

LOSS COSTS – INFORMATION

APRIL 30, 2024

GENERAL LIABILITY

LI-GL-2024-050

## NEW JERSEY PRODUCTS/COMPLETED OPERATIONS PROVIDED; EXPLANATORY MEMORANDUM ATTACHED

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### KEY MESSAGE

We are providing the explanatory memorandum to General Liability Products/Completed Operations loss costs filing [GL-2024-BPRD1](#) for circular LI-GL-2024-044 in New Jersey, which represents an overall change of -6.6%.

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### BACKGROUND

In circular [LI-GL-2024-044](#), we announced the implementation of New Jersey Premises and Operations loss costs for filing [GL-2024-BPOP1](#), and we provided the New Jersey Products/Completed Operations loss costs for filing [GL-2024-BPRD1](#).

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### ISO ACTION

We are providing the explanatory memorandum for filing GL-2024-BPRD1 in New Jersey, which was inadvertently omitted from circular [LI-GL-2024-044](#). Apart from the update outlined above, the information in circular [LI-GL-2024-044](#) remains unchanged.

*For more information on the status of filings in a particular state, including filed and approved documents, associated circulars and links to Print Ready Manuals and Commercial Lines Manual, please feel free to access our [Filings](#) feature within the ISOnet Circulars product.*

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### REFERENCE(S)

[LI-GL-2024-044](#) (04/11/2024) New Jersey Premises/Operations Advisory Prospective Loss Cost Revisions To Be Implemented; Products/Completed Operations Provided

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### [ATTACHMENT\(S\)](#)

Explanatory Memorandum to Filing GL-2024-BPRD1

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### FILES AVAILABLE FOR DOWNLOAD

To download all files associated with this circular, including attachments in the full circular PDF and/or any additional files not included in the PDF, search for the circular number on [ISOnet Circulars](#). Then click the Word/Excel link under the Full Circular column on the Search Results screen.

Please note that in some instances, not all files listed in the Attachment(s) block (if applicable) are included in the PDF.

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## ACKNOWLEDGMENT OF ACTUARIAL QUALIFICATIONS

The American Academy of Actuaries' "Qualification 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 loss cost review a Statement of Actuarial Opinion; therefore, we are including the following acknowledgment:

I, Ping Hsin Lee, am an Actuarial Associate for ISO, and I, Timothy J. McCarthy, am an Actuarial Product Director for Commercial Liability 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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NEW JERSEY GL-2024-BPRD1  
BASIC LIMIT LOSS COST LEVEL  
GENERAL LIABILITY OTHER THAN PROFESSIONAL  
PRODUCTS/COMPLETED OPERATIONS  
EXECUTIVE SUMMARY

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PURPOSE

This document:

- revises current advisory prospective loss costs for Products/Completed Operations classes. These loss costs represent a -6.6% change from the current ISO loss costs. Please note that throughout this document the term loss costs means advisory prospective loss costs.
  - provides the analyses used to derive these advisory loss costs.
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DEFINITION OF  
THE ISO  
ADVISORY  
PROSPECTIVE  
LOSS COSTS

Advisory prospective loss costs in this document are the expected value of that portion of a rate that does not include provisions for expenses (other than loss adjustment expenses) or profit, and are based on historical aggregate losses and loss adjustment expenses adjusted through development to their ultimate value and projected through trending to a future point in time.

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CONSIDERATION  
OF COVID-19

Due to the impact that the COVID-19 pandemic had on experience from March 2020 and beyond, we continue to include a fourth year of experience in calculating the statewide prospective loss costs level changes. In this review, equal weights have been assigned to each year of experience to determine the statewide indicated loss cost level changes for Products and Local Products/Completed Operations. We will continue to seek the appropriate balance between the COVID-19 impacted experience and the experience of other years used in the analyses to determine our prospective loss costs for future periods.

While there is still great uncertainty around COVID-19, the above referenced adjustments do not contemplate the possibility of the renewal of stay-at-home orders during the period in which the newly filed loss costs will be in effect. We have assumed that any recurrence of such extreme and unpredictable circumstances would generally be addressed, as appropriate, by individual carriers.

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LOSS COST  
LEVEL CHANGES

The statewide advisory loss cost level changes are:

<u>SUBLINE</u>	<u>INDICATED</u>	<u>SELECTED</u>
Products	0.0%	0.0%
Local Products/Completed Operations	-8.1%	-8.1%
Products/Completed Operations	-6.6%	-6.6%

The selected loss cost level changes reflect the effect of capping and buildback except for Products where the change is calculated by determining the effect, on state loss cost levels, of implementing multistate loss costs.

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INDICATED  
VS. SELECTED

Indicated changes are based on standard ISO methodology. The selected changes are equal to the indicated changes for all sublines .

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CAPPING

In order to lessen the impact of swings in classification loss costs, this document contains upper and lower caps that take into account the size of the overall indications.

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PRIOR ISO  
REVISIONS

See Page ES-4 for the latest revisions in this jurisdiction.

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HISTORICAL  
SOURCE DATA

The data used in this document is:

- ISO reporting companies' voluntary experience.
- Calendar-accident year data through year ended 12/31/2022 for Products/Completed Operations.

Bodily Injury and Property Damage deductible data is included.

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ADJUSTMENTS  
TO  
REPORTED  
EXPERIENCE

The period of use for this revision is anticipated to begin on 3/1/2025. The Products/Completed Operations portion of this review uses a trend date of 10/1/2024 because of the multistate nature of the review. To adjust the loss and exposure data to levels expected to prevail during the period when the revised indications are assumed to be in effect, historical losses and exposures have been multiplied by trend factors. These trend factors are based on changes in cost, frequency and inflation sensitive exposure bases that are expected to arise between the historical experience period and the prospective period during which the revised loss costs will be in effect. For a summary of the selected annual trend factors, see Exhibits C6 and C13.

For Products/Completed Operations, occurrence cost data and occurrence frequency data through 12/31/2022 were used.

Note that although indications are computed on a Combined Single Limit basis, severity and frequency trends are applied separately for Bodily Injury and Property Damage. Also, separate exposure trends are applied to Products, Local Products and Completed Operations.

Standard actuarial procedures have been used in calculating the indications including adjusting the liability losses to ultimate settlement level and, for all coverages, reflecting all loss adjustment expenses. Indemnity and ALAE are being developed separately. Accident year exposures have been developed to reflect exposure audits.

In this review, multistate reported paid losses, ALAE, and occurrences have been developed to ultimate settlement level in the trend exhibits using paid development techniques. This has been done in the interest of stability of ultimate loss, ALAE and occurrence estimates from one review to another.

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TEN  
LARGEST  
COMPANY  
GROUPS IN  
ISO  
DATA  
BASE

PRODUCTS LIABILITY (ASLOB 18.0)

1. Chubb Group of Insurance Cos.
2. Liberty Mutual Insurance Co.
3. Selective Insurance Co. of America
4. Fireman's Fund Insurance Co.
5. Cincinnati Insurance Co.
6. Travelers Indemnity Co.
7. Zurich American Insurance Co.
8. Continental Casualty Co.
9. Sentry Insurance Mutual Insurance Co.
10. Federated Mutual Insurance Co.

