

RULES – IMPLEMENTATION

DECEMBER 20, 2018

COMMERCIAL MULTIPLE LINE

LI-ML-2018-060

TENNESSEE COMMERCIAL PACKAGE POLICY REVISED PACKAGE MODIFICATION FACTOR REVISION TO BE IMPLEMENTED; EXCEL WORKBOOK NEWLY INCLUDED

KEY MESSAGE

Revised Commercial Package Policy package modification factors for an overall statewide change of **-1.2%** to be implemented.

BACKGROUND

In circular [LI-ML-2018-044](#), we provided you with information about the Commercial Package Policy modification factor experience review.

ISO ACTION

We are implementing ML-2018-RLA1, which presents a review of Commercial Package Policy modification factors experience. Refer to the attachment(s) for complete details.

EFFECTIVE DATE

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

These changes are applicable to all policies written on or after October 1, 2019.

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 SEPTEMBER 2, 2019. 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 ML-2018-RLA1, 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-2018-044](#) 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 10-19 (or the earliest possible subsequent date), along with any new and/or revised manual pages.

REFERENCE(S)

- [LI-CL-2018-044](#) (11/27/2018) Revised Lead Time Requirements Listing
- [LI-ML-2018-044](#) (10/30/2018) Commercial Package Policy Experience Reviewed By Staff

ATTACHMENT(S)

- Filing [ML-2018-RLA1](#)
- Excel Workbook

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 rule revision a Statement of Actuarial Opinion; therefore we are including the following acknowledgment:

I, Rimma Maasbach, am an Actuarial Consultant in Actuarial Operations for ISO, and I, Bei Zhou, am an Actuarial Product Director for Commercial Property 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
ADVISORY PACKAGE MODIFICATION FACTOR REVIEW
COMMERCIAL PACKAGE POLICY
ML-2018-RLA1
EXECUTIVE SUMMARY

PURPOSE

This document:

- presents a review of advisory Package Modification Factors (PMFs). PMFs are relativity factors used to adjust monoline loss costs as appropriate for multiline risks.
 - provides the analyses used to derive these advisory PMFs.
-

PMF CHANGES

The proposed Commercial Package Policy (CPP) Package Modification Factor changes are:

<u>Type of Policy</u>	<u>Property</u>	<u>Liability</u>	<u>Prop. & Liab. Total</u>
Motel/Hotel	0.0%	0.0%	0.0%
Apartment	2.1%	0.0%	1.8%
Office	-4.3%	0.0%	-2.0%
Mercantile	-1.1%	-5.2%	-2.8%
Institutional	1.0%	2.5%	1.3%
Services	-3.1%	-2.0%	-2.7%
Indust./Proc.	0.0%	0.0%	0.0%
Contractors	-3.2%	-1.2%	-1.5%
Statewide	-0.7%	-2.0%	-1.2%

INDICATED
VS. CAPPED

Indicated PMF changes are based on standard ISO methodology. Differences between indicated and capped PMF changes are caused by rounding each indicated PMF to the nearest one percent and applying an upper cap of 1.00, where necessary.

TENNESSEE

ADVISORY PACKAGE MODIFICATION FACTOR REVIEW

COMMERCIAL PACKAGE POLICY

ML-2018-RLA1

EXECUTIVE SUMMARY

HISTORICAL
SOURCE DATA

The data used in this review is from ISO reporting companies for:

- Basic Group I: five fiscal accident years ending 06/30/17.
 - Basic Group II: ten fiscal accident years ending 06/30/17.
 - Special Causes of Loss: five fiscal accident years ending 06/30/17.
 - Crime: calendar year ending 06/30/16.
 - Inland Marine: five calendar accident years ending 12/31/16.
 - Fidelity: policy year ending 12/31/15.
 - Owners, Landlords, and Tenants: five fiscal accident years ending 06/30/17.
 - Manufacturers and Contractors: five fiscal accident years ending 06/30/17.
 - Products: three calendar accident years ending 12/31/16.
 - Local Products and Completed Operations: three calendar accident years ending 12/31/16.
-

PRIOR ISO
REVISIONS

The latest revisions in this state are:

<u>Filing</u>	ML-17-RLA1	ML-12-RLA1	ML-10-RLA1
<u>Dates</u>			
Implemented	06/01/2018	11/01/12	12/01/10
<u>Changes</u>			
Indicated	-2.8%	+5.0%	+2.3%
Filed	-2.8%	+4.8%	+2.4%
Implemented	-2.8%	+4.8%	+2.4%

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ADVISORY PACKAGE MODIFICATION FACTOR REVIEW

COMMERCIAL PACKAGE POLICY

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EXECUTIVE SUMMARY

ADJUSTMENTS
TO REPORTED
EXPERIENCE

Standard actuarial procedures have been used in the reviews underlying the calculation of the PMFs, including adjusting the fire and liability losses to ultimate settlement level and, for all coverages, reflecting all loss adjustment expenses and trend. Specific procedures vary by subline.

TEN LARGEST
GROUPS IN
ISO DATA BASE

Insurers are listed in descending order based on the percent of statewide written premium volume from Annual Statement Page 15 for the year ending 12/31/17 for the Annual Statement Line of Business (ASLOB) indicated.

COMMERCIAL MULTI PERIL (ASLOB 51 & 52)

1. Cincinnati Insurance Company
 2. Travelers Indemnity Company
 3. Tokio Marine Companies
 4. Westfield Insurance Company
 5. Liberty Mutual Insurance Company
 6. Nationwide Mutual Insurance Company
 7. Hartford Accident & Indemnity Company
 8. Hanover Insurance Company
 9. Continental Casualty Company
 10. State Auto Mutual Insurance Company
-

SIZE OF ISO
DATA BASE

The market share of ISO participating insurers as measured by Annual Statement Page 15 written premium for the year ending 12/31/17 is:

Commercial Multi Peril (ASLOB 51 & 52). 51.8%.

ADDITIONAL
SUPPORTING
MATERIAL

Additional supporting material underlying the calculation of the experience review indications used in this PMF analysis may be found in the respective monoline experience review documents for each line.

TENNESSEE
ADVISORY PACKAGE MODIFICATION FACTOR REVIEW
COMMERCIAL PACKAGE POLICY
ML-2018-RLA1
EXECUTIVE SUMMARY

COMPANY DECISION

We encourage each insurer to decide independently whether the judgments made and the procedures or data used by ISO in developing the PMFs contained herein are appropriate for your 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 projection based on the aggregate data.

Some calculations included in this document involve areas of ISO staff judgment. Each company should carefully review and evaluate whether the ISO selected PMFs are appropriate for its use.

The material has been developed exclusively by the staff of Insurance Services Office, Inc.

COMMERCIAL PACKAGE POLICY

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COMMERCIAL PACKAGE POLICY METHODOLOGY OVERVIEW

OBJECTIVE

A Commercial Package Policy (CPP) is essentially a combination of monoline coverages. CPP pricing employs monoline loss costs modified by Package Modification Factors (PMFs). These factors vary by the eight CPP types of policy and are reviewed annually. Monoline and multiline experience are combined and reviewed via a monoline/multiline relativity analysis. The resulting indicated PMFs represent the loss cost for a CPP relative to that for monoline policies providing the same coverages.

STEP 1: THE RELATIVITY ANALYSES

Each line of insurance develops indicated changes to monoline and multiline aggregate loss costs based on an experience ratio relativity analysis for that coverage. The monoline indication represents the needed change to monoline loss costs. The multiline indication represents the needed change to multiline aggregate loss costs, which is implemented through changes to the PMFs. For this PMF analysis, multiline indications are developed for each line of insurance and Type of Policy. Relativity analyses are explained in Section B.

STEP 2: CALCULATION OF THE PMFs

The procedure described above generates indicated Implicit PMFs (IPMFs) which vary by the various lines of insurance and by type of policy. IPMFs represent what the PMF would be for the CPP risk if only a single coverage were written. For each Type of Policy, IPMFs are weighted by CPP aggregate loss costs to determine the indicated property and liability PMFs. These PMFs may be capped, or rounded to the nearest one percent, and certain component IPMFs appropriately adjusted for this change. These calculations are explained in the remainder of Section A.

TENNESSEE

TABLE 1
COMMERCIAL PACKAGE POLICY
SUMMARY OF THIS REVIEW

The display below summarizes the review and shows the capped Package Modification Factors for Property and Liability. For each type of risk, the PMFs are determined to be those factors which when applied to the monoline loss costs produce the appropriate CPP aggregate loss cost level as determined by an analysis of the CPP experience.

TYPE OF POLICY	PROPERTY PMFS			LIABILITY PMFS			PROP. & LIAB. TOTAL
	CURRENT	CAPPED	% CHANGE	CURRENT	CAPPED	% CHANGE	% CHANGE
MOTEL/HOTEL (31)	1.00	1.00	0.0%	1.00	1.00	0.0%	0.0%
APARTMENT (32)	0.97	0.99	2.1%	1.00	1.00	0.0%	1.8%
OFFICE (33)	0.93	0.89	-4.3%	1.00	1.00	0.0%	-2.0%
MERCANTILE (34)	0.94	0.93	-1.1%	0.97	0.92	-5.2%	-2.8%
INSTITUTION (35)	0.97	0.98	1.0%	0.79	0.81	2.5%	1.3%
SERVICES (36)	0.98	0.95	-3.1%	1.00	0.98	-2.0%	-2.7%
IND/PROC (37)	1.00	1.00	0.0%	1.00	1.00	0.0%	0.0%
CONTRACTORS (38)	0.94	0.91	-3.2%	0.82	0.81	-1.2%	-1.5%
STATEWIDE			-0.8%			-2.0%	-1.3%

TENNESSEE
TABLE 2
COMMERCIAL PACKAGE POLICY
CALCULATION OF REVISED CPP PACKAGE MODIFICATION FACTORS (PMF)

MOTEL/HOTEL (31) *****	(1) AGGREG- ATE LOSS COSTS	(2) CURRENT IMPLICIT PMF	(3) NET INDICATION	(4) INDIC. PMF	(5) CAPPED PMF
<u>COVERAGE</u>					
PROPERTY-					
BASIC GRP I	1,310,922	0.835	6.5%	0.889	0.853
BASIC GRP II	764,686	1.079	11.7	1.205	1.157
SP CAUSE/LOSS	621,775	1.447	-7.6	1.337	1.283
*CRIME	6,017	0.910	0.0	0.910	0.910
*INL. MAR.	21,204	0.910	0.0	0.910	0.910
*FIDELITY	23,953	1.000	0.0	1.000	1.000
<u>TOTAL</u>	<u>2,748,557</u>	<u>1.00</u>	<u>4.1%</u>	<u>1.041</u>	<u>1.00</u>
LIABILITY-					
OL&T	1,224,227	1.000	17.6%	1.176	1.000
<u>TOTAL</u>	<u>1,224,227</u>	<u>1.00</u>	<u>17.6%</u>	<u>1.176</u>	<u>1.00</u>
-----	-----	-----	-----	-----	-----
PROP. & LIAB. TOTAL	3,972,784		8.3%		

APARTMENT (32) *****	(1) AGGREG- ATE LOSS COSTS	(2) CURRENT IMPLICIT PMF	(3) NET INDICATION	(4) INDIC. PMF	(5) CAPPED PMF
<u>COVERAGE</u>					
PROPERTY-					
BASIC GRP I	2,929,375	0.957	3.9%	0.994	0.997
BASIC GRP II	1,540,094	0.859	6.8	0.917	0.920
SP CAUSE/LOSS	1,139,155	1.250	-12.2	1.098	1.100
*CRIME	556	0.910	0.0	0.910	0.910
*INL. MAR.	1,287	0.910	0.0	0.910	0.910
*FIDELITY	7,957	1.000	0.0	1.000	1.000
<u>TOTAL</u>	<u>5,618,424</u>	<u>0.97</u>	<u>1.7%</u>	<u>0.987</u>	<u>0.99</u>
LIABILITY-					
OL&T	880,882	1.000	-1.1%	0.989	0.996
<u>TOTAL</u>	<u>880,882</u>	<u>1.00</u>	<u>-1.1%</u>	<u>0.989</u>	<u>1.00</u>
-----	-----	-----	-----	-----	-----
PROP. & LIAB. TOTAL	6,499,306		1.3%		

* indicates coverage for which reviews are on a MULTISTATE basis.

