the vector of the multistate expected number of occurrences per insurer in the particular increased limits table. The j^{th} component of \bar{n}^a is computed as follows: the basic limit loss weight for that policy limit in the increased limits table (as a percentage) is multiplied by n_{bara} , the multistate expected number of occurrences per insurer, in the particular increased limits table, for all limits combined.

Premises/Operations Liability (state group):

\bar{n}^c = the vector of the expected average number of occurrences per insurer per state for all tables combined. The j^{th} component of \bar{n}^c is computed as follows: the basic limit loss weight for that policy limit in the increased limits table (as a percentage) is multiplied by the Premises/Operations n_{barc} , which is the expected average number of occurrences per insurer per state for all tables and limits combined.

Products/Completed Operations Liability (multistate):

\bar{n}^c = the vector of the multistate expected average number of occurrences per insurer for all tables combined. The j^{th} component of \bar{n}^c is computed as follows: the basic limit loss weight for that policy limit in the increased limits table (as a percentage) is multiplied by the Products/Completed Operations n_{barc} , which is the expected average number of occurrences per insurer for all tables and limits combined.

TENNESSEE
GENERAL LIABILITY INCREASED LIMIT FACTORS

SUPPORTING MATERIAL

RISK LOAD FORMULAS AND PARAMETERS

(2) *Process Risk Load*

The process risk component of the risk load is given by $\lambda \times U$. The component u_j , associated with the j^{th} limit, is:

$$u_j = E_{\alpha}[\text{SECM}(\text{PL}_j, \alpha)] + d \cdot E_{\alpha}[\text{AVSEV}(\text{PL}_j, \alpha)^2]$$

where:

- α = random variable with mean 1 and variance a. α represents severity parameter risk.
- a = .001 (based on a special ISO study).
- 1 + d = variance-to-mean ratio for occurrence count distribution, contingent on parameters being known. (In other words, if there were no frequency parameter risk, the variance-to-mean ratio would be 1+d.)
- E_{α} = expected value across all values of the parameter α .

Let: $\alpha_1 = 1 - \sqrt{3a}$; $\alpha_2 = 1$; $\alpha_3 = 1 + \sqrt{3a}$;

The Gauss-Hermite approximation² provides a discrete approximation for the expected value of a function $G(\alpha)$ across all values of the normally distributed random variable α :

$$E_{\alpha}[G(\alpha)] = (1/6)G(\alpha_1) + (2/3)G(\alpha_2) + (1/6)G(\alpha_3)$$

for any function $G(\alpha)$.

(3) *Parameter Risk Load*

The parameter risk component of the risk load is given by $\lambda \times 2 \times (\mathbf{V}^c \cdot \bar{\mathbf{n}}^c + \mathbf{V}^a \cdot \bar{\mathbf{n}}^a)$.

Evaluation of \mathbf{V}^c

v_{ij}^c = element of \mathbf{V}^c corresponding to i^{th} limit, j^{th} limit

$$= c \times E_{\alpha}[\text{AVSEV}(\text{PL}_i, \alpha) \cdot \text{AVSEV}(\text{PL}_j, \alpha)]$$

c = parameter quantifying frequency parameter risk (“c” does for frequency what “a” does for severity). Values vary by line based on a special ISO study.

Evaluation of \mathbf{V}^a

v_{ij}^a = element of \mathbf{V}^a corresponding to i^{th} limit, j^{th} limit

$$= E_{\alpha}[\text{AVSEV}(\text{PL}_i, \alpha) \cdot \text{AVSEV}(\text{PL}_j, \alpha)] - E_{\alpha}[\text{AVSEV}(\text{PL}_i, \alpha)] \cdot E_{\alpha}[\text{AVSEV}(\text{PL}_j, \alpha)]$$

²A. Ralston, *A First Course in Numerical Analysis*, McGraw-Hill, 1965

TENNESSEE
GENERAL LIABILITY INCREASED LIMIT FACTORS

SUPPORTING MATERIAL

SUMMARY

In summary, we calculate limited average severities from a continuous distribution of occurrence size. In this methodology, we fit mixed exponential distributions to trended lag-weighted occurrence-size distributions.

We calculate allocated loss adjustment expense per occurrence that does not vary by policy limit. We calculate unallocated loss adjustment expense by limit as a percentage of the sum of the limited average severity and allocated loss adjustment expense. We calculate risk load amounts reflecting process and parameter risk.

Finally, we calculate the sum of the limited average severity, allocated loss adjustment expense, unallocated loss adjustment expense and risk load. The ratio of this sum at the limit desired to this sum at the basic limit is the per occurrence increased limit factor.

TENNESSEE
GENERAL LIABILITY INCREASED LIMIT FACTORS

SUMMARY OF INCREASED LIMIT FACTOR CHANGES

PREMISES/OPERATIONS LIABILITY
STATE GROUP A

TABLE 1

Policy Limit (\$,000)	State Group Basic Limit Loss Weight	Current Increased Limit Factor	Indicated Increased Limit Factor	Indicated Percent Change	Selected Increased Limit Factor	Selected Percent Change
100	0.0009	1.00	1.00	0.0%	1.00	0.0%
200	0.0000	1.14	1.16	1.8%	1.16	1.8%
250	0.0000	1.18	1.20	1.7%	1.20	1.7%
300	0.0022	1.21	1.24	2.5%	1.24	2.5%
500	0.0049	1.28	1.33	3.9%	1.33	3.9%
750	0.0064	1.34	1.40	4.5%	1.40	4.5%
1,000	0.8969	1.37	1.45	5.8%	1.45	5.8%
1,500	0.0009	1.42	1.52	7.0%	1.52	7.0%
2,000	0.0833	1.45	1.56	7.6%	1.56	7.6%
3,000	0.0002	1.50	1.62	8.0%	1.62	8.0%
5,000	0.0032	1.57	1.70	8.3%	1.70	8.3%
<u>10,000</u>	<u>0.0011</u>	<u>1.68</u>	<u>1.83</u>	<u>8.9%</u>	<u>1.83</u>	<u>8.9%</u>
TOTAL	1.0000	1.376	1.459	6.0%	1.459	6.0%

TABLE 2

Policy Limit (\$,000)	State Group Basic Limit Loss Weight	Current Increased Limit Factor	Indicated Increased Limit Factor	Indicated Percent Change	Selected Increased Limit Factor	Selected Percent Change
100	0.0015	1.00	1.00	0.0%	1.00	0.0%
200	0.0001	1.16	1.16	0.0%	1.16	0.0%
250	0.0000	1.20	1.22	1.7%	1.22	1.7%
300	0.0027	1.24	1.26	1.6%	1.26	1.6%
500	0.0084	1.36	1.39	2.2%	1.39	2.2%
750	0.0024	1.45	1.49	2.8%	1.49	2.8%
1,000	0.9309	1.52	1.56	2.6%	1.56	2.6%
1,500	0.0008	1.61	1.65	2.5%	1.65	2.5%
2,000	0.0500	1.68	1.72	2.4%	1.72	2.4%
3,000	0.0004	1.78	1.81	1.7%	1.81	1.7%
5,000	0.0023	1.92	1.93	0.5%	1.93	0.5%
<u>10,000</u>	<u>0.0005</u>	<u>2.15</u>	<u>2.13</u>	<u>-0.9%</u>	<u>2.13</u>	<u>-0.9%</u>
TOTAL	1.0000	1.526	1.566	2.6%	1.566	2.6%

TENNESSEE
GENERAL LIABILITY INCREASED LIMIT FACTORS
SUMMARY OF INCREASED LIMIT FACTOR CHANGES

PREMISES/OPERATIONS LIABILITY
STATE GROUP A

TABLE 3

Policy Limit (\$,000)	State Group Basic Limit Loss Weight	Current Increased Limit Factor	Indicated Increased Limit Factor	Indicated Percent Change	Selected Increased Limit Factor	Selected Percent Change
100	0.0002	1.00	1.00	0.0%	1.00	0.0%
200	0.0000	1.20	1.20	0.0%	1.20	0.0%
250	0.0013	1.28	1.27	-0.8%	1.27	-0.8%
300	0.0009	1.34	1.33	-0.7%	1.33	-0.7%
500	0.0108	1.52	1.51	-0.7%	1.51	-0.7%
750	0.0010	1.68	1.68	0.0%	1.68	0.0%
1,000	0.9422	1.80	1.80	0.0%	1.80	0.0%
1,500	0.0008	1.98	1.98	0.0%	1.98	0.0%
2,000	0.0379	2.10	2.11	0.5%	2.11	0.5%
3,000	0.0008	2.28	2.29	0.4%	2.29	0.4%
5,000	0.0013	2.52	2.54	0.8%	2.54	0.8%
<u>10,000</u>	<u>0.0028</u>	<u>2.89</u>	<u>2.92</u>	<u>1.0%</u>	<u>2.92</u>	<u>1.0%</u>
TOTAL	1.0000	1.811	1.812	0.1%	1.812	0.1%

SUMMARY

Table	Basic Limit Loss Weight	Current Average Increased Limit Factor	Indicated Average Increased Limit Factor	Indicated Percent Change	Selected Average Increased Limit Factor	Selected Percent Change
Table 1	0.2717	1.376	1.459	6.0%	1.459	6.0%
Table 2	0.5511	1.526	1.566	2.6%	1.566	2.6%
<u>Table 3</u>	<u>0.1772</u>	<u>1.811</u>	<u>1.812</u>	<u>0.1%</u>	<u>1.812</u>	<u>0.1%</u>
TOTAL	1.0000	1.536	1.581	2.9%	1.581	2.9%

Explanation for this exhibit is provided on page A-1.