Insurers are listed in descending order based on the percent of written premium volume from Statutory Page 14 Data for the year ending 12/31/2022 for the Annual Statement Line of Business (ASLOB) indicated. ASLOB 18.0 is based on multistate written premium volume.

SIZE  
OF  
ISO  
DATA  
BASE

While we are unable to specifically determine the market share of ISO reporting company groups separately for the classes contained in this document, we believe that a comparison of Statutory Page 14 data for ISO reporting company groups to industrywide Statutory Page 14 data is a reasonable approximation of a market share for these lines.

The market share of ISO participating insurers as measured by Statutory Page 14 Written Premium for the year ending 12/31/2022 is:

Multistate - Products Liability (ASLOB 18.0)	38.4%
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COMPANY  
DECISION

We encourage each insurer to decide independently whether the judgments made and the procedures or data used by ISO in developing the indications contained herein are appropriate for its use. 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 Insurance Services Office, Inc. Therefore, the ISO experience permits the establishment of a much broader statistical ratemaking base than could be employed by using any individual company's data. A broader data base enhances the validity of ratemaking analysis derived therefrom. At the same time, however, 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 indications are appropriate for its use.

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NEW JERSEY  
PRIOR REVISIONS

The latest implemented revisions in this state are:

Document: GL-2023-BPRD1

<u>Coverage</u>	Distribution <u>Date</u>	<u>Loss Cost Level Changes</u>		
		<u>Indicated</u>	<u>Selected</u>	<u>Implemented</u>
Products		-18.9%	-18.9%	-18.9%
Local Products/Completed Ops		-8.5%	-8.5%	-8.5%
Products/Completed Operations	3/1/2024	-10.7%	-10.7%	-10.7%

Document: GL-2022-BPRD1

<u>Coverage</u>	Distribution <u>Date</u>	<u>Loss Cost Level Changes</u>		
		<u>Indicated</u>	<u>Selected</u>	<u>Implemented</u>
Products		-9.4%	-9.4%	-9.4%
Local Products/Completed Ops		-11.7%	-11.7%	-11.7%
Products/Completed Operations	3/1/2023	-11.2%	-11.2%	-11.2%

Document: GL-2021-BPRD1

<u>Coverage</u>	Distribution <u>Date</u>	<u>Loss Cost Level Changes</u>		
		<u>Indicated</u>	<u>Selected</u>	<u>Implemented</u>
Products		-7.1%	-7.1%	-7.1%
Local Products/Completed Ops		+9.4%	+9.4%	+9.4%
Products/Completed Operations	7/1/2021	+5.3%	+5.3%	+5.3%

Document: GL-2019-BPRD1

<u>Coverage</u>	Distribution <u>Date</u>	<u>Loss Cost Level Changes</u>		
		<u>Indicated</u>	<u>Selected</u>	<u>Implemented</u>
Products		-11.2%	-11.2%	-11.2%
Local Products/Completed Ops		+0.8%	+0.8%	+0.8%
Products/Completed Operations	7/2019	-2.2%	-2.2%	-2.2%

Document: GL-2018-BPRD1

<u>Coverage</u>	Distribution <u>Date</u>	<u>Loss Cost Level Changes</u>		
		<u>Indicated</u>	<u>Selected</u>	<u>Implemented</u>
Products		-7.8%	-7.8%	-7.8%
Local Products/Completed Ops		-7.8%	-7.8%	-7.8%
Products/Completed Operations	7/2018	-7.8%	-7.8%	-7.8%

**NEW JERSEY  
GENERAL LIABILITY  
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EXPLANATION OF LOSS COST CHANGES BY CLASS  
GENERAL LIABILITY OTHER THAN PROFESSIONAL - SUBLINE CODES 336

The Commercial General Liability combined single limit loss costs for each General Liability Other than Professional class code are set forth on the following pages.

For Local Products/Completed Operations, these loss costs are calculated by applying the following procedures:

For Local Products/Completed Operations, a current base loss cost by class group is calculated. This is equal to the Loss Costs at Current Level summarized over all classes in the class group divided by adjusted monoline/multiline exposures (exposures times class differential summed over all classes in the class group). In the case where there is no class group loss costs at current level, the CBLC is not calculated and the current approved class group base loss cost is used.

$$CBLC = \frac{\sum_{\text{class}} LCCL}{\sum_{\text{class}} (\text{Exposure}) \times (\text{Differential})}$$

- For Local Products/Completed Operations, a proposed base loss cost (PBLC) is calculated by multiplying the CBLC by the class group relative change and the overall change.

$$PBLC = CBLC \times CG \text{ Relative Change} \times \text{Statewide Monoline Change}$$

- Each proposed class loss cost is calculated as the differential for that class times the proposed base loss cost for the class group.

For Products, these loss costs are calculated as explained in Pages C-13 to C-15 and EXHIBIT C7 - Class Groups and Calculations of Proposed Class Loss Costs --Products.

METHODOLOGY OVERVIEW  
OVERVIEW OF ISO ACTUARIAL PROCEDURES - GENERAL LIABILITY

INTRODUCTION

General Liability advisory prospective loss costs are determined by evaluating the adequacy of the current ISO loss costs to pay for our best estimate of losses and all loss adjustment expenses that will be incurred in the prospective (or future) period. This evaluation is done separately for Products and Local Products/Completed Operations Liability.

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STEP 1:  
DETERMINATION  
OF INDICATED  
LOSS COST  
LEVEL CHANGES

The first step is the determination of the multistate loss cost level indication for Products and for Local Products/Completed Operations. This loss cost indication represents the percentage change that on average must be made to the current ISO loss costs in order to achieve adequacy for the prospective conditions. The percentage changes are presented in EXHIBITS B1-B2 - Determination of Indicated Loss Cost Level Change.

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STEP 2:  
DISTRIBUTION OF  
BASIC LIMIT LOSS  
COST LEVEL  
INDICATION

For Products and for Local Products/Completed Operations, the multistate basic limit loss cost indication is distributed to the individual types of policy and class groups, and additionally to state for Local Products/Completed Operations. For Local Products/Completed Operations, a multistate loss cost level review and Baileys relative change analysis are performed, calculated assuming approval of all filed loss cost changes from the previous review (as opposed to reflecting only the approvals that have been received at the time of this review). Then, for states which did not approve the loss cost change from the previous review, an "off-level" factor is applied to the statewide indication from the multistate analysis. This off-level factor is equal to the selected, unapproved change from the previous review.

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STEP 3:  
APPLICATION OF  
PERCENTAGE  
CHANGES

The last step is the calculation of the ISO advisory prospective loss costs. For Products, proposed multistate loss costs are calculated using a Bayesian credibility procedure. See Pages C-13-C-15 and EXHIBIT C7 - Class Groups and Calculation of Proposed Class Loss Costs for details. Where loss costs have been capped, this result is then multiplied by a 'build back' factor to ensure that the selected overall change is achieved.