TENNESSEE
TABLE 2
COMMERCIAL PACKAGE POLICY
CALCULATION OF REVISED CPP PACKAGE MODIFICATION FACTORS (PMF)

OFFICE (33) *****	(1)	(2)	(3)	(4)	(5)
	AGGREGATE <u>LOSS COSTS</u>	CURRENT IMPLICIT <u>PMF</u>	NET <u>INDICATION</u>	INDIC. <u>PMF</u>	CAPPED <u>PMF</u>
COVERAGE					
PROPERTY-					
BASIC GRP I	1,495,050	0.950	1.5%	0.964	0.967
BASIC GRP II	1,220,470	0.746	-4.6	0.712	0.713
SP CAUSE/LOSS	1,254,693	1.168	-12.0	1.028	1.030
*CRIME	6,333	0.910	0.0	0.910	0.910
*INL. MAR.	53,569	0.910	0.0	0.910	0.910
*FIDELITY	24,912	1.000	0.0	1.000	1.000
TOTAL	4,055,027	0.93	-4.9%	0.885	0.89
LIABILITY-					
OL&T	4,446,233	1.052	-0.3%	1.049	1.051
M&C	240,140	0.522	2.4	0.535	0.535
TOTAL	4,686,373	1.00	-0.2%	0.998	1.00
-----	-----	-----	-----	-----	-----
PROP. & LIAB. TOTAL	8,741,400		-2.3%		
MERCANTILE (34) *****	(1)	(2)	(3)	(4)	(5)
	AGGREGATE <u>LOSS COSTS</u>	CURRENT IMPLICIT <u>PMF</u>	NET <u>INDICATION</u>	INDIC. <u>PMF</u>	CAPPED <u>PMF</u>
COVERAGE					
PROPERTY-					
BASIC GRP I	7,132,040	1.019	0.8%	1.027	1.030
BASIC GRP II	5,101,387	0.912	-2.2	0.892	0.894
SP CAUSE/LOSS	3,014,174	0.841	-4.7	0.801	0.803
*CRIME	36,549	0.910	0.0	0.910	0.910
*INL. MAR.	221,436	0.910	0.0	0.910	0.910
*FIDELITY	160,678	1.000	0.0	1.000	1.000
TOTAL	15,666,264	0.94	-1.0%	0.931	0.93
LIABILITY-					
OL&T	8,374,861	1.005	-7.7%	0.928	0.934
M&C	951,400	0.860	-9.3	0.780	0.785
LOCAL PRODUCT	669,133	0.994	2.5	1.019	1.026
*MULTI PRODUCT	1,166,397	0.832	3.7	0.862	0.862
TOTAL	11,161,791	0.97	-6.1%	0.911	0.92
-----	-----	-----	-----	-----	-----
PROP. & LIAB. TOTAL	26,828,055		-3.1%		

* indicates coverage for which reviews are on a MULTISTATE basis.

TENNESSEE
TABLE 2
COMMERCIAL PACKAGE POLICY
CALCULATION OF REVISED CPP PACKAGE MODIFICATION FACTORS (PMF)

INSTITUTION (35) *****	(1)	(2)	(3)	(4)	(5)
	AGGREGATE	CURRENT	NET	INDIC.	CAPPED
COVERAGE	<u>LOSS COSTS</u>	<u>IMPLICIT</u>	<u>INDICATION</u>	<u>PMF</u>	<u>PMF</u>
PROPERTY-					
BASIC GRP I	4,203,382	0.943	1.4%	0.956	0.958
BASIC GRP II	5,519,832	0.964	2.5	0.988	0.990
SP CAUSE/LOSS	3,018,681	1.017	-4.2	0.974	0.977
*CRIME	27,356	0.910	0.0	0.910	0.910
*INL. MAR.	33,942	0.910	0.0	0.910	0.910
*FIDELITY	131,546	1.000	0.0	1.000	1.000
TOTAL	12,934,739	0.97	0.4%	0.974	0.98
LIABILITY-					
OL&T	2,431,296	0.812	2.3%	0.831	0.836
M&C	442,551	0.663	1.5	0.673	0.678
TOTAL	2,873,847	0.79	1.5%	0.802	0.81
-----	-----	-----	-----	-----	-----
PROP. & LIAB.	15,808,586		0.6%		
TOTAL					

SERVICES (36) *****	(1)	(2)	(3)	(4)	(5)
	AGGREGATE	CURRENT	NET	INDIC.	CAPPED
COVERAGE	<u>LOSS COSTS</u>	<u>IMPLICIT</u>	<u>INDICATION</u>	<u>PMF</u>	<u>PMF</u>
PROPERTY-					
BASIC GRP I	3,943,931	1.034	-3.1%	1.002	1.004
BASIC GRP II	3,068,199	0.887	-0.6	0.882	0.884
SP CAUSE/LOSS	2,201,466	1.017	-5.4	0.962	0.964
*CRIME	19,741	0.910	0.0	0.910	0.910
*INL. MAR.	38,672	0.910	0.0	0.910	0.910
*FIDELITY	160,069	1.000	0.0	1.000	1.000
TOTAL	9,432,078	0.98	-3.1%	0.949	0.95
LIABILITY-					
OL&T	1,946,335	0.934	-2.0%	0.915	0.922
M&C	2,067,213	1.062	-4.1	1.018	1.025
LOCAL PRODUCT	636,849	1.030	0.5	1.035	1.042
*MULTI PRODUCT	112,454	0.899	1.7	0.914	0.914
TOTAL	4,762,851	1.00	-2.7%	0.973	0.98
-----	-----	-----	-----	-----	-----
PROP. & LIAB.	14,194,929		-3.0%		
TOTAL					

* indicates coverage for which reviews are on a MULTISTATE basis.

TENNESSEE
TABLE 2
COMMERCIAL PACKAGE POLICY
CALCULATION OF REVISED CPP PACKAGE MODIFICATION FACTORS (PMF)

IND/PROC (37) *****	(1)	(2)	(3)	(4)	(5)
	AGGREGATE <u>LOSS COSTS</u>	CURRENT IMPLICIT <u>PMF</u>	NET <u>INDICATION</u>	INDIC. <u>PMF</u>	CAPPED <u>PMF</u>
COVERAGE					
PROPERTY-					
BASIC GRP I	3,797,600	1.197	1.2%	1.211	1.241
BASIC GRP II	1,606,966	0.730	-1.0	0.723	0.740
SP CAUSE/LOSS	1,434,299	0.957	-11.1	0.851	0.872
*CRIME	4,712	0.910	0.0	0.910	0.910
*INL. MAR.	2,220	0.910	0.0	0.910	0.910
*FIDELITY	67,449	1.000	0.0	1.000	1.000
TOTAL	6,913,246	1.00	-2.4%	0.976	1.00
LIABILITY-					
M&C	2,838,895	1.191	4.7	1.247	1.180
LOCAL PRODUCT	119,967	0.665	-1.5	0.655	0.620
*MULTI PRODUCT	2,268,237	0.884	-2.8	0.860	0.860
TOTAL	5,227,099	1.00	3.2%	1.032	1.00
-----	-----	-----	-----	-----	-----
PROP. & LIAB. TOTAL	12,140,345		0.0%		
CONTRACTORS (38) *****	(1)	(2)	(3)	(4)	(5)
	AGGREGATE <u>LOSS COSTS</u>	CURRENT IMPLICIT <u>PMF</u>	NET <u>INDICATION</u>	INDIC. <u>PMF</u>	CAPPED <u>PMF</u>
COVERAGE					
PROPERTY-					
BASIC GRP I	975,027	1.052	1.7%	1.070	1.072
BASIC GRP II	503,581	0.647	0.8	0.652	0.654
SP CAUSE/LOSS	772,105	1.108	-12.5	0.970	0.972
*CRIME	3,316	0.910	0.0	0.910	0.910
*INL. MAR.	5,811	0.910	0.0	0.910	0.910
*FIDELITY	89,150	1.000	0.0	1.000	1.000
TOTAL	2,348,990	0.94	-3.3%	0.909	0.91
LIABILITY-					
M&C	7,463,940	0.870	-4.0	0.835	0.841
LOCAL PRODUCT	6,247,562	0.786	-1.4	0.775	0.780
TOTAL	13,711,502	0.82	-1.7%	0.806	0.81
-----	-----	-----	-----	-----	-----
PROP. & LIAB. TOTAL	16,060,492		-1.9%		

* indicates coverage for which reviews are on a MULTISTATE basis.

TENNESSEE
TABLE 2
COMMERCIAL PACKAGE POLICY
CALCULATION OF REVISED CPP PACKAGE MODIFICATION FACTORS (PMF)

STATEWIDE *****	(1)	(2)	(3)	(4)	(5)
	AGGREGATE	CURRENT	NET	INDIC.	CAPPED
COVERAGE	<u>LOSS COSTS</u>	<u>IMPLICIT</u>	<u>INDICATION</u>	<u>PMF</u>	<u>PMF</u>
PROPERTY-		PMF			
BASIC GRP I	25,787,327	1.008	1.1%	1.019	1.023
BASIC GRP II	19,325,215	0.883	0.7	0.889	0.891
SP CAUSE/LOSS	13,456,348	1.010	-7.3	0.936	0.939
*CRIME	104,580	0.910	0.0	0.910	0.910
*INL. MAR.	378,141	0.910	0.0	0.910	0.910
*FIDELITY	665,714	1.000	0.0	1.000	1.000
TOTAL	59,717,325	0.964	-1.0%	0.954	0.957
LIABILITY-					
OL&T	19,303,834	0.978	-2.3%	0.956	0.950
M&C	14,004,139	0.925	-2.3	0.903	0.897
LOCAL PRODUCT	7,673,511	0.815	-0.9	0.807	0.812
*MULTI PRODUCT	3,547,088	0.867	-0.5	0.862	0.862
TOTAL	44,528,572	0.917	-1.6%	0.902	0.899
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PROP. & LIAB. TOTAL	104,245,897		-1.3%		

* indicates coverage for which reviews are on a MULTISTATE basis.

TENNESSEE

TABLE 2

COMMERCIAL PACKAGE POLICY

COMBINED PMFs

<u>TYPE OF POLICY</u>	<u>CURRENT COMBINED</u>	<u>INDICATED COMBINED</u>	<u>CAPPED COMBINED</u>
MOTEL/HOTEL (31)	1.00	1.083	1.00
APARTMENT (32)	0.97	0.987	0.99
OFFICE (33)	0.96	0.944	0.95
MERCANTILE (34)	0.95	0.923	0.93
INSTITUTION (35)	0.93	0.937	0.94
SERVICES (36)	0.98	0.957	0.96
IND/PROC (37)	1.00	1.000	1.00
CONTRACTORS (38)	0.84	0.820	0.82

NOTE: Combined PMFs are provided for informational purposes only.

EXPLANATORY NOTES TO TABLE 2

CALCULATION OF REVISED PACKAGE MODIFICATION FACTORS

OBJECTIVE	<p>Commercial package policies were introduced in the 1960's as a convenient tool for both insurer and insured to have the many types of insurance needed by commercial risks packaged under one cover. Thus fire, extended coverage, crime, liability insurance, etc. could be written using a single policy instead of several. Today, virtually any type of monoline coverage can also be purchased as part of a package policy such as the CPP.</p> <p>The types of insured which can be written under a CPP are generally categorized into the following Types of Policy:</p> <ul style="list-style-type: none">. Motels and Hotels (TOP 31). Apartments (TOP 32). Offices (TOP 33). Mercantile Operations (TOP 34). Institutions (TOP 35). Service Operations (TOP 36). Industrial and Processing Operations (TOP 37). Contractors (TOP 38)
PRICING OF POLICIES	<p>Since a CPP is essentially a combination of monoline coverages, CPP pricing employs monoline loss costs modified by PMFs (Package Modification Factors). These factors vary by the categories shown above and are reviewed annually.</p>
CPP PMF REVIEW PROCEDURE	<p>The CPP review of Package Modification Factors, which appears in Table 2 of this document, determines the appropriate PMF loss cost level for each of the eight CPP categories. This is done by combining the indications of the simultaneous reviews of monoline and multiline experience for the various lines (or coverages).</p> <p>A detailed explanation of the calculation of the revised PMFs follows.</p>

EXPLANATORY NOTES TO TABLE 2 (Cont'd)

LINES OF INSURANCE (COVERAGES) INCLUDED

The CPP review reflects the contribution from each significant coverage which can be written on a CPP. Included are:

Property Coverages

- . Basic Group I (BGI) - the predominant property coverage included.
- . Basic Group II (BGII) - both Basic Group I and Basic Group II must be purchased under a CPP contract.
- . Special Causes of Loss (SCL) - typically a type of insurance which is purchased in addition to Basic Group I and Basic Group II in order to provide "all risk" property coverage for the insured.
- . Crime (CRIME) - Crime insurance is a commonly purchased CPP coverage.
- . Inland Marine (INL. MAR.) - A highly specialized line of property insurance, Inland Marine coverages can be purchased as part of a package policy.
- . Fidelity (FIDELITY) - Certain forms of fidelity insurance can be part of the CPP package. Various forms of employee dishonesty coverage are available.

Liability Coverages

- . Owners, Landlords and Tenants (OL&T) Liability - this is the prevalent type of Premises/Operations liability for CPP insureds.
- . Manufacturers and Contractors Liability (M&C) - this is the type of Premises/Operations liability insurance for risks whose liability exposure is more heavily off-premises than on.
- . Products/Completed Operations Liability (PROD) - this type of insurance protects against claims for damages arising from products/completed operations in conjunction with an insured's business. For review purposes, this line of insurance is split into the following two categories:
 - Products: experience for this category is reviewed on a multistate basis.
 - Local Products/ Completed Operations: experience for this category reflects an exposure to loss which is local in nature; therefore, individual state experience is used.