TENNESSEE
GENERAL LIABILITY INCREASED LIMIT FACTORS

SUMMARY OF INCREASED LIMIT FACTOR CHANGES

PRODUCTS/COMPLETED OPERATIONS LIABILITY
MULTISTATE

TABLE A

Policy Limit (\$,000)	State Group Basic Limit Loss Weight	Current Increased Limit Factor	Indicated Increased Limit Factor	Indicated Percent Change	Selected Increased Limit Factor	Selected Percent Change
100	0.0004	1.00	1.00	0.0%	1.00	0.0%
200	0.0000	1.15	1.15	0.0%	1.15	0.0%
250	0.0000	1.19	1.20	0.8%	1.20	0.8%
300	0.0059	1.23	1.24	0.8%	1.24	0.8%
500	0.0170	1.33	1.34	0.8%	1.34	0.8%
750	0.0000	1.41	1.42	0.7%	1.42	0.7%
1,000	0.9446	1.47	1.48	0.7%	1.48	0.7%
1,500	0.0000	1.55	1.56	0.6%	1.56	0.6%
2,000	0.0227	1.60	1.62	1.3%	1.62	1.3%
3,000	0.0004	1.68	1.71	1.8%	1.71	1.8%
5,000	0.0000	1.79	1.83	2.2%	1.83	2.2%
<u>10,000</u>	<u>0.0090</u>	<u>1.97</u>	<u>2.02</u>	<u>2.5%</u>	<u>2.02</u>	<u>2.5%</u>
TOTAL	1.0000	1.474	1.484	0.7%	1.484	0.7%

TABLE B

Policy Limit (\$,000)	State Group Basic Limit Loss Weight	Current Increased Limit Factor	Indicated Increased Limit Factor	Indicated Percent Change	Selected Increased Limit Factor	Selected Percent Change
100	0.0003	1.00	1.00	0.0%	1.00	0.0%
200	0.0008	1.18	1.18	0.0%	1.18	0.0%
250	0.0000	1.24	1.25	0.8%	1.25	0.8%
300	0.0026	1.29	1.30	0.8%	1.30	0.8%
500	0.0174	1.43	1.45	1.4%	1.45	1.4%
750	0.0000	1.55	1.57	1.3%	1.57	1.3%
1,000	0.9538	1.64	1.66	1.2%	1.66	1.2%
1,500	0.0000	1.77	1.79	1.1%	1.79	1.1%
2,000	0.0188	1.86	1.88	1.1%	1.88	1.1%
3,000	0.0005	2.00	2.01	0.5%	2.01	0.5%
5,000	0.0004	2.17	2.20	1.4%	2.20	1.4%
<u>10,000</u>	<u>0.0054</u>	<u>2.45</u>	<u>2.49</u>	<u>1.6%</u>	<u>2.49</u>	<u>1.6%</u>
TOTAL	1.0000	1.644	1.664	1.2%	1.664	1.2%

TENNESSEE
GENERAL LIABILITY INCREASED LIMIT FACTORS
SUMMARY OF INCREASED LIMIT FACTOR CHANGES
PRODUCTS/COMPLETED OPERATIONS LIABILITY
MULTISTATE

TABLE C

Policy Limit (\$,000)	State Group Basic Limit Loss Weight	Current Increased Limit Factor	Indicated Increased Limit Factor	Indicated Percent Change	Selected Increased Limit Factor	Selected Percent Change
100	0.0003	1.00	1.00	0.0%	1.00	0.0%
200	0.0000	1.24	1.25	0.8%	1.25	0.8%
250	0.0000	1.33	1.35	1.5%	1.35	1.5%
300	0.0017	1.42	1.43	0.7%	1.43	0.7%
500	0.0030	1.68	1.70	1.2%	1.70	1.2%
750	0.0025	1.93	1.95	1.0%	1.95	1.0%
1,000	0.9628	2.12	2.14	0.9%	2.14	0.9%
1,500	0.0000	2.41	2.44	1.2%	2.44	1.2%
2,000	0.0283	2.61	2.65	1.5%	2.65	1.5%
3,000	0.0006	2.90	2.95	1.7%	2.95	1.7%
5,000	0.0008	3.27	3.34	2.1%	3.34	2.1%
<u>10,000</u>	<u>0.0000</u>	<u>3.83</u>	<u>3.93</u>	<u>2.6%</u>	<u>3.93</u>	<u>2.6%</u>
TOTAL	1.0000	2.132	2.153	1.0%	2.153	1.0%

SUMMARY

Table	Basic Limit Loss Weight	Current Average Increased Limit Factor	Indicated Average Increased Limit Factor	Indicated Percent Change	Selected Average Increased Limit Factor	Selected Percent Change
Table A	0.1602	1.474	1.484	0.7%	1.484	0.7%
Table B	0.6778	1.644	1.664	1.2%	1.664	1.2%
<u>Table C</u>	<u>0.1620</u>	<u>2.132</u>	<u>2.153</u>	<u>1.0%</u>	<u>2.153</u>	<u>1.0%</u>
TOTAL	1.0000	1.696	1.714	1.1%	1.714	1.1%

GENERAL LIABILITY COMBINED

Table	Basic Limit Loss Weight	Current Average Increased Limit Factor	Indicated Average Increased Limit Factor	Indicated Percent Change	Selected Average Increased Limit Factor	Selected Percent Change
Prem/Ops	0.7439	1.536	1.581	2.9%	1.581	2.9%
<u>Products</u>	<u>0.2561</u>	<u>1.696</u>	<u>1.714</u>	<u>1.1%</u>	<u>1.714</u>	<u>1.1%</u>
TOTAL	1.0000	1.577	1.615	2.4%	1.615	2.4%

Explanation for this exhibit is provided on page A-1.

TENNESSEE
GENERAL LIABILITY INCREASED LIMIT FACTORS

COMPARISON OF CURRENT AND REVISED
OCCURRENCE/AGGREGATE INCREASED LIMIT FACTORS

PREMISES/OPERATIONS LIABILITY
STATE GROUP A

Policy Limits (\$,000s) Occurrence Aggregate	TABLE 1			TABLE 2			TABLE 3		
	Current Factor	Revised Factor	Percent Change	Current Factor	Revised Factor	Percent Change	Current Factor	Revised Factor	Percent Change
25 50	0.71	0.69	-2.8%	0.71	0.70	-1.4%	0.70	0.70	0.0%
25 100	0.72	0.70	-2.8%	0.73	0.71	-2.7%	0.71	0.71	0.0%
25 200	0.73	0.71	-2.7%	0.74	0.72	-2.7%	0.72	0.72	0.0%
25 300	0.74	0.72	-2.7%	0.75	0.73	-2.7%	0.73	0.73	0.0%
50 50	0.81	0.80	-1.2%	0.81	0.80	-1.2%	0.79	0.79	0.0%
50 100	0.85	0.84	-1.2%	0.85	0.84	-1.2%	0.83	0.83	0.0%
50 200	0.86	0.85	-1.2%	0.86	0.85	-1.2%	0.85	0.85	0.0%
50 300	0.87	0.86	-1.1%	0.87	0.86	-1.1%	0.86	0.86	0.0%
50 500	0.89	0.88	-1.1%	0.89	0.88	-1.1%	0.88	0.88	0.0%
50 600	0.90	0.89	-1.1%	0.90	0.89	-1.1%	0.89	0.89	0.0%
100 100	0.97	0.97	0.0%	0.97	0.96	-1.0%	0.96	0.96	0.0%
100 200	1.00	1.00	0.0%	1.00	1.00	0.0%	1.00	1.00	0.0%
100 300	1.01	1.01	0.0%	1.01	1.01	0.0%	1.01	1.01	0.0%
100 500	1.03	1.03	0.0%	1.03	1.03	0.0%	1.03	1.03	0.0%
100 600	1.04	1.04	0.0%	1.04	1.04	0.0%	1.04	1.04	0.0%
100 1,000	1.05	1.05	0.0%	1.05	1.05	0.0%	1.05	1.05	0.0%
200 200	1.10	1.12	1.8%	1.13	1.14	0.9%	1.17	1.16	-0.9%
200 300	1.11	1.13	1.8%	1.14	1.15	0.9%	1.19	1.19	0.0%
200 500	1.13	1.15	1.8%	1.16	1.17	0.9%	1.21	1.21	0.0%
200 600	1.14	1.16	1.8%	1.17	1.18	0.9%	1.22	1.22	0.0%
200 1,000	1.15	1.17	1.7%	1.18	1.19	0.8%	1.23	1.23	0.0%
200 1,500	1.16	1.18	1.7%	1.19	1.20	0.8%	1.24	1.24	0.0%
200 2,000	1.17	1.19	1.7%	1.20	1.21	0.8%	1.25	1.25	0.0%
300 300	1.18	1.21	2.5%	1.22	1.24	1.6%	1.31	1.30	-0.8%
300 500	1.20	1.23	2.5%	1.24	1.26	1.6%	1.34	1.33	-0.7%
300 600	1.21	1.24	2.5%	1.25	1.27	1.6%	1.35	1.34	-0.7%
300 1,000	1.22	1.25	2.5%	1.26	1.28	1.6%	1.36	1.35	-0.7%
300 1,500	1.23	1.26	2.4%	1.27	1.29	1.6%	1.37	1.36	-0.7%
300 2,000	1.24	1.27	2.4%	1.28	1.30	1.6%	1.38	1.37	-0.7%
300 2,500	1.25	1.28	2.4%	1.29	1.31	1.6%	1.39	1.38	-0.7%
300 3,000	1.26	1.29	2.4%	1.30	1.32	1.5%	1.40	1.39	-0.7%
500 500	1.26	1.31	4.0%	1.34	1.37	2.2%	1.50	1.49	-0.7%
500 600	1.27	1.32	3.9%	1.35	1.38	2.2%	1.52	1.51	-0.7%
500 1,000	1.28	1.33	3.9%	1.36	1.39	2.2%	1.53	1.53	0.0%
500 1,500	1.29	1.34	3.9%	1.37	1.40	2.2%	1.54	1.54	0.0%
500 2,000	1.30	1.35	3.8%	1.38	1.41	2.2%	1.55	1.55	0.0%
500 2,500	1.31	1.36	3.8%	1.39	1.42	2.2%	1.56	1.56	0.0%
500 3,000	1.32	1.37	3.8%	1.40	1.43	2.1%	1.57	1.57	0.0%
500 4,000	1.33	1.38	3.8%	1.41	1.44	2.1%	1.58	1.58	0.0%
500 5,000	1.34	1.39	3.7%	1.42	1.45	2.1%	1.59	1.59	0.0%
1,000 1,000	1.34	1.42	6.0%	1.49	1.53	2.7%	1.79	1.79	0.0%
1,000 1,500	1.35	1.43	5.9%	1.50	1.54	2.7%	1.80	1.80	0.0%
1,000 2,000	1.36	1.44	5.9%	1.51	1.55	2.6%	1.81	1.81	0.0%
1,000 2,500	1.37	1.45	5.8%	1.52	1.56	2.6%	1.82	1.82	0.0%