For Local Products/Completed Operations, the loss costs are always calculated at the state level. For Local Products/Completed Operations, a Proposed Base Loss Cost by class group and state must first be calculated. This is derived by multiplying the Current Base Loss Cost by the statewide monoline change and the class group relative change. ISO advisory prospective loss costs by class are then calculated as the Proposed Base Loss Cost times the class differential. See Page A-1 and EXHIBIT A3 - Explanation of Loss Cost Changes by Class for details of this procedure. The statewide loss cost level change has been multiplied by a 'build back' factor to ensure that the selected overall change by subline is achieved. This is required to offset the effect of capped loss costs as well as the effect of revised classification differentials (if any) on the overall change.

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METHODOLOGY OVERVIEW  
OVERVIEW OF ISO ACTUARIAL PROCEDURES - GENERAL LIABILITY

STEP 1 - DETERMINATION OF INDICATED LOSS COST LEVEL CHANGE

OBJECTIVE	The objective of this procedure is to determine the indicated loss cost level change. This procedure answers the question: What percentage changes must be made on average to the current ISO loss costs in order for them to be adequate to cover indemnity losses and all loss adjustment expenses incurred in the prospective period in which the revised loss costs will be used?
DESCRIPTION	<p>This procedure compares the developed and trended incurred losses and loss adjustment expenses with the aggregate loss costs at current ISO loss cost level (see definition, below). This experience ratio (losses and all loss adjustment expenses divided by aggregate loss costs) is calculated for several years and a weighted average is calculated. For Products/Completed Operations, the standard procedure has been to use the latest three accident years to calculate the weighted average using 20%-30%-50% weights with the highest weight assigned to the most recent year.</p> <p>However, due to the impact that the COVID-19 pandemic and subsequent recession had on experience from March 2020 and beyond, the procedure was revised to include a fourth year to calculate the weighted average of the Products/Completed Operations experience ratios. Equal weights are assigned to each year.</p> <p>For Products/Completed Operations, the average experience ratio is the indicated multistate advisory loss cost level change, in decimal form. Products/Completed Operations data is assumed to be fully credible.</p>
EXPERIENCE BASE	The experience used in this review is the latest available simplified data as reported under the ISO Commercial Statistical Plan. The data is aggregated on an accident year basis. The review is conducted on \$100,000 basic limit basis - indemnity losses are limited to \$100,000 per occurrence. Also, bodily injury and property damage deductible data is included.

METHODOLOGY OVERVIEW  
OVERVIEW OF ISO ACTUARIAL PROCEDURES - GENERAL LIABILITY

STEP 1 - DETERMINATION OF INDICATED LOSS COST LEVEL CHANGE (Cont'd)

AGGREGATE  
LOSS  
COSTS

The aggregate loss costs at current ISO loss cost level are the loss-related revenue that would have been collected if the current ISO loss costs and deductible discounts were used during the experience period. They are calculated by extending the exposures at the current ISO loss costs. Where appropriate, certain reported data elements have been adjusted prior to being used in the calculations. The \$100,000 basic limit loss costs are used. Inflation-sensitive exposures are adjusted to a prospective level using exposure trend. Exposures are trended to one year beyond the assumed effective date. Accident year exposures are also developed to account for changes due to exposure audits.

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INCURRED  
LOSSES  
& LAE

The incurred losses and loss adjustment expenses are our best estimate of the ultimate payment for indemnity losses and loss adjustment expenses using the frequency and severity levels ISO expects to occur during the prospective period for which the revised loss costs are assumed to be in effect. Where appropriate, certain reported data elements have been adjusted prior to being used in the calculations.

For the liability coverages, the reported incurred losses and allocated loss adjustment expenses are subject to the following adjustments:

- developed to an ultimate settlement basis by the application of loss development factors;
- loaded for unallocated loss adjustment expenses;
- placed on the prospective cost/frequency level by the application of trend factors. Losses are trended to one year beyond the assumed effective date.

Incurred indemnity losses are capped at the \$100,000 basic limit.

Refer to EXHIBITS C4-C6 (Products) and EXHIBITS C11-C13 (Local Products/Completed Operations) for the support for these loss-related adjustments.

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METHODOLOGY OVERVIEW  
OVERVIEW OF ISO ACTUARIAL PROCEDURES - GENERAL LIABILITY

STEP 1 - DETERMINATION OF INDICATED LOSS COST LEVEL CHANGE (Cont'd)

EXPERIENCE  
RATIO

The experience ratio is the ratio of the incurred losses and loss adjustment expenses to the aggregate loss costs at current ISO loss cost level. It measures the adequacy of the current ISO loss costs for the prospective period.

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CREDIBILITY

Products/Completed Operations data is assumed to be fully credible. The procedure for assigning credibility is outlined in Credibility Standards (Page C-12).

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METHODOLOGY OVERVIEW  
OVERVIEW OF ISO ACTUARIAL PROCEDURES - GENERAL LIABILITY

STEP 2 - DISTRIBUTION OF BASIC LIMIT LOSS COST LEVEL INDICATION

OBJECTIVE	<p>For Products, the objective of this procedure is to distribute the multistate basic limit loss cost level indication to the individual types of policy and class groups using a minimum bias iterative procedure. This procedure is used to answer the question: What percentage changes by class group must be made to the current ISO loss costs in order to achieve adequacy for the prospective conditions? For Local Products/Completed Operations the change is also distributed to state.</p> <hr/>
PRODUCTS	<p>Products is reviewed using multistate data; a two-way minimum bias iterative procedure is used to arrive at a set of type of policy and class group relative changes that best represent the experience. The type of policy relative changes serve to derive the relationship of CPP policies relative to monoline policies, via the PMF, while the class group relative changes serve to derive the relationship of the various classifications relative to one another.</p> <p>The indicated multistate change to monoline loss costs is calculated for each class group by taking the product of the monoline type of policy relative change, the class group relative change, and the multistate coverage loss cost level indication.</p> <p>The overall multistate monoline loss cost level indication is the monoline/multiline aggregate loss costs at current level weighted average of the class group indications.</p> <p>The indicated statewide change is calculated by determining the effect, on statewide loss cost levels, of implementing the multistate loss costs. The difference between the multistate change and the indicated statewide change is a result of a difference in the distribution of risks by class in this jurisdiction versus the multistate. In addition, for the states that are off the multistate loss cost level, the difference is also a result of previous multistate revisions which were not implemented in this jurisdiction.</p> <hr/>

METHODOLOGY OVERVIEW  
OVERVIEW OF ISO ACTUARIAL PROCEDURES - GENERAL LIABILITY

STEP 2 - DISTRIBUTION OF BASIC LIMIT LOSS COST LEVEL INDICATION (Cont'd)

LOCAL PRODUCTS/  
COMPLETED  
OPERATIONS

Local Products/Completed Operations is reviewed using multistate data, and this procedure arrives at a set of type of policy, class group, and state relative changes that best represent the multistate experience. The type of policy relative changes serve to derive the relationship of the CPP policies relative to the monoline policies, via the PMF, while the class group and state relative changes serve to derive the relationship of the various classifications and states to one another.