EXPLANATORY NOTES TO TABLE 2 (Cont'd)

THE IMPLICIT PACKAGE MODIFICATION FACTOR

For each applicable coverage listed under each of the eight (8) CPP categories, a "current implicit PMF" is shown in column (2). The definition of this factor follows:

For a given CPP category (e.g., apartments) the published Package Modification Factor (PMF) represents the loss cost for a CPP relative to that for monoline policies providing the same coverages. Thus a property (liability) PMF of .80 represents a 20% lower aggregate loss cost for a CPP than for the comparable monoline policies. This PMF, however, represents the CPP "loss cost" for all property (liability) coverages combined. Based on CPP experience, it has been determined that this CPP "loss cost" can differ significantly if it is determined for each property (liability) coverage individually. The IPMF represents what the PMF would be for that CPP risk if only a single coverage were written. The use of the IPMF in monoline/multiline ratemaking and in the determination of revised CPP Package Modification Factors is significant in that it appropriately identifies how different the component parts of the multiline "loss cost" are.

THE MULTILINE INDICATION

Under the CPP ratemaking procedures, monoline and multiline experience are combined for each coverage. The results of these coverage analyses are indicated changes to monoline loss costs and also indicated CPP aggregate loss cost level changes. The CPP indications by coverage are then incorporated in the CPP PMF review. These indications (shown in column (3)) represent the needed adjustments to the IPMFs (shown in column (2)) described above.

The development of these indications is detailed in Section B.

THE INDICATED PMF

For each CPP category (and for property vs. liability), the indicated PMF is calculated as follows:

Each of the current IPMFs in column (2) is multiplied by the indicated percent change shown in column (3). A weighted average of the indicated IPMFs, using weights based on latest year aggregate loss costs at current ISO loss cost level (column (1) divided by column (2)), yields the indicated PMF at the bottom of column (4).

THE CAPPED PMF

The indicated PMF for each category (and for property vs. liability) shown at the bottom of column (4) is limited to a maximum of 1.00 in arriving at the proposed PMF (bottom of column (5)). All indicated PMFs which are below 1.00 are rounded to the nearest .01 in determining the proposed PMF. To the extent that any indicated PMFs are capped at 1.00, indicated PMFs below this value are adjusted in order to minimize any revenue changes which would result from capping.

In addition to the adjustments just described, the IPMFs (for property and liability) shown in column (4) are subject to minimum and maximum values and adjusted in column (5) so that they average to the proposed PMF shown at the bottom of column (5).

COMMERCIAL PACKAGE POLICY

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TABLE 3 - BASIC GROUP I RELATIVITY ANALYSIS

	(1)	(2)	(3)	(4)	(5)
TOP	\$ LST SQ FORMULA RELATIVITY	CREDIBILITY Z	Z-WTD. RELATIVITY	BALANCED RELATIVITY	INDICATED CHANGE *

10	0.868	0.131	0.982	0.990	
31	2.082	0.060	1.045	1.054	6.5%
32	1.184	0.121	1.021	1.029	3.9%
33	0.942	0.064	0.996	1.005	1.5%
34	0.963	0.271	0.990	0.998	0.8%
35	0.978	0.192	0.996	1.004	1.4%
36	0.761	0.183	0.951	0.959	-3.1%
37	0.962	0.171	0.993	1.002	1.2%
38	0.964	0.048	0.998	1.007	1.7%
RATING GROUP					
01	1.151	0.171	1.024	1.046	
02	2.090	0.152	1.119	1.142	
03	1.082	0.184	1.015	1.036	
04	0.751	0.453	0.878	0.897	
05	1.101	0.028	1.003	1.024	
06	1.052	0.288	1.015	1.036	
07	0.961	0.082	0.997	1.018	
08	0.933	0.305	0.979	1.000	
09	1.089	0.148	1.013	1.034	
10	1.135	0.148	1.019	1.040	
11	1.126	0.027	1.003	1.024	
13	0.944	0.165	0.991	1.011	
14	0.946	0.142	0.992	1.013	
15	1.282	0.123	1.031	1.053	
17	0.662	0.039	0.984	1.005	
18	0.642	0.079	0.966	0.986	
19	0.644	0.046	0.980	1.000	
20	0.700	0.019	0.993	1.014	
21	0.848	0.146	0.976	0.997	
22	0.786	0.121	0.971	0.992	

	(1)	(2)	(3)	(4)
TERRITORY	\$ LST SQ FORMULA RELATIVITY	CREDIBILITY Z	Z-WTD. RELATIVITY	BALANCED RELATIVITY

Memphis	0.871	0.187	0.975	0.961
Nashville FPSA	0.802	0.196	0.958	0.945
Balance of State	1.034	0.695	1.024	1.010

* INDICATED CHANGE = (BALANCED RELATIVITY FOR TOP)/MONOLINE RELATIVITY (TOP10)) -1

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TABLE 4 - SPECIAL CAUSES OF LOSS RELATIVITY ANALYSIS

	(1)	(2)	(3)	(4)	(5)
TOP	\$ LST SQ FORMULA RELATIVITY	CREDIBILITY Z	Z-WTD. RELATIVITY	BALANCED RELATIVITY	INDICATED CHANGE *
<hr/>					
10	1.546	0.168	1.076	1.070	
31	0.919	0.071	0.994	0.989	-7.6%
32	0.640	0.128	0.944	0.939	-12.2%
33	0.656	0.128	0.947	0.942	-12.0%
34	1.096	0.279	1.026	1.020	-4.7%
35	1.105	0.299	1.030	1.025	-4.2%
36	1.078	0.225	1.017	1.012	-5.4%
37	0.752	0.158	0.956	0.951	-11.1%
38	0.507	0.089	0.941	0.936	-12.5%
CATEGORY					
01	1.094	0.770	1.072	1.039	
02	0.418	0.083	0.930	0.902	
03	0.744	0.169	0.951	0.922	
04	0.767	0.174	0.955	0.926	
05	0.629	0.147	0.934	0.906	
06	0.858	0.072	0.989	0.959	
07	0.659	0.046	0.981	0.951	
08	0.509	0.138	0.911	0.883	
09	0.463	0.207	0.853	0.827	
10	0.661	0.042	0.983	0.953	
11	0.929	0.157	0.989	0.959	
12	1.522	0.163	1.071	1.038	
13	0.874	0.088	0.988	0.958	
14	1.864	0.120	1.078	1.045	

* INDICATED CHANGE = (BALANCED RELATIVITY FOR TOP)/MONOLINE RELATIVITY (TOP10)) -1

EXPLANATORY NOTES TO TABLES 3 AND 4

BASIC GROUP I AND SPECIAL CAUSES OF LOSS RELATIVITY ANALYSIS

OBJECTIVE

The explanations which follow clarify Tables 3 and 4, the Basic Group I Relativity Analysis and the Special Causes of Loss Relativity Analysis, respectively. The purpose of these analyses is to:

- (1) determine monoline classification and territorial loss cost level needs for Basic Group I;
- (2) determine monoline category loss cost level need for Special Causes of Loss;
- (3) determine indicated changes to the eight property CPP Package Modification Factors based on Basic Group I/Special Causes of Loss experience.

COLUMN (1)

LEAST SQUARES FORMULA RELATIVITIES

The Least Squares Formula Relativities are the marginal relativities which result from the application of the simultaneous review procedure to the raw experience (where marginal refers to the relativities for a given rating variable, e.g. type of policy, across all subsets of any other rating variables, i.e. rating group and territory for Basic Group I, and category for Special Causes of Loss).

The purpose of such a simultaneous review procedure is to arrive at a set of type of policy relativities (which will serve to price CPP policies relative to monoline policies via the PMF); a set of rating group/territory relativities for Basic Group I; and a set of category relativities for Special Causes of Loss that best represent the experience. This procedure is in contrast to a review of each rating variable's experience separately. Such one-way types of review do not take into account differing percentages of monoline and multiline experience in each rating variable, or differing percentages of a particular rating variable's experience in the monoline and multiline types of policy. The simultaneous relativity procedure accounts for these different distributions in generating relativities for the various rating variables.

EXPLANATORY NOTES TO TABLES 3 AND 4 (Cont'd)

COLUMN (1)
(Cont'd)

The procedure uses an iterative technique to determine a set of marginal relativities by rating variable that is a best fit to the individual cell relativities, with each cell being defined as the cross-section of specific values of each rating variable. The process uses the relativity of the five year experience ratios by rating cell to the overall statewide experience ratio and the latest year aggregate loss costs for each rating cell. (This experience is shown in Table 5 for Basic Group I and Table 6 for Special Causes of Loss). Specifically, the iteration procedure uses the following formulas:

BASIC GROUP I:

$$TOP_i = \frac{\sum_{j=1}^n \sum_{k=1}^t W_{ijk}^2 R_{ijk} RG_j TER_k}{\sum_{j=1}^n \sum_{k=1}^t W_{ijk}^2 RG_j^2 TER_k^2}, \text{ where } 1 \leq i \leq m;$$

$$RG_j = \frac{\sum_{k=1}^t \sum_{i=1}^m W_{ijk}^2 R_{ijk} TOP_i TER_k}{\sum_{k=1}^t \sum_{i=1}^m W_{ijk}^2 TOP_i^2 TER_k^2}, \text{ where } 1 \leq j \leq n$$

$$TER_k = \frac{\sum_{j=1}^n \sum_{i=1}^m W_{ijk}^2 R_{ijk} TOP_i RG_j}{\sum_{j=1}^n \sum_{i=1}^m W_{ijk}^2 TOP_i^2 RG_j^2}, \text{ where } 1 \leq k \leq t$$

EXPLANATORY NOTES TO TABLES 3 AND 4 (Cont'd)

COLUMN (1)
(Cont'd)

SPECIAL CAUSES OF LOSS:

$$TOP_i = \frac{\sum_{j=1}^n W_{ij}^2 R_{ij} CAT_j}{\sum_{j=1}^n W_{ij}^2 CAT_j^2}, \text{ where } 1 \leq i \leq m;$$

$$CAT_j = \frac{\sum_{i=1}^m W_{ij}^2 R_{ij} TOP_i}{\sum_{i=1}^m W_{ij}^2 TOP_i^2}, \text{ where } 1 \leq j \leq n$$

- TOP_i is the relativity for the i th Type of Policy;
- RG_j is the relativity for the j th Rating Group;
- CAT_j is the relativity for the j th Category;
- TER_k is the relativity for the k th Territory;
- W_{ijk} is the loss cost volume at current level for the i th Type of Policy, j th Rating Group or Category and k th Territory;
- R_{ijk} is the experience ratio relativity for the i th Type of Policy, j th Rating Group or Category and k th Territory;
- R_{ij} is the experience ratio relativity for the i th Type of Policy, j th Rating Group or Category;

EXPLANATORY NOTES TO TABLES 3 AND 4 (Cont'd)

COLUMN (1)
(Cont'd)

- m is the number of Types of Policy in the analysis;
- n is the number of Rating Groups or Categories in the analysis;
- t is the number of Territories in the analysis.

The procedure determines m Type of Policy relativities using the above formulas. Then, using those results, a set of n Rating Group and t Territory relativities are determined. These steps form an iterative process which continues until there is no appreciable difference in results from one iteration to the next.

COLUMN (2)

CREDIBILITY

The credibility of the experience for each rating variable is determined from the formula:

$$Z = \frac{P}{P + K}$$

where P is the 5-year adjusted aggregate loss costs for a given rating variable, and K is a constant value. For Basic Group I, K equals an aggregate loss cost volume of \$55,000,000 for territory, \$40,000,000 for rating group, and \$100,000,000 for type of policy. For Special Causes of Loss, K equals an aggregate loss cost volume of \$15,000,000.

COLUMN (3)

CREDIBILITY-WEIGHTED RELATIVITIES

Credibility-weighted relativities are calculated based on the formula

$$W = R^Z$$

where Z is the credibility, R is the least squares formula relativity and W is the credibility-weighted relativity for a given rating variable.

This formula implicitly assigns the complement of credibility to a relativity of unity.

EXPLANATORY NOTES TO TABLES 3 AND 4 (Cont'd)

COLUMN (4)

BALANCED RELATIVITIES

The credibility-weighted relativities are balanced to assure that the average relativity across all rating variables remains at unity.