TENNESSEE
GENERAL LIABILITY INCREASED LIMIT FACTORS

COMPARISON OF CURRENT AND REVISED
OCCURRENCE/AGGREGATE INCREASED LIMIT FACTORS

PREMISES/OPERATIONS LIABILITY
STATE GROUP A

Policy Limits (\$,000s) <u>Occurrence Aggregate</u>	TABLE 1			TABLE 2			TABLE 3		
	<u>Current Factor</u>	<u>Revised Factor</u>	<u>Percent Change</u>	<u>Current Factor</u>	<u>Revised Factor</u>	<u>Percent Change</u>	<u>Current Factor</u>	<u>Revised Factor</u>	<u>Percent Change</u>
1,000 3,000	1.38	1.46	5.8%	1.53	1.57	2.6%	1.83	1.83	0.0%
1,000 4,000	1.39	1.47	5.8%	1.54	1.58	2.6%	1.84	1.84	0.0%
1,000 5,000	1.40	1.48	5.7%	1.55	1.59	2.6%	1.85	1.85	0.0%
1,000 10,000	1.41	1.49	5.7%	1.56	1.60	2.6%	1.86	1.86	0.0%
1,500 1,500	1.39	1.49	7.2%	1.59	1.63	2.5%	1.97	1.98	0.5%
1,500 2,000	1.40	1.50	7.1%	1.60	1.64	2.5%	1.98	1.99	0.5%
1,500 2,500	1.41	1.51	7.1%	1.61	1.65	2.5%	1.99	2.00	0.5%
1,500 3,000	1.42	1.52	7.0%	1.62	1.66	2.5%	2.00	2.01	0.5%
1,500 4,000	1.43	1.53	7.0%	1.63	1.67	2.5%	2.01	2.02	0.5%
1,500 5,000	1.44	1.54	6.9%	1.64	1.68	2.4%	2.02	2.03	0.5%
1,500 10,000	1.45	1.55	6.9%	1.65	1.69	2.4%	2.03	2.04	0.5%
2,000 2,000	1.42	1.53	7.7%	1.65	1.70	3.0%	2.10	2.10	0.0%
2,000 2,500	1.43	1.54	7.7%	1.66	1.71	3.0%	2.11	2.11	0.0%
2,000 3,000	1.44	1.55	7.6%	1.67	1.72	3.0%	2.12	2.12	0.0%
2,000 4,000	1.45	1.56	7.6%	1.68	1.73	3.0%	2.13	2.13	0.0%
2,000 5,000	1.46	1.57	7.5%	1.69	1.74	3.0%	2.14	2.14	0.0%
2,000 10,000	1.47	1.58	7.5%	1.70	1.75	2.9%	2.15	2.15	0.0%
3,000 3,000	1.48	1.60	8.1%	1.77	1.80	1.7%	2.29	2.30	0.4%
3,000 4,000	1.49	1.61	8.1%	1.78	1.81	1.7%	2.30	2.31	0.4%
3,000 5,000	1.50	1.62	8.0%	1.79	1.82	1.7%	2.31	2.32	0.4%
3,000 10,000	1.51	1.63	7.9%	1.80	1.83	1.7%	2.32	2.33	0.4%
4,000 4,000	1.53	1.65	7.8%	1.86	1.87	0.5%	2.43	2.45	0.8%
4,000 5,000	1.54	1.66	7.8%	1.87	1.88	0.5%	2.44	2.46	0.8%
4,000 10,000	1.55	1.67	7.7%	1.88	1.89	0.5%	2.45	2.47	0.8%
5,000 5,000	1.57	1.70	8.3%	1.93	1.94	0.5%	2.55	2.57	0.8%
5,000 10,000	1.58	1.71	8.2%	1.94	1.95	0.5%	2.56	2.58	0.8%
10,000 10,000	1.68	1.84	9.5%	2.16	2.15	-0.5%	2.93	2.96	1.0%
10,000 20,000	1.69	1.85	9.5%	2.17	2.16	-0.5%	2.94	2.97	1.0%

Explanation for this exhibit is provided on page A-1.

TENNESSEE
GENERAL LIABILITY INCREASED LIMIT FACTORS

COMPARISON OF CURRENT AND REVISED
OCCURRENCE/AGGREGATE INCREASED LIMIT FACTORS

PRODUCTS/COMPLETED OPERATIONS LIABILITY
MULTISTATE

Policy Limits (\$,000s) <u>Occurrence Aggregate</u>	TABLE A			TABLE B			TABLE C		
	Current <u>Factor</u>	Revised <u>Factor</u>	Percent <u>Change</u>	Current <u>Factor</u>	Revised <u>Factor</u>	Percent <u>Change</u>	Current <u>Factor</u>	Revised <u>Factor</u>	Percent <u>Change</u>
25 50	0.74	0.73	-1.4%	0.74	0.73	-1.4%	0.72	0.71	-1.4%
25 100	0.75	0.74	-1.3%	0.75	0.74	-1.3%	0.73	0.72	-1.4%
25 200	0.76	0.75	-1.3%	0.76	0.75	-1.3%	0.74	0.73	-1.4%
25 300	0.77	0.76	-1.3%	0.77	0.76	-1.3%	0.75	0.74	-1.3%
50 50	0.84	0.83	-1.2%	0.83	0.82	-1.2%	0.81	0.80	-1.2%
50 100	0.86	0.86	0.0%	0.85	0.85	0.0%	0.83	0.83	0.0%
50 200	0.87	0.87	0.0%	0.86	0.86	0.0%	0.84	0.84	0.0%
50 300	0.88	0.88	0.0%	0.87	0.87	0.0%	0.85	0.85	0.0%
50 500	0.90	0.90	0.0%	0.89	0.89	0.0%	0.87	0.87	0.0%
50 600	0.91	0.91	0.0%	0.90	0.90	0.0%	0.88	0.88	0.0%
100 100	0.98	0.98	0.0%	0.97	0.97	0.0%	0.97	0.97	0.0%
100 200	1.00	1.00	0.0%	1.00	1.00	0.0%	1.00	1.00	0.0%
100 300	1.01	1.01	0.0%	1.01	1.01	0.0%	1.01	1.01	0.0%
100 500	1.03	1.03	0.0%	1.03	1.03	0.0%	1.03	1.03	0.0%
100 600	1.04	1.04	0.0%	1.04	1.04	0.0%	1.04	1.04	0.0%
100 1,000	1.05	1.05	0.0%	1.05	1.05	0.0%	1.05	1.05	0.0%
200 200	1.12	1.12	0.0%	1.15	1.16	0.9%	1.20	1.21	0.8%
200 300	1.13	1.13	0.0%	1.16	1.17	0.9%	1.22	1.23	0.8%
200 500	1.15	1.15	0.0%	1.18	1.19	0.8%	1.24	1.25	0.8%
200 600	1.16	1.16	0.0%	1.19	1.20	0.8%	1.25	1.26	0.8%
200 1,000	1.17	1.17	0.0%	1.20	1.21	0.8%	1.26	1.27	0.8%
200 1,500	1.18	1.18	0.0%	1.21	1.22	0.8%	1.27	1.28	0.8%
200 2,000	1.19	1.19	0.0%	1.22	1.23	0.8%	1.28	1.29	0.8%
300 300	1.20	1.21	0.8%	1.26	1.28	1.6%	1.37	1.38	0.7%
300 500	1.22	1.23	0.8%	1.28	1.30	1.6%	1.41	1.42	0.7%
300 600	1.23	1.24	0.8%	1.29	1.31	1.6%	1.42	1.43	0.7%
300 1,000	1.24	1.25	0.8%	1.30	1.32	1.5%	1.43	1.45	1.4%
300 1,500	1.25	1.26	0.8%	1.31	1.33	1.5%	1.44	1.46	1.4%
300 2,000	1.26	1.27	0.8%	1.32	1.34	1.5%	1.45	1.47	1.4%
300 2,500	1.27	1.28	0.8%	1.33	1.35	1.5%	1.46	1.48	1.4%
300 3,000	1.28	1.29	0.8%	1.34	1.36	1.5%	1.47	1.49	1.4%
500 500	1.31	1.33	1.5%	1.42	1.43	0.7%	1.63	1.65	1.2%
500 600	1.32	1.34	1.5%	1.43	1.45	1.4%	1.65	1.67	1.2%
500 1,000	1.33	1.35	1.5%	1.44	1.46	1.4%	1.69	1.71	1.2%
500 1,500	1.34	1.36	1.5%	1.45	1.47	1.4%	1.70	1.72	1.2%
500 2,000	1.35	1.37	1.5%	1.46	1.48	1.4%	1.71	1.73	1.2%
500 2,500	1.36	1.38	1.5%	1.47	1.49	1.4%	1.72	1.74	1.2%
500 3,000	1.37	1.39	1.5%	1.48	1.50	1.4%	1.73	1.75	1.2%
500 4,000	1.38	1.40	1.4%	1.49	1.51	1.3%	1.74	1.76	1.1%
500 5,000	1.39	1.41	1.4%	1.50	1.52	1.3%	1.75	1.77	1.1%
1,000 1,000	1.45	1.46	0.7%	1.63	1.65	1.2%	2.07	2.10	1.4%
1,000 1,500	1.46	1.47	0.7%	1.64	1.66	1.2%	2.12	2.14	0.9%
1,000 2,000	1.47	1.48	0.7%	1.65	1.67	1.2%	2.13	2.16	1.4%
1,000 2,500	1.48	1.49	0.7%	1.66	1.68	1.2%	2.14	2.17	1.4%

TENNESSEE
GENERAL LIABILITY INCREASED LIMIT FACTORS

COMPARISON OF CURRENT AND REVISED
OCCURRENCE/AGGREGATE INCREASED LIMIT FACTORS

PRODUCTS/COMPLETED OPERATIONS LIABILITY
MULTISTATE

Policy Limits (\$,000s) <u>Occurrence Aggregate</u>	TABLE A			TABLE B			TABLE C		
	<u>Current Factor</u>	<u>Revised Factor</u>	<u>Percent Change</u>	<u>Current Factor</u>	<u>Revised Factor</u>	<u>Percent Change</u>	<u>Current Factor</u>	<u>Revised Factor</u>	<u>Percent Change</u>
1,000 3,000	1.49	1.50	0.7%	1.67	1.69	1.2%	2.15	2.18	1.4%
1,000 4,000	1.50	1.51	0.7%	1.68	1.70	1.2%	2.16	2.19	1.4%
1,000 5,000	1.51	1.52	0.7%	1.69	1.71	1.2%	2.17	2.20	1.4%
1,000 10,000	1.52	1.53	0.7%	1.70	1.72	1.2%	2.18	2.21	1.4%
1,500 1,500	1.53	1.54	0.7%	1.76	1.78	1.1%	2.37	2.40	1.3%
1,500 2,000	1.54	1.55	0.6%	1.77	1.79	1.1%	2.40	2.43	1.3%
1,500 2,500	1.55	1.56	0.6%	1.78	1.80	1.1%	2.42	2.45	1.2%
1,500 3,000	1.56	1.57	0.6%	1.79	1.81	1.1%	2.43	2.47	1.6%
1,500 4,000	1.57	1.58	0.6%	1.80	1.82	1.1%	2.45	2.48	1.2%
1,500 5,000	1.58	1.59	0.6%	1.81	1.83	1.1%	2.46	2.49	1.2%
1,500 10,000	1.59	1.60	0.6%	1.82	1.84	1.1%	2.47	2.50	1.2%
2,000 2,000	1.58	1.61	1.9%	1.86	1.88	1.1%	2.58	2.62	1.6%
2,000 2,500	1.59	1.62	1.9%	1.87	1.89	1.1%	2.61	2.65	1.5%
2,000 3,000	1.60	1.63	1.9%	1.88	1.90	1.1%	2.63	2.67	1.5%
2,000 4,000	1.61	1.64	1.9%	1.89	1.91	1.1%	2.65	2.69	1.5%
2,000 5,000	1.62	1.65	1.9%	1.90	1.92	1.1%	2.66	2.70	1.5%
2,000 10,000	1.63	1.66	1.8%	1.91	1.93	1.0%	2.67	2.72	1.9%
3,000 3,000	1.67	1.71	2.4%	2.00	2.02	1.0%	2.89	2.94	1.7%
3,000 4,000	1.68	1.72	2.4%	2.01	2.03	1.0%	2.92	2.98	2.1%
3,000 5,000	1.69	1.73	2.4%	2.02	2.04	1.0%	2.94	3.00	2.0%
3,000 10,000	1.70	1.74	2.4%	2.03	2.05	1.0%	2.96	3.02	2.0%
4,000 4,000	1.74	1.78	2.3%	2.11	2.14	1.4%	3.10	3.17	2.3%
4,000 5,000	1.75	1.79	2.3%	2.12	2.15	1.4%	3.13	3.20	2.2%
4,000 10,000	1.76	1.80	2.3%	2.13	2.16	1.4%	3.17	3.24	2.2%
5,000 5,000	1.80	1.85	2.8%	2.20	2.23	1.4%	3.28	3.36	2.4%
5,000 10,000	1.81	1.86	2.8%	2.21	2.24	1.4%	3.33	3.41	2.4%
10,000 10,000	1.98	2.04	3.0%	2.48	2.53	2.0%	3.87	3.98	2.8%
10,000 20,000	1.99	2.05	3.0%	2.49	2.54	2.0%	3.91	4.02	2.8%

Explanation for this exhibit is provided on page A-1.