The indicated change to monoline loss costs is calculated for each class group - state combination by taking the product of the monoline type of policy relative change, the class group relative change, the state relative change and the multistate coverage loss cost level indication.

The overall monoline loss cost level indication is the weighted average of the class group - state combination indications. In calculating this weighted average, monoline/multiline aggregate loss costs at current level for the latest available accident year are used as weights.

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EXPLANATORY NOTES TO DETERMINATION OF INDICATED  
LOSS COST LEVEL CHANGE

For Products/Completed Operations, the multistate loss cost level indication is determined using the multistate experience for all monoline and multiline risks.

For Products/ Completed Operations, the loss cost level indications are based upon a review of the latest four years of basic limit experience of companies reporting to Insurance Services Office, Inc. For Products/Completed Operations, multistate data for accident years ending December 31, 2019, 2020, 2021, and 2022 are weighted 25%, 25%, 25% and 25% respectively.

Aggregate loss costs at the current level for the multiline risks have been adjusted by the Implicit Package Modification Factors by Type of Policy. Exposures have been developed to account for changes due to audits. Inflation sensitive exposures have been trended. Incurred losses have been developed and trended, and include all loss adjustment expenses.

For details on these adjustments see EXHIBITS C1-C6 (Products) and EXHIBITS C8-C13 (Local Products/Completed Operations).

## EXPLANATORY NOTES TO RELATIVE CHANGE ANALYSIS

### OBJECTIVES

The objectives of this procedure are to:

- 1) determine monoline loss cost level needs for the appropriate rating variables;
  - 2) determine indicated changes to the CPP Package Modification Factors based on Products/Completed Operations.
- 

### EXPERIENCE BASE

The experience used in this relative change analysis is the latest five (5) years of data, as reported under the Commercial Statistical Plan with adjustments made as described in the Explanatory Notes to Determination of Indicated Loss Cost Level Change in this section.

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### SIMULTANEOUS DETERMINATION OF RATING VARIABLE RELATIVE CHANGES

Once the aggregate loss costs at current level and incurred losses used in the analysis have been appropriately adjusted, the 5-year experience ratios are calculated for each combination of the appropriate rating variables. From these ratios, relative changes to the statewide 5-year experience ratio are calculated. These relative changes are then used in a minimum bias iterative review procedure, which simultaneously determines the relative changes for each rating variable. This data appears in EXHIBITS B3-B7.

The purpose of a simultaneous review procedure is to arrive at a set of relative changes for each rating variable that best represent the experience. For example, the type of policy relative changes will serve to derive the relationship of CPP policies relative to monoline policies, via the PMF, while the class group and territory relative changes will serve to derive the relationship of the various classification and territories relative to one another. An iterative technique is used to derive relative changes for each rating variable. This procedure is in contrast to a one-way type of review, wherein relative changes for each rating variable would each be reviewed separately.

Such one-way types of review do not take into account differing percentages of experience of each rating variable within the other rating variables. The simultaneous review procedure accounts for these different distributions in generating relative changes for each rating variable.

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### RATING VARIABLES USED

For Products/Completed Operations, the rating variables used in the relative change analysis are as follows:

Products -	type of policy and class group
Local Products/Completed Operations -	type of policy, state and class group

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EXPLANATORY NOTES TO RELATIVE CHANGE ANALYSIS

ITERATIVE  
PROCEDURE

The iterative technique referred to in the previous paragraph solves for a set of relative changes for each rating variable based on the experience for the cells; that is, based on the experience ratio and latest year adjusted aggregate loss cost volume for each combination of rating variables relative to the experience ratio and adjusted aggregate loss cost volume for all combinations of rating variables combined. Specifically, the iterative procedure uses the following formulas:

For Products:

$$TOP_i = \frac{\sum_j W_{ij} r_{ij}}{\sum_j W_{ij} CG_j} \quad \text{where } 1 \leq i \leq m$$
$$CG_j = \frac{\sum_i W_{ij} r_{ij}}{\sum_i W_{ij} TOP_i} \quad \text{where } 1 \leq j \leq n$$

$TOP_i$  is the relative change for the  $i^{\text{th}}$  type of policy;

$CG_j$  is the relative change for the  $j^{\text{th}}$  class group;

$W_{ij}$  is the aggregate loss costs at current level for the  $i^{\text{th}}$

type of policy and  $j^{\text{th}}$  class group;

$r_{ij}$  is the relative change for the  $i^{\text{th}}$  type of policy

and  $j^{\text{th}}$  class group;

$m$  is the number of types of policy in the analysis;

$n$  is the number of class groups in the analysis;

EXPLANATORY NOTES TO RELATIVE CHANGE ANALYSIS

ITERATIVE  
PROCEDURE  
(Cont'd)

For Local Products/Completed Operations:

$$TOP_i = \frac{\sum_j \sum_k W_{ijk} r_{ijk}}{\sum_j \sum_k W_{ijk} CG_j ST_k} \quad \text{where } 1 \leq i \leq m$$

$$CG_j = \frac{\sum_i \sum_k W_{ijk} r_{ijk}}{\sum_i \sum_k W_{ijk} TOP_i ST_k} \quad \text{where } 1 \leq j \leq n$$

$$ST_k = \frac{\sum_i \sum_j W_{ijk} r_{ijk}}{\sum_i \sum_j W_{ijk} TOP_i CG_j} \quad \text{where } 1 \leq k \leq p$$

$TOP_i$  is the relative change for the  $i^{\text{th}}$  type of policy;

$CG_j$  is the relative change for the  $j^{\text{th}}$  class group;

$ST_k$  is the relative change for the  $k^{\text{th}}$  state;

$W_{ijk}$  is the aggregate loss costs at current level for the  $i^{\text{th}}$

type of policy,  $j^{\text{th}}$  class group and  $k^{\text{th}}$  state;

$r_{ijk}$  is the relative change for the  $i^{\text{th}}$  type of policy,

$j^{\text{th}}$  class group and  $k^{\text{th}}$  state;

$m$  is the number of types of policy in the analysis;

$n$  is the number of class groups in the analysis;

$p$  is the number of states in the analysis;

## EXPLANATORY NOTES TO RELATIVE CHANGE ANALYSIS

### ITERATIVE PROCEDURE (Cont'd)

For example, for Local Products, the procedure starts by inserting the actual relative changes for type of policy and class group into the third formula to get a state relative change. This result is then used with the class group relative change in the first formula to get a new type of policy relative change, which in turn is substituted along with the state relative change into the second formula to get a new class group relative change. The process continues on in that fashion until there is no appreciable difference from one iteration to the next.