MULTILINE
CONSIDERATIONS

The type of policy (TOP) relativities are used to generate multiline indications which apply to the current Implicit Package Modification Factors (IPMFs). The indicated IPMFs are calculated as follows:

$$\text{TOP y indicated IPMF} = \frac{(\text{TOP y current IPMF}) \times (\text{TOP y relativity})}{\text{monoline relativity}}$$

For each CPP Type of Policy the indicated IPMF is subject to a minimum value of 0.50 and a maximum value of 1.50. If an indicated IPMF falls outside one of those limits, it is capped at that amount, the aggregate loss costs for that Type of Policy are adjusted to the capped IPMF level, and the entire relativity review as described above is re-performed to take this into account. If an IPMF has been capped it is so noted at the bottom of Table 3 and Table 4.

Loss cost changes for each TOP are calculated as described on Tables 3 and 4.

ENTIRE STATE

TENNESSEE

BASIC GROUP I RELATIVITY ANALYSIS
TABLE 5 - SUMMARY OF EXPERIENCE USED IN SIMULTANEOUS REVIEW

TYPE OF POLICY	CATEGORY	(1) ACCIDENT YEAR ENDING 06/30/17 AGGREGATE LOSS COSTS	(2) 5 - YEAR AGGREGATE LOSS COSTS	(3) 5 - YEAR EXPERIENCE RATIO	(4) Z-WEIGHTED EXPERIENCE RATIO	(5) Z-WEIGHTED RELATIVITY
10 MONOLINE	01 APARTMENTS	89,226	775,270	0.637	0.825	0.756
	02 OTHER HABITATIONAL	184,557	754,865	1.985	1.793	1.642
	03 RESTAURANTS & BARS	155,707	654,498	0.212	0.675	0.618
	04 OTHER MERCANTILE RS	652,762	3,190,895	1.095	0.905	0.829
	05 PUBLIC BUILDINGS	51,883	275,661	0.389	0.675	0.618
	06 CHURCHES	68,543	354,799	11.871	6.512	5.963
	07 SCHOOLS	140,650	1,024,091	0.271	0.414	0.379
	08 OFFICES AND BANKS	406,350	1,810,090	0.473	0.587	0.537
	09 REC. FACILITIES	165,841	796,189	0.849	0.957	0.876
	10 HOTELS AND MOTELS	113,101	513,044	0.866	0.985	0.902
	11 HOSPITALS/NURS HOME	36,085	200,805	0.808	0.910	0.833
	13 MOTOR VEHICLE RISKS	186,293	1,073,395	0.710	0.820	0.751
	14 OTHER NON-MANUF.	218,265	1,026,471	1.521	0.980	0.897
	15 STORAGE	166,609	843,408	0.475	0.712	0.652
	17 FOOD MANUFACTURING	37,819	135,734	0.000	0.712	0.652
	18 WOOD MANUFACTURING	96,400	457,229	0.000	0.410	0.375
	19 WEARING APPAREL	10,697	56,853	0.000	0.825	0.756
	20 CHEM. MANUFACTURING	36,355	140,249	0.000	0.754	0.690
	21 METAL MANUFACTURING	120,008	737,026	0.099	0.395	0.362
	22 OTHER MANUFACTURING	38,289	284,336	0.083	0.552	0.505
	TOTAL*	2,975,440	15,104,908	1.029	0.954	0.873
31 MULTILINE MOTEL/HOTEL	10 HOTELS AND MOTELS	1,310,922	6,423,567	3.415	2.417	2.214
	TOTAL*	1,310,922	6,423,567	3.415	2.417	2.214
32 MULTILINE APARTMENT	01 APARTMENTS	1,569,236	7,449,826	1.420	1.316	1.205
	02 OTHER HABITATIONAL	1,360,139	6,373,207	3.626	2.476	2.267
	TOTAL*	2,929,375	13,823,033	2.444	1.855	1.698
33 MULTILINE OFFICE	08 OFFICES AND BANKS	1,495,050	6,833,580	0.734	0.985	0.902
	TOTAL*	1,495,050	6,833,580	0.734	0.985	0.902
34 MULTILINE MERCANTILE	03 RESTAURANTS & BARS	1,475,140	7,534,139	1.077	1.180	1.080
	04 OTHER MERCANTILE RS	4,287,942	22,928,630	0.551	0.710	0.650
	08 OFFICES AND BANKS	355,313	1,642,549	0.566	1.069	0.979
	13 MOTOR VEHICLE RISKS	221,352	1,061,533	0.040	0.949	0.869
	14 OTHER NON-MANUF.	227,056	1,057,112	0.274	1.022	0.936
	15 STORAGE	565,237	2,993,378	1.429	1.336	1.223
	TOTAL*	7,132,040	37,217,341	0.705	0.892	0.817

ENTIRE STATE

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BASIC GROUP I RELATIVITY ANALYSIS

TABLE 5 - SUMMARY OF EXPERIENCE USED IN SIMULTANEOUS REVIEW

TYPE OF POLICY	CATEGORY	(1) ACCIDENT YEAR ENDING 06/30/17 AGGREGATE LOSS COSTS	(2) 5 - YEAR AGGREGATE LOSS COSTS	(3) 5 - YEAR EXPERIENCE RATIO	(4) Z-WEIGHTED EXPERIENCE RATIO	(5) Z-WEIGHTED RELATIVITY
35 MULTILINE INSTITUTIONAL	02 OTHER HABITATIONAL	7,389	61,400	0.111	1.022	0.937
	05 PUBLIC BUILDINGS	163,578	895,601	0.792	1.172	1.074
	06 CHURCHES	2,669,393	15,821,619	1.221	1.243	1.138
	07 SCHOOLS	516,430	2,551,208	0.680	1.076	0.985
	08 OFFICES AND BANKS	350,721	1,903,381	0.879	1.077	0.986
	09 REC. FACILITIES	218,810	1,036,256	0.323	1.022	0.935
	11 HOSPITALS/NURS HOME	183,648	914,116	0.700	1.121	1.027
	13 MOTOR VEHICLE RISKS	5,204	49,849	0.447	1.148	1.051
	14 OTHER NON-MANUF.	88,209	603,586	0.107	1.017	0.931
	TOTAL*	4,203,382	23,837,016	1.013	1.184	1.084
36 MULTILINE SERVICES	03 RESTAURANTS & BARS	143,776	816,601	0.221	0.719	0.659
	04 OTHER MERCANTILE RS	417,793	2,140,796	0.848	0.858	0.786
	08 OFFICES AND BANKS	491,736	3,276,237	0.809	0.807	0.740
	09 REC. FACILITIES	834,313	5,096,718	1.082	0.851	0.780
	13 MOTOR VEHICLE RISKS	980,528	5,692,666	0.781	0.821	0.751
	14 OTHER NON-MANUF.	630,678	3,044,198	0.516	0.713	0.653
	15 STORAGE	310,995	1,625,235	1.174	0.862	0.790
	21 METAL MANUFACTURING	28,368	143,702	50.827	7.418	6.793
	22 OTHER MANUFACTURING	105,744	606,361	0.208	0.642	0.588
	TOTAL*	3,943,931	22,442,514	1.168	0.854	0.783
37 MULTILINE INDUST/PROCESS	04 OTHER MERCANTILE RS	390,088	1,809,004	0.478	0.775	0.710
	08 OFFICES AND BANKS	105,673	534,000	0.290	0.729	0.667
	13 MOTOR VEHICLE RISKS	4,009	52,929	0.337	0.731	0.669
	14 OTHER NON-MANUF.	92,785	511,345	2.777	1.048	0.960
	15 STORAGE	33,677	155,900	0.000	0.878	0.804
	17 FOOD MANUFACTURING	267,244	1,489,386	0.536	0.718	0.657
	18 WOOD MANUFACTURING	548,046	2,967,851	0.136	0.637	0.584
	19 WEARING APPAREL	322,036	1,878,034	0.049	0.627	0.574
	20 CHEM. MANUFACTURING	93,939	622,958	0.020	0.781	0.715
	21 METAL MANUFACTURING	1,027,456	5,980,141	1.068	0.883	0.809
	22 OTHER MANUFACTURING	912,647	4,599,109	0.795	0.797	0.730
	TOTAL*	3,797,600	20,600,657	0.667	0.780	0.714

ENTIRE STATE

TENNESSEE

BASIC GROUP I RELATIVITY ANALYSIS
TABLE 5 - SUMMARY OF EXPERIENCE USED IN SIMULTANEOUS REVIEW

TYPE OF POLICY	CATEGORY	(1) ACCIDENT YEAR ENDING 06/30/17 AGGREGATE LOSS COSTS	(2) 5 - YEAR AGGREGATE LOSS COSTS	(3) 5 - YEAR EXPERIENCE RATIO	(4) Z-WEIGHTED EXPERIENCE RATIO	(5) Z-WEIGHTED RELATIVITY
38 MULTILINE CONTRACTORS	04 OTHER MERCANTILE RS	576,683	3,040,457	0.627	0.794	0.727
	08 OFFICES AND BANKS	299,325	1,585,846	1.309	0.898	0.822
	14 OTHER NON-MANUF.	99,019	402,749	2.184	0.932	0.854
	TOTAL*	975,027	5,029,052	0.994	0.840	0.769
TOTAL ALL TOPS*	01 APARTMENTS	1,658,462	8,225,096	1.377	1.290	1.181
	02 OTHER HABITATIONAL	1,552,085	7,189,472	3.414	2.388	2.187
	03 RESTAURANTS & BARS	1,774,623	9,005,238	0.932	1.098	1.006
	04 OTHER MERCANTILE RS	6,325,268	33,109,782	0.629	0.751	0.688
	05 PUBLIC BUILDINGS	215,461	1,171,262	0.695	1.053	0.964
	06 CHURCHES	2,737,936	16,176,418	1.487	1.375	1.259
	07 SCHOOLS	657,080	3,575,299	0.593	0.935	0.856
	08 OFFICES AND BANKS	3,504,168	17,585,683	0.748	0.916	0.839
	09 REC. FACILITIES	1,218,964	6,929,163	0.914	0.896	0.821
	10 HOTELS AND MOTELS	1,424,023	6,936,611	3.212	2.303	2.109
	11 HOSPITALS/NURS HOME	219,733	1,114,921	0.718	1.086	0.995
	13 MOTOR VEHICLE RISKS	1,397,386	7,930,372	0.652	0.842	0.771
	14 OTHER NON-MANUF.	1,356,012	6,645,461	0.887	0.866	0.794
	15 STORAGE	1,076,518	5,617,921	1.163	1.088	0.997
	17 FOOD MANUFACTURING	305,063	1,625,120	0.470	0.717	0.657
	18 WOOD MANUFACTURING	644,446	3,425,080	0.116	0.603	0.553
	19 WEARING APPAREL	332,733	1,934,887	0.047	0.633	0.580
	20 CHEM. MANUFACTURING	130,294	763,207	0.014	0.773	0.708
	21 METAL MANUFACTURING	1,175,832	6,860,869	2.169	0.991	0.907
	22 OTHER MANUFACTURING	1,056,680	5,489,806	0.710	0.773	0.708
	TOTAL*	28,762,767	151,311,668	1.154	1.092	1.000

* TOTALS IN COLUMNS (3), (4) & (5) ARE AVERAGES USING COLUMN (1) AS WEIGHTS.

TENNESSEE

SPECIAL CAUSES OF LOSS RELATIVITY ANALYSIS
TABLE 6 - SUMMARY OF EXPERIENCE USED IN SIMULTANEOUS REVIEW

TYPE OF POLICY	CATEGORY	(1) ACCIDENT YEAR ENDING 06/30/17 AGGREGATE LOSS COSTS	(2) 5 - YEAR AGGREGATE LOSS COSTS	(3) 5 - YEAR EXPERIENCE RATIO	(4) RELATIVITY
<hr/>					
10 MONOLINE	01 BUILDINGS	928,876	4,640,977	1.671	1.730
	02 RES. APTS. AND COND	11,913	65,179	0.365	0.378
	03 OFFICES	117,526	592,678	0.693	0.717
	04 MERCANTILE - HIGH	156,961	707,288	0.349	0.361
	05 MERCANTILE - MEDIUM	54,704	245,611	0.694	0.718
	06 MERCANTILE - LOW	29,910	144,910	2.038	2.110
	07 MOTELS AND HOTELS	8,655	39,159	0.383	0.396
	08 INSTITUTIONAL - HIG	39,718	579,795	0.112	0.116
	09 INSTITUTIONAL - LOW	28,466	166,470	2.283	2.363
	10 INDUST-PROC - HIGH	14,427	53,959	0.034	0.035
	11 INDUST-PROC - LOW	55,308	268,570	0.168	0.174
	12 SERVICE - HIGH	41,247	219,784	4.275	4.425
	13 SERVICE - LOW	53,037	287,627	0.928	0.961
	14 CONTRACTORS	14,786	71,777	1.459	1.510
	TOTAL*	1,555,534	8,083,784	1.364	1.412
31 MULTILINE	01 BUILDINGS	488,401	2,384,248	0.981	1.016
MOTEL/HOTEL	07 MOTELS AND HOTELS	133,374	679,330	0.596	0.617
	TOTAL*	621,775	3,063,578	0.898	0.930
32 MULTILINE	01 BUILDINGS	839,408	4,595,047	0.683	0.707
APARTMENT	02 RES. APTS. AND COND	299,747	1,294,811	0.262	0.271
	TOTAL*	1,139,155	5,889,858	0.572	0.592
33 MULTILINE	01 BUILDINGS	767,972	3,585,532	0.685	0.709
OFFICE	03 OFFICES	485,534	2,260,089	0.531	0.550
	04 MERCANTILE - HIGH	270	807	0.000	0.000
	08 INSTITUTIONAL - HIG	242	2,374	0.000	0.000
	11 INDUST-PROC - LOW	0	65	0.000	0.000
	12 SERVICE - HIGH	675	2,479	0.000	0.000
	TOTAL*	1,254,693	5,851,346	0.625	0.647