TENNESSEE
GENERAL LIABILITY INCREASED LIMIT FACTORS

SELECTED OCCURRENCE/AGGREGATE INCREASED LIMIT FACTORS

PREMISES/OPERATIONS LIABILITY
STATE GROUP A

TABLE 1 (\$100/200 Basic Limit)

Aggregate	Per Occurrence													
	\$25	50	100	200	300	500	1,000	1,500	2,000	3,000	4,000	5,000	10,000	
\$50	0.69	0.80												
100	0.70	0.84	0.97											
200	0.71	0.85	1.00	1.12										
300	0.72	0.86	1.01	1.13	1.21									
500		0.88	1.03	1.15	1.23	1.31								
600		0.89	1.04	1.16	1.24	1.32								
1,000			1.05	1.17	1.25	1.33	1.42							
1,500				1.18	1.26	1.34	1.43	1.49						
2,000				1.19	1.27	1.35	1.44	1.50	1.53					
2,500					1.28	1.36	1.45	1.51	1.54					
3,000					1.29	1.37	1.46	1.52	1.55	1.60				
4,000						1.38	1.47	1.53	1.56	1.61	1.65			
5,000						1.39	1.48	1.54	1.57	1.62	1.66	1.70		
10,000							1.49	1.55	1.58	1.63	1.67	1.71		1.84
20,000														1.85

TABLE 2 (\$100/200 Basic Limit)

Aggregate	Per Occurrence													
	\$25	50	100	200	300	500	1,000	1,500	2,000	3,000	4,000	5,000	10,000	
\$50	0.70	0.80												
100	0.71	0.84	0.96											
200	0.72	0.85	1.00	1.14										
300	0.73	0.86	1.01	1.15	1.24									
500		0.88	1.03	1.17	1.26	1.37								
600		0.89	1.04	1.18	1.27	1.38								
1,000			1.05	1.19	1.28	1.39	1.53							
1,500				1.20	1.29	1.40	1.54	1.63						
2,000				1.21	1.30	1.41	1.55	1.64	1.70					
2,500					1.31	1.42	1.56	1.65	1.71					
3,000					1.32	1.43	1.57	1.66	1.72	1.80				
4,000						1.44	1.58	1.67	1.73	1.81	1.87			
5,000						1.45	1.59	1.68	1.74	1.82	1.88	1.94		
10,000							1.60	1.69	1.75	1.83	1.89	1.95	2.15	
20,000													2.16	

TABLE 3 (\$100/200 Basic Limit)

Aggregate	Per Occurrence													
	\$25	50	100	200	300	500	1,000	1,500	2,000	3,000	4,000	5,000	10,000	
\$50	0.70	0.79												
100	0.71	0.83	0.96											
200	0.72	0.85	1.00	1.16										
300	0.73	0.86	1.01	1.19	1.30									
500		0.88	1.03	1.21	1.33	1.49								
600		0.89	1.04	1.22	1.34	1.51								
1,000			1.05	1.23	1.35	1.53	1.79							
1,500				1.24	1.36	1.54	1.80	1.98						
2,000				1.25	1.37	1.55	1.81	1.99	2.10					
2,500					1.38	1.56	1.82	2.00	2.11					
3,000					1.39	1.57	1.83	2.01	2.12	2.30				
4,000						1.58	1.84	2.02	2.13	2.31	2.45			
5,000						1.59	1.85	2.03	2.14	2.32	2.46	2.57		
10,000							1.86	2.04	2.15	2.33	2.47	2.58	2.96	
20,000													2.97	

Explanation for this exhibit is provided on page A-1.
Policy limits are expressed in thousands.

TENNESSEE
GENERAL LIABILITY INCREASED LIMIT FACTORS

SELECTED OCCURRENCE/AGGREGATE INCREASED LIMIT FACTORS

PRODUCTS/COMPLETED OPERATIONS LIABILITY
MULTISTATE

TABLE A (\$100/200 Basic Limit)

Aggregate	Per Occurrence													
	\$25	50	100	200	300	500	1,000	1,500	2,000	3,000	4,000	5,000	10,000	
\$50	0.73	0.83												
100	0.74	0.86	0.98											
200	0.75	0.87	1.00	1.12										
300	0.76	0.88	1.01	1.13	1.21									
500		0.90	1.03	1.15	1.23	1.33								
600		0.91	1.04	1.16	1.24	1.34								
1,000			1.05	1.17	1.25	1.35	1.46							
1,500				1.18	1.26	1.36	1.47	1.54						
2,000				1.19	1.27	1.37	1.48	1.55	1.61					
2,500					1.28	1.38	1.49	1.56	1.62					
3,000					1.29	1.39	1.50	1.57	1.63	1.71				
4,000						1.40	1.51	1.58	1.64	1.72	1.78			
5,000						1.41	1.52	1.59	1.65	1.73	1.79	1.85		
10,000							1.53	1.60	1.66	1.74	1.80	1.86	2.04	
20,000													2.05	

TABLE B (\$100/200 Basic Limit)

Aggregate	Per Occurrence													
	\$25	50	100	200	300	500	1,000	1,500	2,000	3,000	4,000	5,000	10,000	
\$50	0.73	0.82												
100	0.74	0.85	0.97											
200	0.75	0.86	1.00	1.16										
300	0.76	0.87	1.01	1.17	1.28									
500		0.89	1.03	1.19	1.30	1.43								
600		0.90	1.04	1.20	1.31	1.45								
1,000			1.05	1.21	1.32	1.46	1.65							
1,500				1.22	1.33	1.47	1.66	1.78						
2,000				1.23	1.34	1.48	1.67	1.79	1.88					
2,500					1.35	1.49	1.68	1.80	1.89					
3,000					1.36	1.50	1.69	1.81	1.90	2.02				
4,000						1.51	1.70	1.82	1.91	2.03	2.14			
5,000						1.52	1.71	1.83	1.92	2.04	2.15	2.23		
10,000							1.72	1.84	1.93	2.05	2.16	2.24	2.53	
20,000													2.54	

TABLE C (\$100/200 Basic Limit)

Aggregate	Per Occurrence													
	\$25	50	100	200	300	500	1,000	1,500	2,000	3,000	4,000	5,000	10,000	
\$50	0.71	0.80												
100	0.72	0.83	0.97											
200	0.73	0.84	1.00	1.21										
300	0.74	0.85	1.01	1.23	1.38									
500		0.87	1.03	1.25	1.42	1.65								
600		0.88	1.04	1.26	1.43	1.67								
1,000			1.05	1.27	1.45	1.71	2.10							
1,500				1.28	1.46	1.72	2.14	2.40						
2,000				1.29	1.47	1.73	2.16	2.43	2.62					
2,500					1.48	1.74	2.17	2.45	2.65					
3,000					1.49	1.75	2.18	2.47	2.67	2.94				
4,000						1.76	2.19	2.48	2.69	2.98	3.17			
5,000						1.77	2.20	2.49	2.70	3.00	3.20	3.36		
10,000							2.21	2.50	2.72	3.02	3.24	3.41	3.98	
20,000													4.02	

Explanation for this exhibit is provided on page A-1.
Policy limits are expressed in thousands.

TENNESSEE
GENERAL LIABILITY INCREASED LIMIT FACTORS

CALCULATION OF INCREASED LIMIT FACTORS

PREMISES/OPERATIONS LIABILITY
STATE GROUP A

TABLE 1

(1)	(2) ^a	(3)	(4)	(5)	(6)	(7) ^b	(8)
Policy Limit (\$,000)	Limited Average Severity	ALAE per Occurrence	ULAE per Occurrence	Process Risk Load	Parameter Risk Load	Indicated Increased Limit Factor	Selected Increased Limit Factor
100	11,185	4,247	1,235	122	107	1.00	1.00
200	13,494	4,247	1,419	234	130	1.16	1.16
250	14,180	4,247	1,474	284	137	1.20	1.20
300	14,707	4,247	1,516	330	142	1.24	1.24
500	16,019	4,247	1,621	490	156	1.33	1.33
750	16,938	4,247	1,695	663	165	1.40	1.40
1,000	17,538	4,247	1,743	821	171	1.45	1.45
1,500	18,279	4,247	1,802	1,094	178	1.52	1.52
2,000	18,722	4,247	1,838	1,324	183	1.56	1.56
2,500	19,028	4,247	1,862	1,528	186	1.59	1.59
3,000	19,264	4,247	1,881	1,720	188	1.62	1.62
4,000	19,619	4,247	1,909	2,085	192	1.66	1.66
5,000	19,880	4,247	1,930	2,431	195	1.70	1.70
10,000	20,592	4,247	1,987	3,925	202	1.83	1.83

^a Reflects trend to prospective average accident date of December 1, 2022 and development to ultimate maturity.

^b Reflects only per-occurrence limitation. Derived by taking the ratio of columns [(2) + (3) + (4) + (5) + (6)] at the policy limit to columns [(2) + (3) + (4) + (5) + (6)] at the basic limit (\$100,000).

Explanation for this exhibit is provided on pages B-1 and B-2.