---

### APPLICATION OF CREDIBILITY

Consideration is then given to the credibility of the experience for each rating variable. The credibility of each of these categories is based on the formula  $Z = \sqrt{P/20,000}$  for Products, where P is the 5 year occurrence total for a given class group or type of policy. For Local Products/Completed Operations, separate formulas are used to calculate the credibility of the experience for each type of policy and class group versus the credibility of the experience for each state, namely  $Z = \sqrt{P/15,000}$  for type of policy and class group, and  $Z = \sqrt{P/5,500}$  for state (in this case, P is the 5 year occurrence total for a given state). Credibility-weighted relative changes are then calculated as follows:

$$W = R^Z \quad \text{where:}$$

Z is the class group, state or type of policy credibility;

R is the class group, state or type of policy relative change;

W is the credibility-weighted relative change.

The resulting credibility-weighted relative changes are then balanced to assure that the average relative change remains at unity.

---

## EXPLANATORY NOTES TO RELATIVE CHANGE ANALYSIS

### MULTILINE CONSIDERATIONS

The type of policy (TOP) relative changes and the class group, and state relative changes which result from the aforementioned procedures are then used to generate indicated monoline classification loss cost changes and multiline indications that apply to the current Implicit Package Modification Factors (IPMFs). The indicated IPMFs are calculated as follows:

$$\text{Indicated IPMF for TOP y} = \frac{\text{Current IPMF for TOP y} \times \text{Relative Change for TOP y}}{\text{Monoline Relative Change for All States Combined}}$$

For each CPP Type of Policy, the indicated IPMF is subject to a minimum and maximum level. To the extent that an indicated IPMF falls outside one of those limits, it is capped at that limit, its data is built back into the monoline TOP, and the procedure as described above is repeated to take this into account.

---

### MONOLINE INDICATIONS -- PRODUCTS

For Products, the indicated change to monoline loss costs is calculated for each class group by taking the product of the monoline type of policy relative change, the class group relative change and the multistate coverage loss cost level indication.

The overall multistate monoline loss cost level indication is the weighted average of the monoline class group indications. In calculating this weighted average, latest year multistate monoline/multiline loss costs at current level are used as weights.

---

### MONOLINE INDICATIONS -- LOCAL PRODUCTS/ COMPLETED OPERATIONS

For Local Products/Completed Operations, the indicated change to monoline loss costs is calculated for each class group-state combination by taking the product of the monoline type of policy relative change, the class group relative change, the state relative change and the multistate coverage loss cost level indication.

The overall multistate monoline loss cost level indication is the weighted average of the monoline class group-state indications. In calculating this weighted average, latest year multistate monoline/multiline loss costs at current level are used as weights.

---

EXPLANATORY NOTES TO  
IMPLICIT PACKAGE MODIFICATION FACTORS

In order to calculate the aggregate loss costs at current ISO levels, the reported exposures must be multiplied by the current ISO monoline loss costs. For multiline exposures, the ISO monoline loss costs must be adjusted by the appropriate ISO implicit package modification factors in order to be on a multiline level.

Implicit Package Modification Factors (IPMF's) adjust the ISO monoline loss costs to levels applicable to multiline risks, i.e., to reflect a difference in multiline experience relative to monoline experience for each coverage. This adjustment is made because risks written under a Package Policy have different experience than risks written under a monoline policy. The IPMF's are calculated based upon a comparison of the multiline experience relative to the monoline experience, and this comparison is done via the Bailey minimum bias relative change analysis (as described in Explanatory Notes to Relative Change Analysis in Pages B-8 to B-12). IPMF's are calculated separately by coverage, for each applicable type of policy within each coverage. One result of the IPMF adjustment to multiline ALCCL is that the monoline and multiline experience for the same coverage tends toward the same experience ratio. IPMF's are the components of the published liability Package Modification Factors (PMF's) which vary by type of policy only. These PMF's represent the CPP relativity for all liability coverages combined within a type of policy. The IPMF represents what the PMF would be for the CPP risk if only a single coverage were written.

EXPLANATION OF EXPOSURE DEVELOPMENT

IMPORTANCE OF APPLICATION

The application of exposure development factors reflects the important ratemaking concept that all of the exposures for a particular accident year have not been finally determined at the time the experience is compiled. This is because exposures are subject to audit and may change as a result.

---

APPLICATION OF EXPOSURE DEVELOPMENT FACTORS

The earned exposures underlying Products/Completed Operations data is evaluated as of March 31, 2023.

For example, the accident year ending December 31, 2022 includes all exposures earned during the period from January 1, 2022 through December 31, 2022.

The immature experience reported as of 15 and 27 months for accident years ending 12/31/2022 and 12/31/2021 must be adjusted to an ultimate exposure development basis. This adjustment is accomplished through the use of an exposure development factor. Exposures are assumed to be mature at 39 months. Exposure development factors are based on experience evaluated as of March 31, 2023 for Products/Completed Operations.

The Local Products/Completed Operations exposure development factors used in this revision are based on statewide and multistate experience. The Products exposure development factors are based on multistate experience. The exposure development factors are based on total limits premium. Using premium rather than exposures eliminates distortions that may arise because of changing distributions of data by class. The exposure development factors used are the 'best 3 of 5.' This is calculated by taking the exposure development ratios for the latest five years, dropping the highest and lowest ratios and then averaging the remaining three ratios. For Local Products/Completed Operations, the state ratios are then credibility-weighted with the multistate ratios using a Bayesian credibility procedure.

Products exposure development is based on multistate data, as shown in EXHIBIT C3 - Calculation of Exposure Development Factors.

EXHIBIT C10 - Calculation of Exposure Development Factors displays the calculation of the credibility-weighted exposure development factors for Local Products/Completed Operations. State and multistate data are used in the calculation.

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## EXPLANATION OF LOSS DEVELOPMENT

### IMPORTANCE OF APPLICATION

The application of loss development factors reflects the important ratemaking concept that all of the losses for a particular accident year have not been finally determined at the time the experience is compiled.

---

### APPLICATION OF LOSS DEVELOPMENT FACTORS

The incurred losses and allocated loss adjustment expenses underlying the Products/Completed Operations data is evaluated as of March 31, 2023.

For example, the accident year ending December 31, 2022 includes all losses and allocated loss adjustment expenses paid on accidents occurring from January 1, 2022 through December 31, 2022 and all losses and loss adjustment expenses outstanding on those policies as of March 31, 2023, 15 months after the inception of the accident year.

The immature experience reported as of 15, 27, 39 and 51 months for accident years ending 12/31/2022, 12/31/2021, 12/31/2020, and 12/31/2019 must be adjusted to an ultimate settlement basis. This adjustment is accomplished through the use of a loss development factor.

Indemnity losses are developed separately from ALAE. ALAE development procedures are described in the Explanation of ALAE Development in this section.