TENNESSEE

SPECIAL CAUSES OF LOSS RELATIVITY ANALYSIS
TABLE 6 - SUMMARY OF EXPERIENCE USED IN SIMULTANEOUS REVIEW

TYPE OF POLICY	CATEGORY	(1) ACCIDENT YEAR ENDING 06/30/17 AGGREGATE LOSS COSTS	(2) 5 - YEAR AGGREGATE LOSS COSTS	(3) 5 - YEAR EXPERIENCE RATIO	(4) RELATIVITY
34 MULTILINE MERCANTILE	01 BUILDINGS	1,937,757	9,837,053	1.165	1.206
	03 OFFICES	5,856	26,180	2.075	2.148
	04 MERCANTILE - HIGH	467,467	2,191,023	0.947	0.980
	05 MERCANTILE - MEDIUM	391,873	2,317,748	0.679	0.703
	06 MERCANTILE - LOW	189,016	972,174	0.892	0.923
	08 INSTITUTIONAL - HIG	197	569	0.000	0.000
	11 INDUST-PROC - LOW	1,294	2,864	0.000	0.000
	12 SERVICE - HIGH	9,767	48,673	2.374	2.458
	13 SERVICE - LOW	5,623	28,326	2.425	2.510
	14 CONTRACTORS	5,324	22,996	0.048	0.050
	TOTAL*	3,014,174	15,447,606	1.056	1.093
35 MULTILINE INSTITUTIONAL	01 BUILDINGS	1,965,576	11,740,979	1.179	1.220
	03 OFFICES	3,769	13,850	0.000	0.000
	08 INSTITUTIONAL - HIG	337,916	1,712,302	0.563	0.583
	09 INSTITUTIONAL - LOW	709,822	3,607,307	0.497	0.514
	12 SERVICE - HIGH	502	8,904	0.000	0.000
	13 SERVICE - LOW	116	227	0.000	0.000
	14 CONTRACTORS	980	6,447	0.000	0.000
	TOTAL*	3,018,681	17,090,016	0.948	0.981
36 MULTILINE SERVICES	01 BUILDINGS	1,465,005	7,391,847	1.153	1.194
	03 OFFICES	8,020	39,865	0.012	0.012
	04 MERCANTILE - HIGH	14,810	64,810	0.125	0.129
	05 MERCANTILE - MEDIUM	3,845	15,082	8.008	8.290
	06 MERCANTILE - LOW	1,709	9,866	0.942	0.975
	08 INSTITUTIONAL - HIG	16,145	96,504	0.000	0.000
	09 INSTITUTIONAL - LOW	31,613	150,172	0.000	0.000
	10 INDUST-PROC - HIGH	2,362	11,562	0.000	0.000
	11 INDUST-PROC - LOW	5,947	19,589	2.769	2.866
	12 SERVICE - HIGH	432,973	2,628,390	1.575	1.630
	13 SERVICE - LOW	211,456	1,126,857	0.953	0.987
	14 CONTRACTORS	7,581	41,400	0.248	0.257
	TOTAL*	2,201,466	11,595,944	1.193	1.235

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SPECIAL CAUSES OF LOSS RELATIVITY ANALYSIS
TABLE 6 - SUMMARY OF EXPERIENCE USED IN SIMULTANEOUS REVIEW

TYPE OF POLICY	CATEGORY	(1) ACCIDENT YEAR ENDING 06/30/17 AGGREGATE LOSS COSTS	(2) 5 - YEAR AGGREGATE LOSS COSTS	(3) 5 - YEAR EXPERIENCE RATIO	(4) RELATIVITY
37 MULTILINE INDUST/PROC	01 BUILDINGS	854,559	4,387,149	0.793	0.821
	03 OFFICES	1,906	10,651	0.183	0.189
	04 MERCANTILE - HIGH	7,366	31,556	0.080	0.083
	05 MERCANTILE - MEDIUM	223	1,272	0.000	0.000
	06 MERCANTILE - LOW	147	1,174	0.000	0.000
	10 INDUST-PROC - HIGH	104,904	589,538	0.523	0.541
	11 INDUST-PROC - LOW	461,314	2,495,609	0.718	0.743
	12 SERVICE - HIGH	1,124	2,936	1.753	1.815
	13 SERVICE - LOW	958	2,984	0.000	0.000
	14 CONTRACTORS	1,798	4,164	13.354	13.824
	TOTAL*	1,434,299	7,527,033	0.760	0.787
38 MULTILINE CONTRACTORS	01 BUILDINGS	342,675	1,660,858	0.507	0.525
	03 OFFICES	22,188	109,130	3.282	3.398
	04 MERCANTILE - HIGH	48,100	173,026	0.999	1.034
	05 MERCANTILE - MEDIUM	326	2,666	0.000	0.000
	06 MERCANTILE - LOW	9,274	33,744	0.279	0.289
	08 INSTITUTIONAL - HIG	409	790	0.000	0.000
	11 INDUST-PROC - LOW	261	361	0.000	0.000
	12 SERVICE - HIGH	1,651	5,811	0.172	0.178
	13 SERVICE - LOW	1,701	5,498	1.174	1.215
	14 CONTRACTORS	345,520	1,900,592	0.932	0.965
	TOTAL*	772,105	3,892,476	0.805	0.833
TOTAL ALL TOPS*	01 BUILDINGS	9,590,229	50,223,690	1.068	1.106
	02 RES. APTS. AND COND	311,660	1,359,990	0.266	0.275
	03 OFFICES	644,799	3,052,443	0.659	0.682
	04 MERCANTILE - HIGH	694,974	3,168,510	0.788	0.816
	05 MERCANTILE - MEDIUM	450,971	2,582,379	0.742	0.768
	06 MERCANTILE - LOW	230,056	1,161,868	1.016	1.052
	07 MOTELS AND HOTELS	142,029	718,489	0.583	0.604
	08 INSTITUTIONAL - HIG	394,627	2,392,334	0.493	0.510
	09 INSTITUTIONAL - LOW	769,901	3,923,949	0.543	0.562
	10 INDUST-PROC - HIGH	121,693	655,059	0.455	0.471
	11 INDUST-PROC - LOW	524,124	2,787,058	0.681	0.705
	12 SERVICE - HIGH	487,939	2,916,977	1.811	1.875
	13 SERVICE - LOW	272,891	1,451,519	0.976	1.010
	14 CONTRACTORS	375,989	2,047,376	0.983	1.018
	TOTAL*	15,011,882	78,441,641	0.966	1.000

* TOTALS IN COLUMNS (3) & (4) ARE AVERAGES USING COLUMN (1) AS WEIGHTS.

EXPLANATORY NOTES TO TABLES 5 AND 6

BASIC GROUP I/SPECIAL CAUSES OF LOSS RELATIVITY ANALYSIS SUMMARY OF EXPERIENCE USED IN SIMULTANEOUS REVIEW

INTRODUCTION The experience used in the relativity analysis and displayed in Tables 5 and 6 is the latest five years of accident year data as reported under the Commercial Statistical Plan. As in the overall review, loss costs have been adjusted to current ISO loss cost and prospective amount of insurance levels (with multiline aggregate loss costs adjusted additionally by the current implicit package modification factors). Incurred losses are adjusted to prospective cost levels, and are further adjusted by the Basic Group I large loss procedure and the Special Causes of Loss excess procedure. Losses have also been developed to their ultimate settlement value by application of loss development factors.

COLUMN (1) AGGREGATE LOSS COSTS

The latest year adjusted aggregate loss costs (adjusted as described above) are used as weights both in the calculation of any totals shown in this table and in the iterative formulae used in the simultaneous review procedure.

COLUMN (2) 5 - YEAR AGGREGATE LOSS COSTS

The combined five-year adjusted aggregate loss costs (adjusted as described above) are used to calculate the experience ratios in column (3).

COLUMN (3) FIVE-YEAR EXPERIENCE RATIOS

These are the ratio of the combined five-year adjusted incurred losses (adjusted as described above) to the combined five-year adjusted aggregate loss costs as shown in Column (2). Any totals which are shown are weighted averages using the adjusted aggregate loss costs in Column (1).

COLUMN (4) CREDIBILITY (Z) WEIGHTED EXPERIENCE RATIO

A credibility procedure is applied to the initial experience ratios in column (3) on a cell-by-cell basis prior to the simultaneous review procedure. The credibility values are calculated using an empirical Bayesian credibility procedure. In the following discussion, cell refers to an individual combination of TOP, rating group or category, and territory (where applicable).

EXPLANATORY NOTES TO TABLES 5 AND 6 (Cont'd)

COLUMN (4)
(Cont'd)

The important concept underlying empirical Bayesian credibility is that the credibility should depend both on the overall variation of the group of which the cell is a member, in addition to the variation of the yearly experience ratios for each cell. Therefore, if a cell's data is itself very stable then we would assign a relatively high credibility value, and vice versa.

The empirical Bayesian credibility formula for individual cell credibility is $Z = ((C-3)/C) (P/(P+K)) + (3/C)$. P equals the cell's five-year adjusted aggregate loss costs and C equals the number of unique combinations of rating variables (Territory, TOP and Rating Group/Category) within a class group. The K value is estimated from the underlying data using the empirical Bayes method and varies by TOP group and by territory where applicable. The three TOP groups used in this analysis are: Monoline (TOP 10), Premises (TOP's 31-35), and Operations (TOP's 36-38). The 3/C term corrects for the statistical bias associated with the credibility process. The minimum credibility that is possible is 3/C.

The calculated credibility (Z) is then applied to the five-year experience ratio with the complement of credibility applied to the credibility-weighted average of the individual experience ratios of the group, where group refers to the specified TOP/territory group. In a non-territory state, K values would be determined for the three TOP groups on an entire state basis.

COLUMN (5)

WEIGHTED RELATIVITIES

The relativities are the ratios of the five-year credibility-weighted experience ratios shown in column (4) to the average five-year credibility-weighted experience ratio for all TOP's, rating groups and territories (where applicable) combined. These relativities represent how much better or worse than average the experience for a given cell is. They are used along with the aggregate loss costs in column (1) as input for the simultaneous review procedure.

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TABLE 7 - BASIC GROUP II RELATIVITY ANALYSIS

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	ACCIDENT YEAR ENDING 06/30/16	ACCIDENT YEARS 2007-2016			Z	BALANCED	NORMALIZED	
	AGGR. LOSS COSTS AT CURRENT IMPLICIT PMF	EXPER. RATIO AT CURRENT PMF	FORMULA RELATIVITY (2) / 0.990	CREDI- BILITY Z C	WEIGHTED RELA- TIVITY D	FORMULA RELA- TIVITY E	FORMULA RELA- TIVITY F	INDICATED CHANGE G
MONOLINE	2,488,988	1.222	0.986	0.358	0.995	0.995	0.9938	
MULTILINE	19,325,215	1.241	1.002	0.821	1.002	1.002	1.0007	
COVERAGE	21,814,203	1.239	1.000			1.0012	B 0.9999	
MULTILINE TOP								
31 MOTEL/HOTEL	764,686	2.194	1.771	0.133	1.103	1.111	1.1097	11.7%
32 APARTMENT	1,540,094	1.503	1.213	0.261	1.056	1.063	1.0617	6.8%
33 OFFICE	1,220,470	0.837	0.676	0.179	0.942	0.949	0.9479	-4.6%
34 MERCANTILE	5,101,387	1.158	0.935	0.519	0.966	0.973	0.9718	-2.2%
35 INSTITUTIONAL	5,519,832	1.265	1.021	0.614	1.013	1.020	1.0188	2.5%
36 SERVICES	3,068,199	1.185	0.956	0.407	0.982	0.989	0.9878	-0.6%
37 INDUST/PROCESS	1,606,966	1.141	0.921	0.278	0.978	0.985	0.9838	-1.0%
38 CONTRACTORS	503,581	1.196	0.965	0.111	0.996	1.003	1.0018	0.8%
	19,325,215	1.241 B	1.002		0.995 B	1.002 B	1.0007 B	

B - AVERAGE WEIGHTED BY COLUMN (1)

C - CREDIBILITY = $P / (P + K)$ WHERE P REPRESENTS THE TOTAL 10 YEAR ADJUSTED LOSS COSTS AND K = 45,000,000

D - (5) = (3) * (4) + (1.000 - (4))

E - (6) = (5) * (1.002/0.995)

F - (7) = (6) / 1.0012

G - (8) = (NORMALIZED RELATIVITY FOR TOP) / (NORMALIZED MONOLINE RELATIVITY (TOP 10)) - 1

EXPLANATORY NOTES TO TABLE 7

BASIC GROUP II RELATIVITY ANALYSIS

OBJECTIVE

The explanations which follow clarify Table 7, the Basic Group II (BG II) relativity analysis. The purpose of this analysis is to:

- (1) determine the monoline loss cost level need;
- (2) determine indicated changes to the eight property Commercial Package Policy (CPP) Package Modification Factors (PMFs) based on Basic Group II experience.