TENNESSEE
GENERAL LIABILITY INCREASED LIMIT FACTORS

CALCULATION OF INCREASED LIMIT FACTORS

PREMISES/OPERATIONS LIABILITY
STATE GROUP A

TABLE 2

(1)	(2) ^a	(3)	(4)	(5)	(6)	(7) ^b	(8)
Policy Limit (\$,000)	Limited Average Severity	ALAE per Occurrence	ULAE per Occurrence	Process Risk Load	Parameter Risk Load	Indicated Increased Limit Factor	Selected Increased Limit Factor
100	14,396	7,405	1,744	176	203	1.00	1.00
200	17,843	7,405	2,020	350	253	1.16	1.16
250	18,940	7,405	2,108	433	269	1.22	1.22
300	19,824	7,405	2,178	513	282	1.26	1.26
500	22,241	7,405	2,372	816	318	1.39	1.39
750	24,101	7,405	2,520	1,173	345	1.49	1.49
1,000	25,350	7,405	2,620	1,507	364	1.56	1.56
1,500	26,921	7,405	2,746	2,093	388	1.65	1.65
2,000	27,876	7,405	2,822	2,592	403	1.72	1.72
2,500	28,536	7,405	2,875	3,036	413	1.77	1.77
3,000	29,035	7,405	2,915	3,444	420	1.81	1.81
4,000	29,770	7,405	2,974	4,204	431	1.87	1.87
5,000	30,312	7,405	3,017	4,924	440	1.93	1.93
10,000	31,854	7,405	3,141	8,181	463	2.13	2.13

^a Reflects trend to prospective average accident date of December 1, 2022 and development to ultimate maturity.

^b Reflects only per-occurrence limitation. Derived by taking the ratio of columns [(2) + (3) + (4) + (5) + (6)] at the policy limit to columns [(2) + (3) + (4) + (5) + (6)] at the basic limit (\$100,000).

Explanation for this exhibit is provided on pages B-1 and B-2.

TENNESSEE
GENERAL LIABILITY INCREASED LIMIT FACTORS

CALCULATION OF INCREASED LIMIT FACTORS

PREMISES/OPERATIONS LIABILITY
STATE GROUP A

TABLE 3

(1)	(2) ^a	(3)	(4)	(5)	(6)	(7) ^b	(8)
Policy Limit (\$,000)	Limited Average Severity	ALAE per Occurrence	ULAE per Occurrence	Process Risk Load	Parameter Risk Load	Indicated Increased Limit Factor	Selected Increased Limit Factor
100	19,576	13,463	2,643	283	441	1.00	1.00
200	25,895	13,463	3,149	625	584	1.20	1.20
250	28,071	13,463	3,323	798	633	1.27	1.27
300	29,885	13,463	3,468	970	674	1.33	1.33
500	35,227	13,463	3,895	1,674	795	1.51	1.51
750	39,800	13,463	4,261	2,590	899	1.68	1.68
1,000	43,108	13,463	4,526	3,502	974	1.80	1.80
1,500	47,530	13,463	4,879	5,199	1,075	1.98	1.98
2,000	50,357	13,463	5,106	6,707	1,140	2.11	2.11
2,500	52,366	13,463	5,266	8,080	1,186	2.21	2.21
3,000	53,912	13,463	5,390	9,365	1,221	2.29	2.29
4,000	56,207	13,463	5,574	11,766	1,274	2.42	2.42
5,000	57,867	13,463	5,706	13,995	1,312	2.54	2.54
10,000	62,238	13,463	6,056	23,239	1,412	2.92	2.92

^a Reflects trend to prospective average accident date of December 1, 2022 and development to ultimate maturity.

^b Reflects only per-occurrence limitation. Derived by taking the ratio of columns [(2) + (3) + (4) + (5) + (6)] at the policy limit to columns [(2) + (3) + (4) + (5) + (6)] at the basic limit (\$100,000).

Explanation for this exhibit is provided on pages B-1 and B-2.

TENNESSEE
GENERAL LIABILITY INCREASED LIMIT FACTORS

CALCULATION OF INCREASED LIMIT FACTORS

PRODUCTS/COMPLETED OPERATIONS LIABILITY
MULTISTATE

TABLE A

(1)	(2) ^a	(3)	(4)	(5)	(6)	(7) ^b	(8)
Policy Limit (\$,000)	Limited Average Severity	ALAE per Occurrence	ULAE per Occurrence	Process Risk Load	Parameter Risk Load	Indicated Increased Limit Factor	Selected Increased Limit Factor
100	17,160	12,010	2,334	208	2,372	1.00	1.00
200	21,131	12,010	2,651	409	2,925	1.15	1.15
250	22,411	12,010	2,754	505	3,103	1.20	1.20
300	23,432	12,010	2,835	597	3,246	1.24	1.24
500	26,084	12,010	3,048	929	3,617	1.34	1.34
750	27,999	12,010	3,201	1,297	3,884	1.42	1.42
1,000	29,323	12,010	3,307	1,651	4,068	1.48	1.48
1,500	31,149	12,010	3,453	2,335	4,323	1.56	1.56
2,000	32,363	12,010	3,550	2,969	4,493	1.62	1.62
2,500	33,235	12,010	3,620	3,554	4,615	1.67	1.67
3,000	33,901	12,010	3,673	4,100	4,709	1.71	1.71
4,000	34,884	12,010	3,752	5,115	4,846	1.78	1.78
5,000	35,598	12,010	3,809	6,065	4,946	1.83	1.83
10,000	37,571	12,010	3,966	10,226	5,222	2.02	2.02

^a Reflects trend to prospective average accident date of December 1, 2022 and development to ultimate maturity.

^b Reflects only per-occurrence limitation. Derived by taking the ratio of columns [(2) + (3) + (4) + (5) + (6)] at the policy limit to columns [(2) + (3) + (4) + (5) + (6)] at the basic limit (\$100,000).

Explanation for this exhibit is provided on pages B-1 and B-2.

TENNESSEE
GENERAL LIABILITY INCREASED LIMIT FACTORS

CALCULATION OF INCREASED LIMIT FACTORS

PRODUCTS/COMPLETED OPERATIONS LIABILITY
MULTISTATE

TABLE B

(1)	(2) ^a	(3)	(4)	(5)	(6)	(7) ^b	(8)
Policy Limit (\$,000)	Limited Average Severity	ALAE per Occurrence	ULAE per Occurrence	Process Risk Load	Parameter Risk Load	Indicated Increased Limit Factor	Selected Increased Limit Factor
100	31,047	42,279	5,866	536	10,196	1.00	1.00
200	42,258	42,279	6,763	1,191	13,913	1.18	1.18
250	46,082	42,279	7,069	1,515	15,184	1.25	1.25
300	49,227	42,279	7,320	1,833	16,232	1.30	1.30
500	57,969	42,279	8,020	3,039	19,148	1.45	1.45
750	64,790	42,279	8,566	4,453	21,424	1.57	1.57
1,000	69,518	42,279	8,944	5,795	23,005	1.66	1.66
1,500	75,811	42,279	9,447	8,263	25,115	1.79	1.79
2,000	79,934	42,279	9,777	10,501	26,498	1.88	1.88
2,500	82,973	42,279	10,020	12,606	27,516	1.95	1.95
3,000	85,385	42,279	10,213	14,633	28,323	2.01	2.01
4,000	89,077	42,279	10,508	18,535	29,558	2.11	2.11
5,000	91,817	42,279	10,728	22,242	30,477	2.20	2.20
10,000	99,295	42,279	11,326	38,184	32,992	2.49	2.49

^a Reflects trend to prospective average accident date of December 1, 2022 and development to ultimate maturity.

^b Reflects only per-occurrence limitation. Derived by taking the ratio of columns [(2) + (3) + (4) + (5) + (6)] at the policy limit to columns [(2) + (3) + (4) + (5) + (6)] at the basic limit (\$100,000).

Explanation for this exhibit is provided on pages B-1 and B-2.

TENNESSEE
GENERAL LIABILITY INCREASED LIMIT FACTORS

CALCULATION OF INCREASED LIMIT FACTORS

PRODUCTS/COMPLETED OPERATIONS LIABILITY
MULTISTATE

TABLE C

(1)	(2) ^a	(3)	(4)	(5)	(6)	(7) ^b	(8)
Policy Limit (\$,000)	Limited Average Severity	ALAE per Occurrence	ULAE per Occurrence	Process Risk Load	Parameter Risk Load	Indicated Increased Limit Factor	Selected Increased Limit Factor
100	39,113	64,764	8,310	786	23,026	1.00	1.00
200	58,663	64,764	9,874	2,041	34,541	1.25	1.25
250	66,212	64,764	10,478	2,741	38,989	1.35	1.35
300	72,776	64,764	11,003	3,466	42,858	1.43	1.43
500	92,840	64,764	12,608	6,499	54,686	1.70	1.70
750	110,483	64,764	14,020	10,473	65,089	1.95	1.95
1,000	123,839	64,764	15,088	14,557	72,964	2.14	2.14
1,500	143,051	64,764	16,625	22,610	84,300	2.44	2.44
2,000	156,123	64,764	17,671	30,110	92,021	2.65	2.65
2,500	165,574	64,764	18,427	36,973	97,605	2.82	2.82
3,000	172,786	64,764	19,004	43,299	101,868	2.95	2.95
4,000	183,316	64,764	19,846	54,830	108,092	3.17	3.17
5,000	190,893	64,764	20,453	65,398	112,569	3.34	3.34
10,000	211,616	64,764	22,110	110,554	124,813	3.93	3.93

Reflects trend to prospective average accident date of December 1, 2022 and development to ultimate maturity.

Reflects only per-occurrence limitation. Derived by taking the ratio of columns [(2) + (3) + (4) + (5) + (6)] at the policy limit to columns [(2) + (3) + (4) + (5) + (6)] at the basic limit (\$100,000).

Explanation for this exhibit is provided on pages B-1 and B-2.

TENNESSEE
GENERAL LIABILITY INCREASED LIMIT FACTORS

INDEMNITY SEVERITY TREND SELECTIONS

Multistate Paid Annual Average Occurrence Severities

Accident Year	Premises/Operations		Products/Completed Operations	
	Basic Limit	Total Limits	Basic Limit	Total Limits
2010	12,155	21,687	17,079	34,211
2011	13,184	24,143	17,312	34,197
2012	13,190	25,051	17,638	35,700
2013	14,473	28,125	19,188	38,158
2014	15,493	30,610	20,431	43,005
2015	16,459	32,838	21,369	44,287
2016	16,450	33,740	22,754	48,318
2017	17,929	37,146	24,211	52,303
2018	19,195	40,155	24,992	52,820
2019	19,774	41,441	26,319	59,263

Trend Indications

Trend Period	Basic Limit		Total Limits		Basic Limit		Total Limits	
	Trend Fit	R ²	Trend Fit	R ²	Trend Fit	R ²	Trend Fit	R ²
10 years	5.6%	0.9847	7.5%	0.9893	5.4%	0.9864	6.7%	0.9777
8 years	5.7%	0.9757	7.3%	0.9823	5.7%	0.9904	7.2%	0.9820
6 years	5.2%	0.9600	6.5%	0.9804	5.3%	0.9928	6.5%	0.9660
4 years	6.4%	0.9594	7.2%	0.9570	4.8%	0.9862	6.4%	0.9129
Selection			6.5%				6.5%	

Explanation for this exhibit is provided on page B-6.