The Completed Operations indemnity loss development factors used in this revision are based on statewide and multistate accident year experience. The Products and Local Products indemnity loss development factors are based on multistate accident year experience. The loss development factors used are the 'best 3 of 5.' This is calculated by taking the loss development ratios for the latest five years, dropping the highest and lowest ratios and then averaging the remaining three ratios. For evaluations that do not have five years of data, the ratios are calculated using the Modified Bondy Method. An explanation of this method can be found in the Explanation of Modified Bondy Method in this section. The Bondy calculated ratios are excluded from the calculation of the three year mean ratios. If fewer than three years of data are available, the three year mean ratio is based on the data for the available year(s).

## EXPLANATION OF LOSS DEVELOPMENT

### APPLICATION OF LOSS DEVELOPMENT FACTORS (Cont'd)

For Completed Operations bodily injury and property damage full coverage indemnity, statewide experience is credibility weighted with multistate experience. A Bayesian credibility procedure is used.

For bodily injury deductible and property damage deductible incurred indemnity losses, multistate development is used.

The multistate Products loss development data is displayed in EXHIBIT C4 - Loss Development Data.

EXHIBIT C11 - Loss Development Data displays the calculation of the credibility-weighted loss development factors for Completed Operations. State and multistate data are used. The multistate Local Products loss development data is also displayed in EXHIBIT C11 - Loss Development Data.

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## EXPLANATION OF ALLOCATED LOSS ADJUSTMENT EXPENSE (ALAE) DEVELOPMENT

### OBJECTIVE

This document contains a procedure designed to achieve more consistent and stable estimates of ultimate ALAE which are generally at lower volume than the associated basic limit liability losses. Also, while basic limit losses may exhibit relatively stable development patterns over time, ALAE development patterns may be much more variable.

Traditional development procedures customarily used for losses apply a loss development factor to reported losses at various evaluation points. For example, a '15-month to ultimate' factor would be applied to the losses for accident year ended December 31, 2022 evaluated as of March 31, 2023. If an analogous procedure is used for ALAE, the variability of the experience can lead to unusually high (or low) estimates of ultimate ALAE.

---

### INCREMENTAL ALAE PERCENTAGES

The procedure used in this document calculates future ALAE development using ALAE as a percentage of ultimate incurred indemnity losses.

Specifically, "incremental ALAE percentages" are calculated as the emergence of ALAE between two evaluation points, divided by ultimate incurred indemnity losses. For example, the difference between historic ALAE evaluated at 27 months and ALAE evaluated at 15 months is expressed as a percentage of ultimate incurred indemnity losses. Similar percentages are calculated for the 27-to-39 month period, the 39-to-51 month period, etc. These percentages are summed, and multiplied by estimated ultimate incurred losses for a given accident year, to calculate ultimate ALAE.

In order to achieve greater stability, statewide and multistate percentages are credibility weighted. The ultimate incurred indemnity losses used as the denominator in the incremental ALAE percentages are capped at \$500,000. ALAE is expected to vary in proportion to loss volume, but higher limits of losses are better estimates of the overall loss volume in a given year. Losses limited at \$500,000 were found to be a stable base for use in this procedure.

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## EXPLANATION OF ALLOCATED LOSS ADJUSTMENT EXPENSE (ALAE) DEVELOPMENT

### DESCRIPTION OF METHODOLOGY

First, statewide and multistate ultimate incurred indemnity losses (capped at \$500,000) are calculated using standard ISO procedures (see Explanation of Loss Development in this section).

The next step is to calculate statewide and multistate triangles of incremental ALAE. At each evaluation and each stage of maturity, incremental ALAE is calculated as a percentage of ultimate indemnity losses, separately for statewide and multistate data, and separately for each accident year. For each stage of maturity, a 'best 3 of 5' method is used to determine incremental percentages. The statewide incremental percentages are then credibility weighted with the multistate percentages.

The resulting weighted incremental percentages are summed together and applied to the developed \$500,000 limits indemnity losses to calculate the ALAE remaining to be incurred. This is added to reported incurred ALAE to determine ultimate ALAE. For example,

$$\text{Ultimate ALAE} = (\text{Incurred ALAE at 15 months}) + (\text{sum of incremental ALAE percentages}) * (\text{ultimate indemnity})$$

---

### APPLICATION

The above methods are used to develop ALAE to 171 months. Bodily injury and property damage ALAE are developed separately, and the credibility-weighted incremental ALAE percentages are applied to statewide ultimate indemnity losses to calculate expected future ALAE. This result is added to statewide ALAE reported at the most recent evaluation date for each accident year.

These calculations are shown in EXHIBITS C4 and C11 - Loss Development.

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Note: The developed losses in the ALAE calculation in this filing reflect the full implementation of the 500K loss development factors, which had not been implemented in the immediately preceding filing, in the calculation of ALAE remaining to be incurred.

EXPLANATION OF ALLOCATED LOSS ADJUSTMENT EXPENSE (ALAE) DEVELOPMENT

---

PRODUCTS

Products ALAE is developed to 171 months using multistate data and the incremental method above. Because Products ALAE historically has more substantial development beyond 171 months, multistate link ratios are calculated to develop ALAE from 171 months to ultimate, using the standard link-ratio methodology (see Explanation of Loss Development in this section).

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LOCAL PRODUCTS/  
COMPLETED  
OPERATIONS

Local Products/Completed Operations ALAE incremental percentages are calculated to 171 months using multistate data and applied to state ultimate indemnity losses (capped at \$500,000). Since Local Products/Completed Operations ALAE historically has more substantial development beyond 171 months, multistate link ratios are calculated to develop ALAE from 171 months to ultimate, using the standard link-ratio methodology (see Explanation of Loss Development in this section).

---

EXPLANATION OF MODIFIED BONDY METHOD

Each development link ratio is estimated based on average of the 'Best 3 out of 5' years' link ratios for that particular link. Where 5 link ratios are not available we use the Modified Bondy procedure to estimate those link ratios. The algorithm used is outlined below:

Accident Year	171 to 183 Months	183 to 195 Months	195 to 207 Months	207 to 219 Months	219 to 231 Months	231 to 243 Months	243 Months To Ultimate Z*
2001	A	G	L	P	S	U	Z*
2002	B	H	M	Q	T	Y*	
2003	C	I	N	R	X*	Y*	
2004	D	J	O	W*	X*	Y*	
2005	E	K	V*	W*	X*	Y*	
2006	F						
Best 3 out of 5#	BTOF1	BTOF2	BTOF3	BTOF4	BTOF5	BTOF6	

\* Calculated using the Modified Bondy Procedure.

# The 'Best 3 out of 5' loss development ratio is calculated by taking the sum of the latest 5 years' link ratios and subtracting out both the highest and lowest link ratio and then dividing the result by 3.