COLUMN (1)

AGGREGATE LOSS COSTS

The latest accident year adjusted aggregate loss costs (adjusted in the same manner as in the overall review, i.e. to current manual loss cost and prospective amount of insurance levels, with multiline aggregate loss costs further adjusted to current IPMF level) are used as weights in the calculation of any totals shown in this table.

COLUMN (2)

10 - YEAR EXPERIENCE RATIO

These experience ratios are the ratio of the combined ten year CSP adjusted incurred losses (adjusted to current deductible and prospective cost levels including loss development, and also adjusted to reflect the BGII excess loss procedure) to the combined ten year CSP adjusted aggregate loss costs. Any totals which are shown are weighted averages using the aggregate loss costs in Column (1). When a dash is displayed in the column, it indicates that the indicated IPMF which resulted from this procedure was capped. The procedure which follows when capping occurs is described below.

COLUMN (3)

FORMULA RELATIVITY

The formula relativities are the ratios of the ten year experience ratios for the type of policy (either monoline vs. multiline or individual multiline programs) to the average ten year experience ratio for monoline and multiline combined. These relativities represent how much better or worse than average the experience for a given type of policy is. Again, any totals which are shown are weighted averages and the display of a dash indicates that the resulting IPMF was capped.

EXPLANATORY NOTES TO TABLE 7 (Cont'd)

COLUMN (3)
(Cont'd)

Unlike the BGI and SCL relativity analyses, the BGII analysis does not employ a simultaneous review procedure since a one way review is involved. That is, the overall loss cost change is only distributed across type of policy; no other rating variables are considered.

COLUMN (4)

CREDIBILITY

The credibility of the experience for each type of policy is determined from the formula:

$$Z = \frac{P}{P + K}$$

where P is the ten year adjusted aggregate loss costs for a given type of policy, and K is a constant loss cost volume of \$45,000,000.

COLUMN (5)

Z - WEIGHTED RELATIVITY

The weighted relativity is a weighted average of the individual TOP formula relativity and the overall (coverage) formula relativity using credibility and its complement as the respective weights. Therefore, to the extent that the indication for a type of policy is not fully credible, the complement of credibility is assigned to the statewide coverage level change.

COLUMN (6)

BALANCED FORMULA RELATIVITY

The individual multiline weighted relativities are balanced to the multiline weighted relativity level by applying a factor equal to the overall multiline relativity (i.e. the weighted relativity for all multiline combined which is shown on the top of the exhibit directly under the corresponding monoline relativity) divided by the average multiline relativity (i.e. the weighted average of the individual multiline weighted relativities which is shown on the bottom of the exhibit). When the indicated IPMF for a type of policy is capped, the balanced relativity is set equal to the product of the capped IPMF and the monoline balanced formula relativity, divided by the current IPMF.

EXPLANATORY NOTES TO TABLE 7 (Cont'd)

COLUMN (7)

NORMALIZED FORMULA RELATIVITY

The normalized relativity is equal to the balanced formula relativity divided by the average monoline/multiline combined relativity. This balances the average monoline/multiline relativity to unity.

COLUMN (8)

INDICATED LOSS COST CHANGES

The indicated multiline (by TOP) changes are calculated by taking the ratio of the TOP relativity (Column 7) to the monoline relativity.

For each type of policy the indicated IPMF is subject to a minimum value of 0.50 and a maximum value of 1.50. If an indicated IPMF falls outside one of those limits, it is capped at that amount, the aggregate loss costs for that type of policy are adjusted to the capped IPMF level, and the entire relativity review as described above is redone to take this into account. If an IPMF has been capped it is so noted in footnote A.

CRIME AND FIDELITY

The reviews for Burglary and Theft and for Fidelity are done on a multistate basis, combining both multiline and monoline experience. However, unlike other coverages included in a Commercial Package Policy, there is no simultaneous review procedure for either Burglary and Theft or for Fidelity in which separate loss cost level changes can be determined for multiline and monoline experience. In the absence of a simultaneous review procedure, we are unable to determine Type of Policy relativities with which to price CPP policies relative to monoline policies and therefore have assumed a multiline change of 0.0% and thus no change to the historic Crime or Fidelity IPMFs.

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TABLE 8

COMMERCIAL I.M. RELATIVITY ANALYSIS

(1)	(2)	(3)	(4)	(5)
TOP	BALANCED	CURRENT	INDICATED	SELECTED
10	RELATIVITY	IPMF	IPMF *	IPMF
	1.000	0.910	0.910	0.910
3X & 7X	1.000			

CLASSIFICATION

150	0.923
191	1.100
192	0.785
220	0.789
221	0.755
234	1.202
235	1.088
240	0.789
241	0.715
327	0.757
328	0.932
340	0.646
341	0.757
342	0.751
343	0.767
403	0.640
451	0.946
452	0.778
453	0.811
454	0.713
460	0.479
482	0.889
510	0.662
514	0.631
530	0.628
534	0.757

* COLUMN (4) = COLUMN (3) * (TOP 3X & 7X COLUMN (2) / TOP 10 COLUMN (2))

TENNESSEE

COMMERCIAL INLAND MARINE RELATIVITY ANALYSIS
TABLE 9 - SUMMARY OF EXPERIENCE USED IN SIMULTANEOUS REVIEW

<u>TYPE OF POLICY</u>	<u>RATING</u>	(1) <u>2016 AGGREGATE</u>	(2) <u>2012 - 2016</u>	(3) <u>FIVE-YEAR</u>	(4) <u>RELATIVITY</u>
<u>MONOLINE 10</u>	<u>GROUP</u>	<u>LOSS COSTS</u>	<u>AGGREGATE LOSS COSTS</u>	<u>EXP RATIO</u>	
	150	311,633	1,898,096	1.151	1.353
	191	5,446,492	15,816,054	1.032	1.213
	192	862,002	2,760,886	0.627	0.737
	220	5,112	87,903	5.716	6.717
	221	1,491	2,853	1.199	1.409
	234	5,224,155	20,144,072	0.600	0.705
	235	8,439,000	24,407,283	0.761	0.894
	240	928,183	3,685,254	0.656	0.771
	241	15,553	114,739	0.053	0.062
	327	18,917	91,546	0.000	0.000
	328	2,319,887	11,908,665	0.792	0.931
	340	40,688	87,993	0.000	0.000
	341	0	0	0.000	0.000
	342	19,188	65,375	0.555	0.652
	343	589	3,417	343.665	578.925
	403	1,600,852	5,771,545	0.345	0.405
	451	3,309,677	12,953,836	0.855	1.005
	452	34,702	137,467	1.628	1.913
	453	45,575	212,456	3.203	3.764
	454	164,836	745,300	0.734	0.863
	460	790,198	3,687,530	0.415	0.488
	482	839,364	2,841,134	0.986	1.159
	510	3,252	39,977	0.020	0.024
	514	446,469	1,612,361	0.339	0.398
	530	504,434	2,697,004	0.489	0.575
	534	0	0	0.000	0.000
	TOTAL#	31,372,249	111,772,746	0.785	0.922

TENNESSEE

COMMERCIAL INLAND MARINE RELATIVITY ANALYSIS
TABLE 9 - SUMMARY OF EXPERIENCE USED IN SIMULTANEOUS REVIEW

<u>TYPE OF POLICY</u>	<u>RATING GROUP</u>	(1)	(2)	(3)	(4)
		2016 AGGREGATE <u>LOSS COSTS</u>	2012 - 2016 <u>AGGREGATE LOSS COSTS</u>	FIVE-YEAR <u>EXP RATIO</u>	<u>RELATIVITY</u>
MULTILINE ## 3X & 7X	150	720,095	3,333,227	0.795	0.934
	191	603,595	2,704,067	0.774	0.910
	192	202,803	783,492	0.826	0.971
	220	6,439	28,512	1.526	1.793
	221	5,606	27,010	0.258	0.303
	234	12,669,443	52,530,286	1.162	1.365
	235	478,171	2,380,353	2.879	3.383
	240	11,651	60,061	1.983	2.330
	241	5,028	15,371	0.019	0.022
	327	2,942	18,862	0.000	0.000
	328	396	2,751	168.726	198.268
	340	32,828	132,609	0.016	0.019
	341	0	0	0.000	0.000
	342	6,082	30,546	0.000	0.000
	343	2,369	7,996	0.000	0.000
	403	479,869	2,417,275	0.739	0.868
	451	95,342	438,635	0.360	0.423
	452	38,096	206,651	0.535	0.629
	453	34,375	104,958	0.147	0.173
	454	228,162	984,183	0.274	0.322
	460	3,613,811	15,118,089	0.318	0.374
	482	127,496	760,961	0.693	0.814
	510	23,290	121,842	0.000	0.000
	514	63,169	300,866	0.073	0.086
	530	1,129,574	4,779,992	0.414	0.486
	534	0	0	0.000	0.000
	TOTAL#	20,580,632	87,288,595	0.952	1.119

REFLECTS CURRENT IPMF OF 0.910.

TENNESSEE

COMMERCIAL INLAND MARINE RELATIVITY ANALYSIS
TABLE 9 - SUMMARY OF EXPERIENCE USED IN SIMULTANEOUS REVIEW

<u>TYPE OF POLICY</u>	<u>RATING</u>	(1)	(2)	(3)	(4)
<u>TOTAL ALL TOPS#</u>	<u>GROUP</u>	<u>2016 AGGREGATE LOSS COSTS</u>	<u>2012 - 2016 AGGREGATE LOSS COSTS</u>	<u>FIVE-YEAR EXP RATIO</u>	<u>RELATIVITY</u>
	150	1,031,728	5,231,323	0.903	1.061
	191	6,050,087	18,520,121	1.006	1.182
	192	1,064,805	3,544,378	0.665	0.781
	220	11,551	116,415	3.380	3.972
	221	7,097	29,863	0.456	0.536
	234	17,893,598	72,674,358	0.998	1.173
	235	8,917,171	26,787,636	0.875	1.028
	240	939,834	3,745,315	0.672	0.790
	241	20,581	130,110	0.045	0.053
	327	21,859	110,408	0.000	0.000
	328	2,320,283	11,911,416	0.821	0.965
	340	73,516	220,602	0.007	0.008
	341	0	0	0.000	0.000
	342	25,270	95,921	0.421	0.495
	343	2,958	11,413	267.552	314.397
	403	2,080,721	8,188,820	0.436	0.512
	451	3,405,019	13,392,471	0.841	0.988
	452	72,798	344,118	1.056	1.241
	453	79,950	317,414	1.889	2.220
	454	392,998	1,729,483	0.467	0.549
	460	4,404,009	18,805,619	0.335	0.394
	482	966,860	3,602,095	0.947	1.113
	510	26,542	161,819	0.002	0.002
	514	509,638	1,913,227	0.306	0.360
	530	1,634,008	7,476,996	0.437	0.514
	534	0	0	0.000	0.000
	TOTAL#	51,952,881	199,061,341	0.851	1.000

TOTAL IN COLUMN (3) IS AN AVERAGE USING COLUMN (1) AS WEIGHTS.

EXPLANATORY NOTES TO TABLES 8 AND 9

COMMERCIAL INLAND MARINE RELATIVITY ANALYSIS

EXPERIENCE BASE

The Commercial Inland Marine IPMF review presented in the attached exhibits is based on a review of the latest available five years of monoline and multiline experience through accident year 2016 for all companies reporting data to Insurance Services Office under the Inland Marine Module of the Commercial Statistical Plan (CSP) and the Intermediate Level of the Commercial Minimum Statistical Plan (CMSP).

ADJUSTMENT OF DATA

Aggregate loss costs for each year in the review period have been adjusted to the levels which would have been earned had the current loss costs applied throughout the experience period. Reported premiums are adjusted to current level on an individual policy basis by applying a factor equal to all loss cost level changes that have been implemented subsequent to the policy being written. These adjusted premiums are then converted to a loss cost at current level. In order to eliminate the impact of company deviations from the manual level and individual risk modifications which were in effect at the time the policy was written, aggregate loss costs are further adjusted based on reported Rate Modification and Rate Departure Factors/Loss Cost Multipliers. Multiline aggregate loss costs are further adjusted to the level of the current Implicit Package Modification Factor (IPMF). Incurred losses are loaded for all loss adjustment expenses by applying a factor of 1.105.