TENNESSEE
GENERAL LIABILITY INCREASED LIMIT FACTORS

PAYMENT LAG PARAMETERS AND LAG WEIGHTS

PREMISES/OPERATIONS LIABILITY
STATE GROUP A

Payment Lag Parameters

	<u>TABLE 1</u>	<u>TABLE 2</u>	<u>TABLE 3</u>
R1 =	0.55751979	0.54448535	0.50711832
R2 =	0.25768134	0.28742380	0.30328926
R3 =	0.50285523	0.54416333	0.61179709
$k = 1+R1+((R1 \cdot R2)/(1-R3)) =$	1.84649486	1.88780579	1.90331200

Generation of Lag Weights

	<u>TABLE 1</u>	<u>TABLE 2</u>	<u>TABLE 3</u>
Lag 1 =	$1 / k =$ 0.54156662	0.52971551	0.52539994
Lag 2 =	$R1 / k =$ 0.30193411	0.28842233	0.26643993
Lag 3 =	$R1 \cdot R2 / k =$ 0.07780279	0.08289944	0.08080837
Lag 4 =	$R1 \cdot R2 \cdot R3 / k =$ 0.03912354	0.04511084	0.04943833
Lag 5 =	$R1 \cdot R2 \cdot R3^2 / k =$ 0.01967348	0.02454766	0.03024622
Lag 6 =	$R1 \cdot R2 \cdot R3^3 / k =$ 0.00989291	0.01335794	0.01850455
Lag 7 =	$R1 \cdot R2 \cdot (R3^4 / (1-R3)) / k =$ 0.01000655	0.01594628	0.02916266

The lag weight distribution includes assigned or allocated CRR data, but excludes data with a non-zero deductible or attachment point.

Explanation for this exhibit is provided on pages B-11 and B-12.

TENNESSEE
 GENERAL LIABILITY INCREASED LIMIT FACTORS
PAYMENT LAG PARAMETERS AND LAG WEIGHTS
 PRODUCTS/COMPLETED OPERATIONS LIABILITY
 MULTISTATE

Payment Lag Parameters

	<u>TABLE A</u>	<u>TABLE B</u>	<u>TABLE C</u>
R1 =	0.52189409	0.77989110	0.89129984
R2 =	0.27454251	0.49990659	0.71290973
R3 =	0.65072322	0.76349373	0.71952148
$k = 1+R1+((R1 \cdot R2)/(1-R3)) =$	1.93211922	3.42835776	4.15677218

Generation of Lag Weights

	<u>TABLE A</u>	<u>TABLE B</u>	<u>TABLE C</u>
Lag 1 =	$1 / k =$ 0.51756640	0.29168485	0.24057129
Lag 2 =	$R1 / k =$ 0.27011485	0.22748241	0.21442114
Lag 3 =	$R1 \cdot R2 / k =$ 0.07415801	0.11371996	0.15286292
Lag 4 =	$R1 \cdot R2 \cdot R3 / k =$ 0.04825634	0.08682447	0.10998815
Lag 5 =	$R1 \cdot R2 \cdot R3^2 / k =$ 0.03140152	0.06628994	0.07913884
Lag 6 =	$R1 \cdot R2 \cdot R3^3 / k =$ 0.02043370	0.05061196	0.05694209
Lag 7 =	$R1 \cdot R2 \cdot (R3^4 / (1-R3)) / k =$ 0.03806918	0.16338641	0.14607557

The lag weight distribution includes assigned or allocated CRR data, but excludes data with a non-zero deductible or attachment point.

Explanation for this exhibit is provided on pages B-11 and B-12.

TENNESSEE
GENERAL LIABILITY INCREASED LIMIT FACTORS

PARAMETERS FOR MIXED EXPONENTIAL DISTRIBUTIONS^a

PREMISES/OPERATIONS LIABILITY
STATE GROUP A

TABLE 1		TABLE 2		TABLE 3	
Mean	Weight	Mean	Weight	Mean	Weight
1,188	0.413755	1,538	0.351836	3,978	0.515067
6,497	0.391338	7,575	0.412560	17,361	0.309638
28,973	0.129997	31,768	0.146445	94,297	0.131534
108,757	0.055003	101,467	0.066652	565,107	0.036045
502,801	0.008760	388,070	0.014665	2,166,929	0.006306
2,208,420	0.000919	841,283	0.006450	7,032,874	0.001070
7,091,917	0.000168	3,485,070	0.001103	20,883,262	0.000276
20,747,976	0.000047	10,142,462	0.000201	100,000,000	0.000064
100,000,000	0.000013	24,165,715	0.000065		
		100,000,000	0.000023		

PRODUCTS/COMPLETED OPERATIONS LIABILITY
MULTISTATE

TABLE A		TABLE B		TABLE C	
Mean	Weight	Mean	Weight	Mean	Weight
2,232	0.196965	1,117	0.039290	3,722	0.266719
8,151	0.518962	5,098	0.235559	25,430	0.378305
31,749	0.198642	12,840	0.213772	151,555	0.230472
144,093	0.072190	34,336	0.267061	801,120	0.099312
716,761	0.010587	125,339	0.177464	2,584,607	0.019023
2,349,234	0.001991	509,835	0.054431	7,303,869	0.004470
6,755,613	0.000484	2,099,370	0.009687	20,836,440	0.001360
20,089,606	0.000144	6,418,438	0.002050	100,000,000	0.000339
100,000,000	0.000035	19,635,373	0.000557		
		97,796,790	0.000129		

^a Mixed exponential parameters are based on an average accident date of December 1, 2022.

Explanation for this exhibit is provided on page B-15.

TENNESSEE
GENERAL LIABILITY INCREASED LIMIT FACTORS

COMPARISON OF LIMITED AVERAGE SEVERITIES

PREMISES/OPERATIONS LIABILITY
STATE GROUP A

Policy Limit (\$,000)	TABLE 1			TABLE 2		
	Empirical <u>LAS^a</u>	Fitted <u>LAS</u>	Percent <u>Difference</u>	Empirical <u>LAS^a</u>	Fitted <u>LAS</u>	Percent <u>Difference</u>
100	11,236	11,185	-0.45%	14,432	14,396	-0.25%
200	13,550	13,494	-0.41%	17,889	17,843	-0.26%
250	14,233	14,180	-0.37%	18,985	18,940	-0.24%
300	14,763	14,707	-0.38%	19,886	19,824	-0.31%
500	16,093	16,019	-0.46%	22,309	22,241	-0.30%
1,000	17,579	17,538	-0.23%	25,402	25,350	-0.20%
1,500	18,360	18,279	-0.44%	27,003	26,921	-0.30%
2,000	18,792	18,722	-0.37%	27,938	27,876	-0.22%
2,500	19,097	19,028	-0.36%	28,610	28,536	-0.26%
3,000	19,341	19,264	-0.40%	29,120	29,035	-0.29%
4,000	19,704	19,619	-0.43%	29,852	29,770	-0.27%
5,000	19,965	19,880	-0.43%	30,393	30,312	-0.27%
10,000	20,670	20,592	-0.38%	31,945	31,854	-0.28%

Policy Limit (\$,000)	TABLE 3		
	Empirical <u>LAS^a</u>	Fitted <u>LAS</u>	Percent <u>Difference</u>
100	19,645	19,576	-0.35%
200	25,975	25,895	-0.31%
250	28,179	28,071	-0.38%
300	30,016	29,885	-0.44%
500	35,268	35,227	-0.12%
1,000	43,219	43,108	-0.26%
1,500	47,624	47,530	-0.20%
2,000	50,449	50,357	-0.18%
2,500	52,462	52,366	-0.18%
3,000	54,012	53,912	-0.19%
4,000	56,301	56,207	-0.17%
5,000	57,983	57,867	-0.20%
10,000	62,338	62,238	-0.16%

^a For Premises/Operations, empirical limited average severities reflect tail smoothing and credibility-weighting with state group complement data.

Explanation for this exhibit is provided on page B-15.

TENNESSEE
GENERAL LIABILITY INCREASED LIMIT FACTORS

COMPARISON OF LIMITED AVERAGE SEVERITIES

PRODUCTS/COMPLETED OPERATIONS LIABILITY
MULTISTATE

Policy Limit (\$,000)	TABLE A			TABLE B		
	Empirical <u>LAS^a</u>	Fitted <u>LAS</u>	Percent <u>Difference</u>	Empirical <u>LAS^a</u>	Fitted <u>LAS</u>	Percent <u>Difference</u>
100	17,177	17,160	-0.10%	31,097	31,047	-0.16%
200	21,176	21,131	-0.21%	42,313	42,258	-0.13%
250	22,433	22,411	-0.10%	46,118	46,082	-0.08%
300	23,441	23,432	-0.04%	49,276	49,227	-0.10%
500	26,145	26,084	-0.23%	58,115	57,969	-0.25%
1,000	29,372	29,323	-0.17%	69,645	69,518	-0.18%
1,500	31,237	31,149	-0.28%	75,948	75,811	-0.18%
2,000	32,443	32,363	-0.25%	80,096	79,934	-0.20%
2,500	33,306	33,235	-0.21%	83,062	82,973	-0.11%
3,000	33,973	33,901	-0.21%	85,485	85,385	-0.12%
4,000	34,961	34,884	-0.22%	89,227	89,077	-0.17%
5,000	35,677	35,598	-0.22%	91,962	91,817	-0.16%
10,000	37,643	37,571	-0.19%	99,411	99,295	-0.12%

Policy Limit (\$,000)	TABLE C		
	Empirical <u>LAS^a</u>	Fitted <u>LAS</u>	Percent <u>Difference</u>
100	39,244	39,113	-0.33%
200	58,578	58,663	0.15%
250	66,043	66,212	0.26%
300	72,603	72,776	0.24%
500	93,039	92,840	-0.21%
1,000	123,655	123,839	0.15%
1,500	143,243	143,051	-0.13%
2,000	156,248	156,123	-0.08%
2,500	165,599	165,574	-0.02%
3,000	172,793	172,786	0.00%
4,000	183,382	183,316	-0.04%
5,000	190,996	190,893	-0.05%
10,000	211,677	211,616	-0.03%

^a For Products/Completed Operations, empirical limited average severities reflect tail smoothing.

Explanation for this exhibit is provided on page B-15.

TENNESSEE
GENERAL LIABILITY INCREASED LIMIT FACTORS

CALCULATION OF ALLOCATED LOSS ADJUSTMENT EXPENSE PER OCCURRENCE

PREMISES/OPERATIONS LIABILITY
STATE GROUP A

Ratios of ALAE to Total Limits Indemnity - Paid Data^a

Accident <u>Year</u>	<u>Table 1</u>	<u>Table 2</u>	<u>Table 3</u>
2012	0.24924	0.29874	0.32697
2013	0.28504	0.34231	0.26765
2014	0.27127	0.27716	0.31496
2015	0.21606	0.28492	0.34602
2016	0.23133	0.28442	0.31175
2017	0.23320	0.29668	0.30317
2018	0.21928	0.29192	0.29581
Best 5-of-7 Average	0.24087	0.29133	0.31053

Indicated ALAE per Occurrence

<u>Table</u>	(1) ALAE per Total Limits <u>Indemnity</u>	(2) Mixed Exponential Total Limits <u>Average Severity^b</u>	(1) x (2) ALAE per <u>Occurrence</u>
1	0.24087	17,633	4,247
2	0.29133	25,418	7,405
3	0.31053	43,354	13,463

^a Derived from paid aggregate state group data developed to ultimate.