The link ratios represented by the letters A through U are calculated directly from the reported data. The links represented by V through Z are calculated using the following formulae:

$$\begin{aligned}
 V &= \text{BTOF2}^{(P1)} & X &= \text{BTOF4}^{(P3)} & \text{Where the powers P1, P2, P3, P4 and P5} \\
 W &= \text{BTOF3}^{(P2)} & Y &= \text{BTOF5}^{(P4)} & \text{are defined as follows:} \\
 Z &= \text{BTOF6}^{(P5)}
 \end{aligned}$$

---


$$\begin{aligned}
 &\text{If BTOF1} > 1.0 \text{ and BTOF1} \geq \text{BTOF2} \geq 1.0 & \text{Or BTOF1} < 1.0 \text{ and BTOF1} \leq \text{BTOF2} \leq 1.0 \\
 &\text{Then P1} = \text{Log (BTOF2) / Log (BTOF1)} & \text{Otherwise: P1} = 1.0
 \end{aligned}$$


---

$$\begin{aligned}
 &\text{If BTOF2} > 1.0 \text{ and BTOF2} \geq \text{BTOF3} \geq 1.0 & \text{Or BTOF2} < 1.0 \text{ and BTOF2} \leq \text{BTOF3} \leq 1.0 \\
 &\text{Then P2} = \text{Log (BTOF3) / Log (BTOF2)} & \text{Otherwise: P2} = 1.0
 \end{aligned}$$


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$$\begin{aligned}
 &\text{If BTOF3} > 1.0 \text{ and BTOF3} \geq \text{BTOF4} \geq 1.0 & \text{Or BTOF3} < 1.0 \text{ and BTOF3} \leq \text{BTOF4} \leq 1.0 \\
 &\text{Then P3} = \text{Log (BTOF4) / Log (BTOF3)} & \text{Otherwise: P3} = 1.0
 \end{aligned}$$


---

$$\begin{aligned}
 &\text{If BTOF4} > 1.0 \text{ and BTOF4} \geq \text{BTOF5} \geq 1.0 & \text{Or BTOF4} < 1.0 \text{ and BTOF4} \leq \text{BTOF5} \leq 1.0 \\
 &\text{Then P4} = \text{Log (BTOF5) / Log (BTOF4)} & \text{Otherwise: P4} = 1.0
 \end{aligned}$$


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$$\begin{aligned}
 &\text{If BTOF5} > 1.0 \text{ and } (0.8 * \text{Log (BTOF5)}) \geq \text{Log (BTOF6)} \geq 0.0 \\
 &\text{Or BTOF5} < 1.0 \text{ and } (0.8 * \text{Log (BTOF5)}) \leq \text{Log (BTOF6)} \leq 0.0 \\
 &\text{Then P5} = \text{Log (BTOF6) / (Log(BTOF5) - Log (BTOF6))} & \text{Otherwise: P5} = 4.0
 \end{aligned}$$

Once all link ratios have been determined, the development factors can then be calculated. The 243 months to ultimate development factor is equal to Z as defined above. The 231 months to ultimate factor is then determined by multiplying Z by the 231 to 243 month 'Best 3 out of 5' years' link ratio. All other 'to ultimate' development factors are calculated in the same manner.

## UNALLOCATED LOSS ADJUSTMENT FACTOR METHODOLOGY

BACKGROUND	Allocated loss adjustment expense is reported on a unit transaction basis with the loss records and is thus included with indemnity loss data. Since the prospective loss costs include all loss adjustment expenses, we must load for unallocated loss adjustment expense.
IMPORTANCE OF APPLICATION	The unallocated loss adjustment expense factor is necessary to account for loss adjustment expenses which cannot be allocated to a particular claim.
METHODOLOGY FOR LIABILITY COVERAGES	<p>Calculation of the unallocated loss adjustment expense factor is based on multistate data for ISO member and subscriber companies (see Multistate review of ULAE Experience in EXHIBIT C5 and EXHIBIT C12). The adjustment is calculated by using unallocated expenses as a percent of losses and allocated expenses.</p> <p>Starting with the 2011 review, experience for CMP Liability has been included with the data used to select the ULAE factor.</p> <p>For this review the factor is 1.070.</p>

## EXPLANATION OF TREND CALCULATION

### EXPOSURE TREND

The exposure bases for most Products/Completed Operations classes are inflation sensitive. In order to provide aggregate loss costs at current level, reported exposures must be trended to reflect the anticipated exposure levels.

Exposure trends are estimated using custom price indexes derived from econometric historic data and base-case forecasts provided by Moody's Analytics. Each custom index is calculated as a ratio of nominal (current dollar) values for some measure of economic activity to the real (inflation-adjusted) values for the same.

For Products/Completed Operations, exposures are calculated based upon sales by manufacturers for products and local products classes and average hourly earnings of contracting workers for completed operations classes just as for M&C. For Products exposure trend detail, see EXHIBIT C6 - Trend Summary and Trend Data. For Local Products/Completed Operations exposure trend detail, see EXHIBIT C13 - Trend Summary and Trend Data.

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### SEVERITY TREND

For Products, multistate calendar accident year average occurrence severity for the latest six, eight and ten years is displayed in EXHIBIT C6. For Local Products/Completed Operations, multistate calendar accident year average occurrence severity for the latest six, eight and ten years is displayed in EXHIBIT C13. The standard ISO calculation uses the least squares method to construct an exponential curve of best fit from this time series data, since the data contain random fluctuations. By minimizing these fluctuations, we can make a more reliable estimate of the underlying trend in the data. In this review multistate dollars of losses and number of occurrences contained in the severity trend exhibits are based on paid amounts developed to ultimate using paid development factors (chain ladder link ratio for indemnity and an incremental ALAE method for ALAE). The procedure to determine the ultimate ALAE underlying the severity trend analysis is consistent with the procedure used in ISO's General Liability loss development calculations. Specifically, "incremental ALAE percentages" are calculated by each 12 month evaluation period and summed. They are then multiplied by estimated ultimate paid \$500,000 limit indemnity losses for a given accident year and added to the reported paid ALAE to calculate the ultimate ALAE. Large individual occurrence ALAE amounts are capped to temper the effect on a severity point in cases where they have a significant impact on the individual severity point.

In selecting severity trend factors for use in calculating the Products/Completed Operations indicated loss cost level changes, we also review and compare severity trends indicated by techniques other than the standard calculation described above. For example, exponential fits where ultimate average severity is based on incurred (rather than paid) data, as well as econometric models, are reviewed. In addition, consideration is also given to the goodness of fit statistic (R-squared) and trend selections from prior reviews.

## EXPLANATION OF TREND CALCULATION

SEVERITY  
TREND  
(Cont'd)

Given the difference in time between the end of the experience period and available external data related to trend (CPI for example) when this filing was developed, the external data has been reviewed and taken into account as part of the trend selections. This has become more important with the significant changes in inflation in recent times. The impact of any changes in inflation on insurance losses may not be fully reflected in the historical trend data.

For Products Property Damage, the exponential curve does not fit the data well. Given all the considerations mentioned above, we have selected a lower severity trend for property damage compared to the 2023 review.

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FREQUENCY  
TREND

The historical occurrence frequency data are displayed in EXHIBIT C6 and EXHIBIT C13. For Products/Completed Operations, these pages display the frequency data for CGL only for accident years ending 12/31/2009 - 12/31/2022. In this review, multistate number of occurrences contained in the frequency trend exhibits are based on paid amounts developed to ultimate using paid development factors.