RELATIVITY ANALYSIS

For Inland Marine coverage, a multistate IPMF level is determined via a two-way relativity analysis similar to the analysis used in Basic Group I. The experience for all reviewed classes is used to form class group relativities. These relativities for monoline and multiline (all programs combined) are determined through an iterative procedure. The ratio of the multiline relativity to the monoline relativity is multiplied by the current IPMF to yield the indicated IPMF. The indicated IPMF is subject to a minimum value of 0.500 and a maximum value of 1.500. If an indicated IPMF falls outside one of those limits, it is capped at that amount, the premiums for that Type of Policy (i.e., TOP 10 versus TOP 3X) are adjusted to the capped IPMF level, and the entire relativity review is performed again to take this into account.

TABLE 10
TENNESSEE
OWNERS, LANDLORDS AND TENANTS
BASIC LIMIT RELATIVE CHANGE ANALYSIS

	(1) BAILEY FORMULA RELATIV.	(2) CREDIBILITY Z	(3) Z-WTD RELATIV.	(4) BALANCED RELATIV.	(5) INDICATED CHANGE *
TOP					
10	1.018	0.249	1.004	1.014	
31	2.504	0.181	1.181	1.192	17.6%
32	0.935	0.095	0.994	1.003	-1.1%
33	1.009	0.196	1.002	1.011	-0.3%
34	0.778	0.304	0.927	0.936	-7.7%
35	1.140	0.202	1.027	1.037	2.3%
36	0.905	0.158	0.984	0.994	-2.0%
CLASS GROUP					
01	1.101	0.157	1.015	1.022	
02	1.024	0.230	1.006	1.012	
03	1.131	0.127	1.016	1.022	
04	0.708	0.037	0.987	0.994	
05	1.000	0.045	1.000	1.006	
06	0.594	0.075	0.962	0.968	
07	1.778	0.139	1.083	1.090	
08	0.355	0.043	0.956	0.963	
09	0.876	0.207	0.973	0.979	
10	1.004	0.201	1.001	1.007	
11	1.270	0.116	1.028	1.035	
12	0.874	0.268	0.965	0.971	
13	1.060	0.080	1.005	1.011	
16	0.346	0.023	0.976	0.982	
TERRITORY					
1	1.167	0.205	1.032	1.037	
3	0.996	0.295	0.999	1.003	
4	0.826	0.114	0.978	0.983	
5	0.969	0.398	0.987	0.992	

* INDICATED CHANGE = (BALANCED RELATIVITY FOR TOP) / (MONOLINE RELATIVITY (TOP 10)) - 1

TABLE 11
TENNESSEE
MANUFACTURERS AND CONTRACTORS
BASIC LIMIT RELATIVE CHANGE ANALYSIS

TOP	(1) BAILEY FORMULA RELATIV.	(2) CREDIBILITY Z	(3) Z-WTD RELATIV.	(4) BALANCED RELATIV.	(5) INDICATED CHANGE *
10	1.056	0.256	1.014	1.016	
33	2.257	0.045	1.037	1.040	2.4%
34	0.395	0.090	0.920	0.922	-9.3%
35	1.554	0.064	1.029	1.031	1.5%
36	0.807	0.132	0.972	0.974	-4.1%
37	1.841	0.098	1.062	1.064	4.7%
38	0.894	0.245	0.973	0.975	-4.0%
CLASS GROUP					
30	0.933	0.119	0.992	0.991	
31	1.539	0.196	1.088	1.087	
32	0.940	0.242	0.985	0.984	
33	1.403	0.131	1.045	1.045	
34	1.383	0.131	1.043	1.043	
35	0.815	0.034	0.993	0.992	
36	0.292	0.076	0.911	0.910	
37	0.327	0.051	0.945	0.944	
38	1.043	0.110	1.005	1.004	

* INDICATED CHANGE = (BALANCED RELATIVITY FOR TOP) / (MONOLINE RELATIVITY (TOP 10)) - 1

TABLE 12
TENNESSEE
OWNERS, LANDLORDS AND TENANTS
BASIC LIMIT RELATIVE CHANGE ANALYSIS

SUMMARY OF EXPERIENCE USED IN RELATIVE CHANGE ANALYSIS

TERRITORY	ALL	(1)	(2)	(3)	(4)	(5)	(6)
		FISCAL A.Y.E. 06/30/2017 AGGREGATE LOSS COSTS AT CURRENT LEVEL	FISCAL A.Y.E. 2013 - 2017 AGG LOSS COST CURRENT LEVEL	FIVE YEAR EXPERIENCE RATIO		NUMBER OF OCCURRENCES	BAL CELL RELATIV.
TYPE OF POLICY	CLASS GROUP				RELATIV.		
10 MONOLINE	01 FOOD&BEV. (RETAIL)	\$603,522	\$1,472,923	0.939		111	
	02 RESTAURANTS	440,180	2,063,433	1.069		159	
	03 STORES	158,502	680,549	1.202		46	
	04 VENDING & RENTAL	27,622	108,928	0.008		0	
	05 FOOD & BEV. DIST.	53,227	247,287	1.911		12	
	06 NON-FOOD&BEV.DIST	89,810	348,386	0.361		7	
	07 CLUBS,AMSMT&SPRTS	259,127	1,275,312	3.268		136	
	08 HEALTH CARE FACIL	25,710	177,120	0.131		3	
	09 HOTELS AND MOTELS	564,170	1,833,563	0.948		182	
	10 SCHLS & CHURCHES	306,399	1,514,141	0.924		63	
	11 APARTMENTS	766,745	2,640,469	1.363		99	
	12 BUILDINGS&OFFICES	1,408,591	5,628,501	0.732		268	
	13 MISC. PREMISES	352,959	917,015	1.045		32	
	TOTAL *	\$5,056,564	\$18,907,627	1.083		1,118	
31 MULT MOTEL/HOTEL	09 HOTELS AND MOTELS	\$831,111	\$3,652,370	2.218		591	
	TOTAL *	\$831,111	\$3,652,370	2.218		591	
32 MULT APARTMENT	11 APARTMENTS	\$525,016	\$2,473,361	1.235		147	
	12 BUILDINGS&OFFICES	73,003	296,760	0.591		18	
	TOTAL *	\$598,019	\$2,770,121	1.156		165	
33 MULT OFFICE	12 BUILDINGS&OFFICES	\$3,001,359	\$14,461,760	0.890		690	
	13 MISC. PREMISES	17,129	83,906	0.791		3	
	TOTAL *	\$3,018,488	\$14,545,666	0.890		693	
34 MULT MERCANTILE	01 FOOD&BEV. (RETAIL)	\$840,079	\$5,608,646	0.964		333	
	02 RESTAURANTS	2,425,953	11,919,342	0.796		798	
	03 STORES	900,915	3,784,686	0.834		223	
	04 VENDING & RENTAL	11,909	59,427	0.001		1	
	05 FOOD & BEV. DIST.	172,677	766,231	0.507		25	
	06 NON-FOOD&BEV.DIST	429,753	2,205,847	0.521		95	
	12 BUILDINGS&OFFICES	904,295	4,653,606	0.677		191	
	TOTAL *	\$5,685,581	\$28,997,785	0.777		1,666	

TABLE 12
TENNESSEE
OWNERS, LANDLORDS AND TENANTS
BASIC LIMIT RELATIVE CHANGE ANALYSIS

SUMMARY OF EXPERIENCE USED IN RELATIVE CHANGE ANALYSIS

TERRITORY	ALL	(1) FISCAL A.Y.E. 06/30/2017 AGGREGATE LOSS COSTS AT CURRENT LEVEL	(2) FISCAL A.Y.E. 2013 - 2017 AGG LOSS COST CURRENT LEVEL	(3) FIVE YEAR EXPERIENCE RATIO	(4) RELATIV.	(5) NUMBER OF OCCURRENCES	(6) BAL CELL RELATIV.
TYPE OF POLICY	CLASS GROUP						
35 MULT INSTITUT.	07 CLUBS,AMSMT&SPRTS	\$39,681	\$153,591	0.957		23	
	08 HEALTH CARE FACIL	169,788	957,926	0.442		31	
	10 SCHLS & CHURCHES	1,236,765	6,253,829	1.191		667	
	12 BUILDINGS&OFFICES	12,131	46,991	0.166		5	
	13 MISC. PREMISES	577	4,567	0.000		0	
	16 GOVT SUBDIVISIONS	191,632	956,124	0.386		10	
	TOTAL *	\$1,650,574	\$8,373,028	1.007		736	
36 MULT SERVICES	03 STORES	\$89,652	\$460,195	1.301		24	
	04 VENDING & RENTAL	128,376	560,580	0.855		24	
	07 CLUBS,AMSMT&SPRTS	589,266	2,434,794	1.022		190	
	08 HEALTH CARE FACIL	2,016	10,911	0.000		0	
	09 HOTELS AND MOTELS	27,385	139,800	0.149		3	
	10 SCHLS & CHURCHES	5,900	16,594	0.263		2	
	12 BUILDINGS&OFFICES	279,439	1,494,745	1.859		129	
	13 MISC. PREMISES	199,307	940,283	1.069		81	
	TOTAL *	\$1,321,341	\$6,057,902	1.186		453	
TOTAL ALL	TOP						
	01 FOOD&BEV. (RETAIL)	\$1,443,601	\$7,081,569	0.954		444	
	02 RESTAURANTS	2,866,133	13,982,775	0.838		957	
	03 STORES	1,149,069	4,925,430	0.921		293	
	04 VENDING & RENTAL	167,907	728,935	0.655		25	
	05 FOOD & BEV. DIST.	225,904	1,013,518	0.838		37	
	06 NON-FOOD&BEV.DIST	519,563	2,554,233	0.493		102	
	07 CLUBS,AMSMT&SPRTS	888,074	3,863,697	1.674		349	
	08 HEALTH CARE FACIL	197,514	1,145,957	0.397		34	
	09 HOTELS AND MOTELS	1,422,666	5,625,733	1.674		776	
	10 SCHLS & CHURCHES	1,549,064	7,784,564	1.135		732	
	11 APARTMENTS	1,291,761	5,113,830	1.311		246	
	12 BUILDINGS&OFFICES	5,678,818	26,582,363	0.859		1,301	
	13 MISC. PREMISES	569,972	1,945,771	1.045		116	
	16 GOVT SUBDIVISIONS	191,632	956,124	0.386		10	
	TOTAL *	\$18,161,678	\$83,304,499	1.010		5,422	

* TOTALS IN COLUMN (3) ARE AVERAGES USING COLUMN (1) AS WEIGHTS.

TABLE 13
TENNESSEE
MANUFACTURERS AND CONTRACTORS
BASIC LIMIT RELATIVE CHANGE ANALYSIS

SUMMARY OF EXPERIENCE USED IN RELATIVE CHANGE ANALYSIS

TYPE OF POLICY	CLASS GROUP	(1) FISCAL A.Y.E. 06/30/2017 AGGREGATE LOSS COSTS AT CURRENT LEVEL	(2) FISCAL A.Y.E. 2013 - 2017 AGG LOSS COST CURRENT LEVEL	(3) FIVE YEAR EXPERIENCE RATIO	(4) RELATIV.	(5) NUMBER OF OCCURRENCES	(6) BAL CELL RELATIV.
10 MONOLINE	30 SERVICE	\$315,255	\$1,324,780	0.818	0.842	87	1.007
	31 LIGHT CONTRACTING	517,249	2,423,763	1.663	1.711	309	1.105
	32 MEDIUM CONTRCTING	2,538,756	12,414,845	1.006	1.035	558	1.001
	33 HEAVY CONTRACTING	449,240	1,825,396	1.040	1.071	76	1.062
	34 DEALER OR DISTRIB	214,126	889,814	1.234	1.269	51	1.060
	35 LGT. MANUFACTURER	76,549	286,712	0.560	0.576	5	1.009
	36 MED. MANUFACTURER	330,690	1,324,976	0.469	0.482	22	0.925
	37 HVY. MANUFACTURER	129,553	620,707	0.242	0.249	8	0.959
	38 MISC. OPERATION	298,339	1,307,009	1.388	1.428	65	1.020
	TOTAL *	\$4,869,757	\$22,418,002	1.036		1,181	
33 MULT OFFICE	31 LIGHT CONTRACTING	\$5,576	\$132,265	0.798	0.821	4	1.131
	32 MEDIUM CONTRCTING	2,122	19,003	0.000	0.000	0	1.024
	33 HEAVY CONTRACTING	78,398	483,173	4.076	4.194	20	1.086
	38 MISC. OPERATION	76,932	301,691	1.513	1.557	13	1.044
	TOTAL *	\$163,028	\$936,132	2.701		37	
34 MULT MERCANTILE	30 SERVICE	\$44,646	\$250,225	0.155	0.160	2	0.914
	32 MEDIUM CONTRCTING	100,419	514,264	0.062	0.064	7	0.908
	34 DEALER OR DISTRIB	462,177	2,178,277	0.608	0.626	111	0.961
	36 MED. MANUFACTURER	31	545	0.000	0.000	0	0.839
	38 MISC. OPERATION	38,620	171,722	0.475	0.489	27	0.925
	TOTAL *	\$645,893	\$3,115,033	0.484		147	
35 MULT INSTITUT.	31 LIGHT CONTRACTING	\$10,487	\$45,586	0.719	0.740	2	1.121
	32 MEDIUM CONTRCTING	289,955	1,265,288	1.477	1.520	73	1.015
	TOTAL *	\$300,442	\$1,310,874	1.451		75	
36 MULT SERVICES	30 SERVICE	\$57,798	\$305,831	1.370	1.410	24	0.966
	31 LIGHT CONTRACTING	147,312	749,610	1.099	1.131	40	1.060
	32 MEDIUM CONTRCTING	120,845	571,395	0.047	0.048	4	0.959
	33 HEAVY CONTRACTING	23,670	85,766	2.489	2.561	4	1.018
	34 DEALER OR DISTRIB	487,166	2,237,652	1.045	1.075	140	1.016
	36 MED. MANUFACTURER	2,655	16,613	0.394	0.405	1	0.887
	38 MISC. OPERATION	563,957	2,303,954	0.905	0.931	103	0.978
	TOTAL *	\$1,403,403	\$6,270,821	0.945		316	