^b Occurrence-weighted average of limited average severities from Exhibits 7-9.

Explanation for this exhibit is provided on page B-18.

TENNESSEE
GENERAL LIABILITY INCREASED LIMIT FACTORS

CALCULATION OF ALLOCATED LOSS ADJUSTMENT EXPENSE PER OCCURRENCE

PRODUCTS/COMPLETED OPERATIONS LIABILITY
MULTISTATE

Ratios of ALAE to Total Limits Indemnity - Paid Data^a

Accident Year	Table A	Table B	Table C
2012	0.42801	0.62324	0.56665
2013	0.43087	0.58931	0.60207
2014	0.36276	0.59120	0.49496
2015	0.41311	0.59383	0.50724
2016	0.43332	0.61751	0.51032
2017	0.36975	0.60720	0.50199
2018	0.39928	0.61604	0.47616
Best 5-of-7 Average	0.40820	0.60515	0.51623

Indicated ALAE per Occurrence

Table	(1) ALAE per Total Limits Indemnity	(2) Mixed Exponential Total Limits Average Severity ^b	(1) x (2) ALAE per Occurrence
A	0.40820	29,423	12,010
B	0.60515	69,866	42,279
C	0.51623	125,455	64,764

^a Derived from paid aggregate multistate data developed to ultimate.

^b Occurrence-weighted average of limited average severities from Exhibits 10-12.

Explanation for this exhibit is provided on page B-18.

TENNESSEE
GENERAL LIABILITY INCREASED LIMIT FACTORS

DEVELOPMENT OF UNALLOCATED LOSS ADJUSTMENT EXPENSE FACTOR

General Liability Excluding Medical Professional Liability
Multistate Expense Experience
Loss Adjustment Expense Special Call

ITEM ^a	CALENDAR YEAR				
	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>
(1) Direct Losses Incurred	24,958,455	25,388,567	22,632,160	26,519,433	28,416,595
(2) Allocated Loss Adjustment Expenses Incurred (ALAE)	6,032,038	4,939,134	5,935,928	5,781,764	5,750,906
(3) Unallocated Loss Adjustment Expenses Incurred (ULAE)	2,454,825	2,540,806	2,332,466	2,282,751	2,814,839
(4) Incurred Losses + ALAE [(1) + (2)]	30,990,493	30,327,701	28,568,088	32,301,197	34,167,501
	<u>Incurred Percentage^b</u>				
	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>
(5) ULAE as Ratio to (Losses + ALAE) [(3) / (4)]	7.92%	8.38%	8.16%	7.07%	8.24%
Selected ULAE Factor:	8.0%				

^a Items (1) - (3) are from an ISO special call submission for available writers. All dollar amounts are displayed in thousands.

^b Incurred percentages are calculated on a direct basis.

Explanation for this exhibit is provided on page B-18.

TENNESSEE
GENERAL LIABILITY INCREASED LIMIT FACTORS

RISK LOAD PARAMETERS

GENERAL AND COMMERCIAL AUTOMOBILE LIABILITY

$$\text{Lambda}(\lambda)^a = 1.4673\text{E-}07$$

MULTISTATE PARAMETERS

<u>Premises/Operations</u>		<u>Products/Completed Operations</u>	
d	= 1.725	d	= 1.469
c	= 0.005	c	= 0.015
a	= 0.001	a	= 0.001
nbarc	= 350	nbarc	= 1,050

VALUES OF nbara

<u>Premises/Operations</u> STATE GROUP A		<u>Products/Completed Operations</u> MULTISTATE	
Table 1	167.38	Table A	367.19
Table 2	248.35	Table B	604.16
Table 3	48.83	Table C	78.65

^a ISO determines lambda so that the ratio of the average increased limit factor with risk load to the average increased limit factor without risk load is equal to 1.06 for all states for all (non-professional) commercial liability lines combined.

Explanation for this exhibit is provided on pages B-19 through B-22.

TENNESSEE
GENERAL LIABILITY INCREASED LIMIT FACTORS

MIXED NEGATIVE BINOMIAL FREQUENCY PARAMETERS
MULTISTATE

Premises/Operations Liability

j	w _j	r _j	β _i	m _i
1	0.92211524	1.00000000	9.98580849E+12	1.001E-13
2	0.05564394	9.84512420	3.08916580E+01	0.319
3	0.00231264	2.81736112	1.51157272E+00	1.864
4	0.01992818	0.02292149	1.30039375E-01	0.176
Weighted:				0.026

Products/Completed Operations Liability

j	w _j	r _j	β _i	m _i
1	0.92702622	0.05408610	7.35519231	0.007
2	0.00572834	0.01000000	0.07486523	0.134
3	0.06724544	0.02415934	0.71039635	0.034
Weighted:				0.010

Explanation for this exhibit is provided on page A-2.

TENNESSEE
GENERAL LIABILITY INCREASED LIMIT FACTORS

MANUAL PAGES

REVISED INCREASED LIMIT FACTORS

(Limits are in thousands)

**RULE 56.
INCREASED LIMITS TABLES**

1. Premises/Operations (Subline Code 334) Table 1 - \$100/200 Basic Limit

Aggregate	Per Occurrence						
	\$ 25	50	100	200	300	500	1,000
\$ 50	<u>0.690.71</u>	<u>0.800.81</u>					
100	<u>0.700.72</u>	<u>0.840.85</u>	0.97				
200	<u>0.710.73</u>	<u>0.850.86</u>	1.00	<u>1.124.40</u>			
300	<u>0.720.74</u>	<u>0.860.87</u>	1.01	<u>1.134.41</u>	<u>1.211.18</u>		
500		<u>0.880.89</u>	1.03	<u>1.154.43</u>	<u>1.231.20</u>	<u>1.314.26</u>	
600		<u>0.890.90</u>	1.04	<u>1.164.44</u>	<u>1.241.21</u>	<u>1.324.27</u>	
1,000			1.05	<u>1.174.45</u>	<u>1.251.22</u>	<u>1.334.28</u>	<u>1.424.34</u>
1,500				<u>1.184.46</u>	<u>1.261.23</u>	<u>1.344.29</u>	<u>1.434.35</u>
2,000				<u>1.194.47</u>	<u>1.271.24</u>	<u>1.354.30</u>	<u>1.444.36</u>
2,500					<u>1.281.25</u>	<u>1.364.31</u>	<u>1.454.37</u>
3,000					<u>1.291.26</u>	<u>1.374.32</u>	<u>1.464.38</u>

The following factors MUST be referred to company before using.

Aggregate	Per Occurrence							
	\$ 500	1,000	1,500	2,000	3,000	4,000	5,000	10,000
\$ 1,500			<u>1.494.39</u>					
2,000			<u>1.504.40</u>	<u>1.534.42</u>				
2,500			<u>1.514.41</u>	<u>1.544.43</u>				
3,000			<u>1.524.42</u>	<u>1.554.44</u>	<u>1.604.48</u>			
4,000	<u>1.384.33</u>	<u>1.474.39</u>	<u>1.534.43</u>	<u>1.564.45</u>	<u>1.614.49</u>	<u>1.654.53</u>		
5,000	<u>1.394.34</u>	<u>1.484.40</u>	<u>1.544.44</u>	<u>1.574.46</u>	<u>1.624.50</u>	<u>1.664.54</u>	<u>1.704.57</u>	
10,000		<u>1.494.41</u>	<u>1.554.45</u>	<u>1.584.47</u>	<u>1.634.51</u>	<u>1.674.55</u>	<u>1.714.58</u>	<u>1.844.68</u>
20,000								<u>1.854.69</u>

Table 56.B.1. Premises/Operations (Subline Code 334) Table 1 - \$100/200 Basic Limit

TENNESSEE
GENERAL LIABILITY INCREASED LIMIT FACTORS

MANUAL PAGES

REVISED INCREASED LIMIT FACTORS

(Limits are in thousands)

**RULE 56.
INCREASED LIMITS TABLES**

2. Premises/Operations (Subline Code 334) Table 2 - \$100/200 Basic Limit

Aggregate	Per Occurrence						
	\$ 25	50	100	200	300	500	1,000
\$ 50	<u>0.700-71</u>	<u>0.800-81</u>					
100	<u>0.710-73</u>	<u>0.840-85</u>	<u>0.960-97</u>				
200	<u>0.720-74</u>	<u>0.850-86</u>	1.00	<u>1.141-13</u>			
300	<u>0.730-75</u>	<u>0.860-87</u>	1.01	<u>1.151-14</u>	<u>1.241-22</u>		
500		<u>0.880-89</u>	1.03	<u>1.171-16</u>	<u>1.261-24</u>	<u>1.371-34</u>	
600		<u>0.890-90</u>	1.04	<u>1.181-17</u>	<u>1.271-25</u>	<u>1.381-35</u>	
1,000			1.05	<u>1.191-18</u>	<u>1.281-26</u>	<u>1.391-36</u>	<u>1.531-49</u>
1,500				<u>1.201-19</u>	<u>1.291-27</u>	<u>1.401-37</u>	<u>1.541-50</u>
2,000				<u>1.211-20</u>	<u>1.301-28</u>	<u>1.411-38</u>	<u>1.551-51</u>
2,500					<u>1.311-29</u>	<u>1.421-39</u>	<u>1.561-52</u>
3,000					<u>1.321-30</u>	<u>1.431-40</u>	<u>1.571-53</u>

The following factors MUST be referred to company before using.