Historically, frequency trend for Products/Completed Operations has been quite volatile, often cyclical in nature. As a result, an exponential curve did not fit the data well over a long term. Given the frequency trend pattern, however, we are continuing to select a negative frequency trend for Products. For Local Products/Completed Operations, we have selected 0.0%. These selections are consistent with a measured approach toward frequency trend selections, which reflects the difficulty of predicting turning points for cyclical and volatile data along with the amplifying effects that varying frequency trend selections have on indicated loss cost level changes.

For Products/Completed Operations, frequency trend data includes pandemic impacted periods. It is expected that the sharpest economic and pandemic disruptions have already occurred, but the effects may persist in muted form for some time. Less reliance than normal has been placed on the frequency trend data for the latest points when making selections given that this pandemic impacted period may not be a good indicator of future experience.

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## CREDIBILITY STANDARDS

Due to the greater need for stability in the relative change analysis, full credibility standards used therein are as follows:

For Products:

$$z = \sqrt{\frac{\text{Total number of occurrences during five year experience period}}{20,000}}$$

These standards are based on 95% confidence of being within 5% of the actual value.

For the Local Products/Completed Operations relative change analysis, the full credibility standards used are as follows:

$$z = \sqrt{\frac{\text{Total number of occurrences during five year experience period}}{15,000}}$$

This full credibility standard applies for each type of policy and class group. It is based on 95% confidence of being within 5% of the actual value.

For Local Products/Completed Operations, the full credibility standard below applies for each state.

$$z = \sqrt{\frac{\text{Total number of occurrences during five year experience period}}{5,500}}$$

It is based on 90% confidence of being within 7% of the actual value.

These credibility standards reflect occurrence severity and occurrence frequency variations for bodily injury and property damage combined.

EXPLANATORY NOTES TO CLASS GROUPS AND  
CALCULATION OF PROPOSED CLASS LOSS COSTS --  
PRODUCTS

The present class groups for Products classifications are presented in EXHIBIT C7 - Class Groups and Calculation of Proposed Class Loss Costs. Class group 21 is an A-rated class group and is not reviewed in this document.

Multistate proposed Products class loss costs are calculated as the product of the class index, the class group relative change, the multistate loss cost level change and a 'build back' factor to ensure that the selected multistate overall change is achieved. Capping is performed by comparing the proposed loss costs to the present multistate loss costs. The class index is determined using credibility weighted experience ratios, where a Bayesian credibility procedure is used. See EXHIBIT C7 and Pages C-13 to C-15 - Class Groups and Calculation of Proposed Class Loss Costs for details of the calculation of multistate class loss costs.

CLASS GROUPS AND CALCULATION OF PROPOSED CLASS LOSS COSTS

Explanatory Notes

The following are definitions of the columns for the Products calculation of proposed loss costs shown on EXHIBIT C7.

Column (1) is the latest year multistate Monoline/Multiline Aggregate Loss Costs at Current Level (ALCCL) for the respective class.

Column (2) is the five year multistate Monoline/Multiline Aggregate Loss Costs at Current Level.

Column (3) is the five year Monoline/Multiline Experience Ratio. Losses are developed and trended, and ALCCL has been exposure trended. IPMFs and Deductible Discounts have been applied to ALCCL.

Column (4) is the credibility ( $Z_i$ ) of the individual class with respect to the class group. This is calculated based on the equation:

$$Z_i = \frac{K - 3}{K} \left( \frac{\bar{P}_i}{\bar{P}_i + \frac{\sum^2}{T^2}} \right) + \frac{3}{K}$$

$K$  = The number of classes within the class group.

$\bar{P}_i$  = The 5 year total Monoline/Multiline ALCCL for class  $i$ .

$\sum^2$  = The average within class variance for the class group. (Sigma Squared)

$T^2$  = The between class variance for the class group. (Tau Squared)

Column (5) is the Formula Experience Ratio. This is found by credibility weighting the class experience ratio with the class group experience ratio and is based on the equation:

$$FER_i = Z_i \bar{X}_i + (1 - Z_i) \bar{X} \text{ where:}$$

$\bar{X}_i$  = The 5 year average experience ratio for class  $i$  from column (3).

$$\bar{X} = \frac{\sum_{i=1}^k Z_i \bar{X}_i}{\sum_{i=1}^k Z_i}$$

Column (6) is the Index or the class relative change factor, which is the quotient of the Formula Experience Ratio ( $FER_i$ ) and  $\tilde{X}_{monoline}$  which is the column (5) total using column (1) as weights.

Note:  $\tilde{X}$  (X - tilde) is the 5 year Monoline/Multiline ALCCL weighted class group experience ratio, where  $\tilde{X}_{monoline}$  (X - tilde monoline) is weighted based on Monoline/Multiline ALCCL for the latest year only.

## CLASS GROUPS AND CALCULATION OF PROPOSED CLASS LOSS COSTS

### Explanatory Notes (Cont'd)

Column (7) is the change factor, which is to be applied to the present loss cost. The formula for this is given as:

$$\text{Change Factor} = (\text{Index}) (\text{Class Group Relative Change}) (\text{SWRL}) (\text{Off balance factor})$$

where "SWRL" is the selected multistate monoline loss cost level change.  
The off balance factor results from capping and is 1.001 for this review.

Note: For classes with no ALCCL in the latest five years of the experience period, the index in the formula above is set to 1.000

Column (8) is the current multistate occurrence loss cost for each class.

Column (9) is the proposed multistate occurrence loss cost based on the product of column (7) and column (8), with the effects of capping and CGL rounding.

Column (10) is the percent change of the proposed state occurrence loss cost (column (12)) for each class with respect to the current state occurrence loss cost (column (11)).

Column (11) is the current state occurrence loss cost for each class.

Column (12) is the proposed state occurrence loss cost for each class. These are equal to the multistate proposed loss costs.

EXPLANATORY NOTES TO CLASS GROUPS AND  
DIFFERENTIALS -- LOCAL PRODUCTS/COMPLETED OPERATIONS

The present class groups and multistate differentials for Local Products/Completed Operations classifications are presented in EXHIBIT C14 - Class Groups and Differentials. Class groups 21 and 22 are A-rated class groups and are not reviewed in this document.

Differentials are reviewed on a periodic basis. The most recent differential review was completed in 2022 and filed with the 2022 revisions.

PRODUCTS/COMPLETED OPERATIONS  
CLASS EXCEPTIONS

The following class exceptions for Products/Completed Operations apply by state:

Products Included

47469	Not valid for New Jersey
49910	Valid only for New York
49920	Valid only for New York
93169	Valid only for Louisiana

Class Group 21

49913	Valid only for New York
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Class Group 03

51029	Valid only for Hawaii
51098	Valid only for Hawaii

Class Group 22

93166	Valid only in Louisiana
93167	Valid only in Louisiana