Aggregate	Per Occurrence							
	\$ 500	1,000	1,500	2,000	3,000	4,000	5,000	10,000
\$ 1,500			<u>1.631-59</u>					
2,000			<u>1.641-60</u>	<u>1.701-65</u>				
2,500			<u>1.651-61</u>	<u>1.711-66</u>				
3,000			<u>1.661-62</u>	<u>1.721-67</u>	<u>1.801-77</u>			
4,000	<u>1.441-41</u>	<u>1.581-54</u>	<u>1.671-63</u>	<u>1.731-68</u>	<u>1.811-78</u>	<u>1.871-86</u>		
5,000	<u>1.451-42</u>	<u>1.591-55</u>	<u>1.681-64</u>	<u>1.741-69</u>	<u>1.821-79</u>	<u>1.881-87</u>	<u>1.941-93</u>	
10,000		<u>1.601-56</u>	<u>1.691-65</u>	<u>1.751-70</u>	<u>1.831-80</u>	<u>1.891-88</u>	<u>1.951-94</u>	<u>2.152-16</u>
20,000								<u>2.162-17</u>

Table 56.B.2. Premises/Operations (Subline Code 334) Table 2 - \$100/200 Basic Limit

TENNESSEE
GENERAL LIABILITY INCREASED LIMIT FACTORS

MANUAL PAGES

REVISED INCREASED LIMIT FACTORS

(Limits are in thousands)

**RULE 56.
INCREASED LIMITS TABLES**

3. Premises/Operations (Subline Code 334) Table 3 - \$100/200 Basic Limit

Aggregate	Per Occurrence						
	\$ 25	50	100	200	300	500	1,000
\$ 50	0.70	0.79					
100	0.71	0.83	0.96				
200	0.72	0.85	1.00	<u>1.16</u> 1.17			
300	0.73	0.86	1.01	1.19	<u>1.30</u> 1.31		
500		0.88	1.03	1.21	<u>1.33</u> 1.34	<u>1.49</u> 1.50	
600		0.89	1.04	1.22	<u>1.34</u> 1.35	<u>1.51</u> 1.52	
1,000			1.05	1.23	<u>1.35</u> 1.36	1.53	1.79
1,500				1.24	<u>1.36</u> 1.37	1.54	1.80
2,000				1.25	<u>1.37</u> 1.38	1.55	1.81
2,500					<u>1.38</u> 1.39	1.56	1.82
3,000					<u>1.39</u> 1.40	1.57	1.83

The following factors MUST be referred to company before using.

Aggregate	Per Occurrence							
	\$ 500	1,000	1,500	2,000	3,000	4,000	5,000	10,000
\$ 1,500			<u>1.98</u> 1.97					
2,000			<u>1.99</u> 1.98	2.10				
2,500			<u>2.00</u> 1.99	2.11				
3,000			<u>2.01</u> 2.00	2.12	<u>2.30</u> 2.29			
4,000	1.58	1.84	<u>2.02</u> 2.01	2.13	<u>2.31</u> 2.30	<u>2.45</u> 2.43		
5,000	1.59	1.85	<u>2.03</u> 2.02	2.14	<u>2.32</u> 2.31	<u>2.46</u> 2.44	<u>2.57</u> 2.55	
10,000		1.86	<u>2.04</u> 2.03	2.15	<u>2.33</u> 2.32	<u>2.47</u> 2.45	<u>2.58</u> 2.56	<u>2.96</u> 2.93
20,000								<u>2.97</u> 2.94

Table 56.B.3. Premises/Operations (Subline Code 334) Table 3 - \$100/200 Basic Limit

TENNESSEE
GENERAL LIABILITY INCREASED LIMIT FACTORS

MANUAL PAGES

REVISED INCREASED LIMIT FACTORS

(Limits are in thousands)

**RULE 56.
INCREASED LIMITS TABLES**

4. Products/Completed Operations (Subline Code 336) Table A - \$100/200 Basic Limit

Aggregate	Per Occurrence						
	\$ 25	50	100	200	300	500	1,000
\$ 50	<u>0.730.74</u>	<u>0.830.84</u>					
100	<u>0.740.75</u>	0.86	0.98				
200	<u>0.750.76</u>	0.87	1.00	1.12			
300	<u>0.760.77</u>	0.88	1.01	1.13	<u>1.214.20</u>		
500		0.90	1.03	1.15	<u>1.234.22</u>	<u>1.334.34</u>	
600		0.91	1.04	1.16	<u>1.244.23</u>	<u>1.344.32</u>	
1,000			1.05	1.17	<u>1.254.24</u>	<u>1.354.33</u>	<u>1.464.45</u>
1,500				1.18	<u>1.264.25</u>	<u>1.364.34</u>	<u>1.474.46</u>
2,000				1.19	<u>1.274.26</u>	<u>1.374.35</u>	<u>1.484.47</u>
2,500					<u>1.284.27</u>	<u>1.384.36</u>	<u>1.494.48</u>
3,000					<u>1.294.28</u>	<u>1.394.37</u>	<u>1.504.49</u>

The following factors MUST be referred to company before using.

Aggregate	Per Occurrence							
	\$ 500	1,000	1,500	2,000	3,000	4,000	5,000	10,000
\$ 1,500			<u>1.544.53</u>					
2,000			<u>1.554.54</u>	<u>1.614.58</u>				
2,500			<u>1.564.55</u>	<u>1.624.59</u>				
3,000			<u>1.574.56</u>	<u>1.634.60</u>	<u>1.714.67</u>			
4,000	<u>1.404.38</u>	<u>1.514.50</u>	<u>1.584.57</u>	<u>1.644.64</u>	<u>1.724.68</u>	<u>1.784.74</u>		
5,000	<u>1.414.39</u>	<u>1.524.54</u>	<u>1.594.58</u>	<u>1.654.62</u>	<u>1.734.69</u>	<u>1.794.75</u>	<u>1.854.80</u>	
10,000		<u>1.534.52</u>	<u>1.604.59</u>	<u>1.664.63</u>	<u>1.744.70</u>	<u>1.804.76</u>	<u>1.864.84</u>	<u>2.044.98</u>
20,000								<u>2.054.99</u>

Table 56.B.4. Products/Completed Operations (Subline Code 336) Table A - \$100/200 Basic Limit

TENNESSEE
GENERAL LIABILITY INCREASED LIMIT FACTORS

MANUAL PAGES

REVISED INCREASED LIMIT FACTORS

(Limits are in thousands)

**RULE 56.
INCREASED LIMITS TABLES**

5. Products/Completed Operations (Subline Code 336) Table B - \$100/200 Basic Limit

Aggregate	Per Occurrence						
	\$ 25	50	100	200	300	500	1,000
\$ 50	<u>0.730.74</u>	<u>0.820.83</u>					
100	<u>0.740.75</u>	0.85	0.97				
200	<u>0.750.76</u>	0.86	1.00	<u>1.164.45</u>			
300	<u>0.760.77</u>	0.87	1.01	<u>1.174.46</u>	<u>1.284.26</u>		
500		0.89	1.03	<u>1.194.48</u>	<u>1.304.28</u>	<u>1.434.42</u>	
600		0.90	1.04	<u>1.204.49</u>	<u>1.314.29</u>	<u>1.454.43</u>	
1,000			1.05	<u>1.214.20</u>	<u>1.324.30</u>	<u>1.464.44</u>	<u>1.654.63</u>
1,500				<u>1.224.21</u>	<u>1.334.31</u>	<u>1.474.45</u>	<u>1.664.64</u>
2,000				<u>1.234.22</u>	<u>1.344.32</u>	<u>1.484.46</u>	<u>1.674.65</u>
2,500					<u>1.354.33</u>	<u>1.494.47</u>	<u>1.684.66</u>
3,000					<u>1.364.34</u>	<u>1.504.48</u>	<u>1.694.67</u>

The following factors MUST be referred to company before using.

Aggregate	Per Occurrence							
	\$ 500	1,000	1,500	2,000	3,000	4,000	5,000	10,000
\$ 1,500			<u>1.784.76</u>					
2,000			<u>1.794.77</u>	<u>1.884.86</u>				
2,500			<u>1.804.78</u>	<u>1.894.87</u>				
3,000			<u>1.814.79</u>	<u>1.904.88</u>	<u>2.022.00</u>			
4,000	<u>1.514.49</u>	<u>1.704.68</u>	<u>1.824.80</u>	<u>1.914.89</u>	<u>2.032.04</u>	<u>2.142.11</u>		
5,000	<u>1.524.50</u>	<u>1.714.69</u>	<u>1.834.81</u>	<u>1.924.90</u>	<u>2.042.02</u>	<u>2.152.12</u>	<u>2.232.20</u>	
10,000		<u>1.724.70</u>	<u>1.844.82</u>	<u>1.934.94</u>	<u>2.052.03</u>	<u>2.162.13</u>	<u>2.242.21</u>	<u>2.532.48</u>
20,000								<u>2.542.49</u>

Table 56.B.5. Products/Completed Operations (Subline Code 336) Table B - \$100/200 Basic Limit

TENNESSEE
GENERAL LIABILITY INCREASED LIMIT FACTORS

MANUAL PAGES

REVISED INCREASED LIMIT FACTORS

(Limits are in thousands)

**RULE 56.
INCREASED LIMITS TABLES**

6. Products/Completed Operations (Subline Code 336) Table C - \$100/200 Basic Limit

Aggregate	Per Occurrence						
	\$ 25	50	100	200	300	500	1,000
\$ 50	<u>0.710-72</u>	<u>0.800-81</u>					
100	<u>0.720-73</u>	0.83	0.97				
200	<u>0.730-74</u>	0.84	1.00	<u>1.214-20</u>			
300	<u>0.740-75</u>	0.85	1.01	<u>1.234-22</u>	<u>1.384-37</u>		
500		0.87	1.03	<u>1.254-24</u>	<u>1.424-41</u>	<u>1.654-63</u>	
600		0.88	1.04	<u>1.264-25</u>	<u>1.434-42</u>	<u>1.674-65</u>	
1,000			1.05	<u>1.274-26</u>	<u>1.454-43</u>	<u>1.714-69</u>	<u>2.102-07</u>
1,500				<u>1.284-27</u>	<u>1.464-44</u>	<u>1.724-70</u>	<u>2.142-12</u>
2,000				<u>1.294-28</u>	<u>1.474-45</u>	<u>1.734-71</u>	<u>2.162-13</u>
2,500					<u>1.484-46</u>	<u>1.744-72</u>	<u>2.172-14</u>
3,000					<u>1.494-47</u>	<u>1.754-73</u>	<u>2.182-15</u>

The following factors MUST be referred to company before using.

Aggregate	Per Occurrence							
	\$ 500	1,000	1,500	2,000	3,000	4,000	5,000	10,000
\$ 1,500			<u>2.402-37</u>					
2,000			<u>2.432-40</u>	<u>2.622-58</u>				
2,500			<u>2.452-42</u>	<u>2.652-64</u>				
3,000			<u>2.472-43</u>	<u>2.672-63</u>	<u>2.942-89</u>			
4,000	<u>1.764-74</u>	<u>2.192-16</u>	<u>2.482-45</u>	<u>2.692-65</u>	<u>2.982-92</u>	<u>3.173-10</u>		
5,000	<u>1.774-75</u>	<u>2.202-17</u>	<u>2.492-46</u>	<u>2.702-66</u>	<u>3.002-94</u>	<u>3.203-13</u>	<u>3.363-28</u>	
10,000		<u>2.212-18</u>	<u>2.502-47</u>	<u>2.722-67</u>	<u>3.022-96</u>	<u>3.243-17</u>	<u>3.413-33</u>	<u>3.983-87</u>
20,000								<u>4.023-94</u>

Table 56.B.6. Products/Completed Operations (Subline Code 336) Table C - \$100/200 Basic Limit