TABLE 13
 TENNESSEE
 MANUFACTURERS AND CONTRACTORS
 BASIC LIMIT RELATIVE CHANGE ANALYSIS

 SUMMARY OF EXPERIENCE USED IN RELATIVE CHANGE ANALYSIS

TYPE OF POLICY	CLASS GROUP	(1) FISCAL A.Y.E. 06/30/2017 AGGREGATE LOSS COSTS AT CURRENT LEVEL	(2) FISCAL A.Y.E. 2013 - 2017 AGG LOSS COST CURRENT LEVEL	(3) FIVE YEAR EXPERIENCE RATIO	(4) RELATIV.	(5) NUMBER OF OCCURRENCES	(6) BAL CELL RELATIV.
37 MULT INDUST/PROC.	31 LIGHT CONTRACTING	\$91	\$441	0.000	0.000	0	1.157
	32 MEDIUM CONTRCTING	77,015	486,184	0.998	1.027	18	1.048
	33 HEAVY CONTRACTING	37,817	208,089	5.068	5.215	9	1.112
	34 DEALER OR DISTRIB	5,031	55,879	7.079	7.284	8	1.109
	35 LGT. MANUFACTURER	129,752	517,785	1.621	1.668	17	1.056
	36 MED. MANUFACTURER	1,076,269	4,880,077	0.470	0.484	81	0.968
	37 HVY. MANUFACTURER	573,455	2,504,506	0.606	0.623	39	1.004
	38 MISC. OPERATION	27,858	118,890	0.287	0.295	4	1.068
	TOTAL *	\$1,927,288	\$8,771,851	0.714		176	
38 MULT CONTRACTORS	30 SERVICE	\$875,768	\$4,406,999	0.828	0.852	142	0.966
	31 LIGHT CONTRACTING	948,701	4,580,484	1.341	1.379	339	1.060
	32 MEDIUM CONTRCTING	2,141,498	10,329,514	0.840	0.864	396	0.960
	33 HEAVY CONTRACTING	1,002,998	4,761,351	1.190	1.224	203	1.019
	38 MISC. OPERATION	98,204	390,894	0.470	0.484	8	0.979
	TOTAL *	\$5,067,169	\$24,469,242	0.994		1,088	
TOTAL ALL TOP	30 SERVICE	\$1,293,467	\$6,287,835	0.827		255	
	31 LIGHT CONTRACTING	1,629,416	7,932,149	1.415		694	
	32 MEDIUM CONTRCTING	5,270,610	25,600,493	0.924		1,056	
	33 HEAVY CONTRACTING	1,592,123	7,363,775	1.401		312	
	34 DEALER OR DISTRIB	1,168,500	5,361,622	0.933		310	
	35 LGT. MANUFACTURER	206,301	804,497	1.227		22	
	36 MED. MANUFACTURER	1,409,645	6,222,211	0.470		104	
	37 HVY. MANUFACTURER	703,008	3,125,213	0.539		47	
	38 MISC. OPERATION	1,103,910	4,594,160	1.009		220	
	TOTAL *	\$14,376,980	\$67,291,955	0.972		3,020	

* TOTALS IN COLUMN (3) ARE AVERAGES USING COLUMN (1) AS WEIGHTS.

TABLE 14
TENNESSEE
PRODUCTS
BASIC LIMIT RELATIVE CHANGE ANALYSIS

	(1) BAILEY FORMULA RELATIV.	(2) CREDIBILITY Z	(3) Z-WTD RELATIV.	(4) BALANCED RELATIV.	(5) INDICATED CHANGE *
TOP					
10	0.908	0.385	0.964	0.961	
34	1.062	0.394	1.024	1.021	+ 6.2%
36	0.945	0.198	0.989	0.986	+ 2.6%
37	1.036	0.541	1.019	1.017	+ 5.8%
CLASS GROUP					
3	0.939	0.535	0.967	0.971	
4	1.062	0.425	1.026	1.029	
5	1.158	0.132	1.020	1.023	
6	0.984	0.341	0.995	0.998	
7	0.957	0.186	0.992	0.995	

* INDICATED CHANGE =
(BALANCED RELATIVITY FOR TOP) / (BALANCED MONOLINE (TOP 10) RELATIVITY) - 1

NOTE: THE INDICATED CHANGES BY TOP WERE FURTHER ADJUSTED BY THE FOLLOWING
DIFFERENTIALS: TOP 34: 0.976
TOP 36: 0.991
TOP 37: 0.919

TABLE 15
MULTISTATE
PRODUCTS
BASIC LIMIT RELATIVE CHANGE ANALYSIS

SUMMARY OF EXPERIENCE USED IN RELATIVE CHANGE ANALYSIS

TYPE OF POLICY	CLASS GROUP	(1) CALENDAR A.Y.E. 12/31/2016 AGGREGATE LOSS COSTS AT CURRENT LEVEL	(2) CALENDAR A.Y.E. 2012 - 2016 AGG LOSS COST CURRENT LEVEL	(3) FIVE YEAR EXPERIENCE RATIO	(4) RELATIV.	(5) NUMBER OF OCCURRENCES	(6) BAL CELL RELATIV.
10 MONOLINE	03 MAN,DLR,DSTFD/DRG	\$21,602,530	\$83,447,793	0.852	0.787	1,581	0.933
	04 DLR,DST-NOTFD/DRG	9,679,270	41,811,675	1.278	1.182	666	0.990
	05 MAN.NTFD/DRG (LOW)	1,692,267	7,299,063	0.767	0.709	64	0.984
	06 MAN.NTFD/DRG (MED)	10,333,678	44,740,395	0.937	0.867	509	0.960
	07 MAN.NTFD/DRG (HGH)	2,805,495	12,365,722	1.011	0.935	148	0.957
	TOTAL *	\$46,113,240	\$189,664,648	0.967		2,968	
34 MULT MERCANTILE	03 MAN,DLR,DSTFD/DRG	\$5,884,889	\$28,782,063	1.470	1.359	936	0.991
	04 DLR,DST-NOTFD/DRG	32,124,091	153,045,789	1.148	1.061	2,174	1.051
	06 MAN.NTFD/DRG (MED)	15,743	64,180	0.000	0.000	0	1.019
	TOTAL *	\$38,024,723	\$181,892,032	1.197		3,110	
36 MULT SERVICES	04 DLR,DST-NOTFD/DRG	\$3,789,140	\$17,974,549	1.089	1.007	780	1.016
	06 MAN.NTFD/DRG (MED)	60,544	302,132	0.755	0.698	8	0.985
	TOTAL *	\$3,849,684	\$18,276,681	1.084		788	
37 MULT INDUST/PROC.	03 MAN,DLR,DSTFD/DRG	\$18,758,762	\$92,830,487	1.011	0.935	3,210	0.987
	05 MAN.NTFD/DRG (LOW)	3,999,375	22,161,197	1.454	1.345	287	1.040
	06 MAN.NTFD/DRG (MED)	30,062,799	137,041,119	1.114	1.030	1,814	1.015
	07 MAN.NTFD/DRG (HGH)	8,087,615	39,304,471	1.047	0.968	549	1.012
	TOTAL *	\$60,908,551	\$291,337,274	1.096		5,860	
TOTAL ALL TOP	03 MAN,DLR,DSTFD/DRG	\$46,246,181	\$205,060,343	0.995		5,727	
	04 DLR,DST-NOTFD/DRG	45,592,501	212,832,013	1.171		3,620	
	05 MAN.NTFD/DRG (LOW)	5,691,642	29,460,260	1.250		351	
	06 MAN.NTFD/DRG (MED)	40,472,764	182,147,826	1.068		2,331	
	07 MAN.NTFD/DRG (HGH)	10,893,110	51,670,193	1.038		697	
	TOTAL *	\$148,896,198	\$681,170,635	1.082		12,726	

* TOTALS IN COLUMN (3) ARE AVERAGES USING COLUMN (1) AS WEIGHTS.

TABLE 16
 TENNESSEE
 LOCAL PRODUCTS/COMPLETED OPERATIONS
 BASIC LIMIT RELATIVE CHANGE ANALYSIS

TOP	(1) BAILEY FORMULA RELATIV.	(2) CREDIBILITY Z	(3) Z-WTD RELATIV.	(4) BALANCED RELATIV.	(5) INDICATED CHANGE *
10	1.007	0.764	1.005	1.004	
34	1.052	0.588	1.030	1.029	2.5%
36	1.019	0.533	1.010	1.009	0.5%
37	0.934	0.146	0.990	0.989	-1.5%
38	0.991	1.000	0.991	0.990	-1.4%
CLASS GROUP					
1	0.852	0.596	0.909	0.903	
2	1.029	0.508	1.015	1.008	
11	1.067	0.341	1.022	1.015	
12	1.022	1.000	1.022	1.015	
13	0.802	0.282	0.940	0.933	

* INDICATED CHANGE =
 (BALANCED RELATIVITY FOR TOP) / (BALANCED MONOLINE (TOP 10) RELATIVITY) - 1

TABLE 16C
MULTISTATE
LOCAL PRODUCTS/COMPLETED OPERATIONS
BASIC LIMIT RELATIVE CHANGE ANALYSIS *

STATE	(1) BAILEY FORMULA RELATIV	(2) CREDIBILITY Z	(3) Z-WTD RELATIV	(4) BALANCED RELATIV.
	1.324	0.399	1.119	1.116
	1.182	0.648	1.114	1.111
	1.139	0.606	1.082	1.079
	1.138	0.577	1.078	1.075
	1.449	0.200	1.077	1.074
	1.178	0.429	1.073	1.070
	1.279	0.243	1.062	1.059
	1.106	0.442	1.045	1.043
	1.134	0.344	1.044	1.041
	1.097	0.371	1.035	1.032
	1.093	0.381	1.034	1.032
	1.132	0.256	1.032	1.029
	1.211	0.162	1.031	1.029
	1.122	0.206	1.024	1.021
	1.042	0.508	1.021	1.018
	1.131	0.166	1.021	1.018
	1.046	0.224	1.010	1.007
	1.036	0.251	1.009	1.006
	1.009	0.291	1.003	1.000
	1.009	0.228	1.002	0.999
	1.001	0.274	1.000	0.998
	0.971	0.150	0.996	0.993
	0.983	0.474	0.992	0.989
	0.962	0.229	0.991	0.988
	0.975	0.363	0.991	0.988
	0.970	0.333	0.990	0.987
	0.957	0.247	0.989	0.987
	0.890	0.104	0.988	0.985
	0.966	0.347	0.988	0.985
	0.971	0.428	0.988	0.985
	0.955	0.336	0.985	0.982
	0.943	0.307	0.982	0.980
	0.951	0.462	0.977	0.975
	0.775	0.097	0.976	0.973
	0.841	0.161	0.973	0.970
	0.926	0.385	0.971	0.968
	0.938	0.512	0.968	0.965
	0.882	0.281	0.965	0.963
Tennessee	0.904	0.382	0.962	0.960
	0.835	0.230	0.959	0.957
	0.749	0.166	0.953	0.951
	0.527	0.076	0.952	0.950
	0.760	0.206	0.945	0.943
	0.841	0.337	0.943	0.941
	0.702	0.168	0.942	0.940
	0.682	0.164	0.939	0.937
	0.475	0.085	0.939	0.936
	0.853	0.407	0.937	0.935
	0.708	0.188	0.937	0.935
	0.812	0.350	0.930	0.927
	0.791	0.594	0.870	0.868
	0.714	0.502	0.844	0.842

* Sorted by balanced relative change.

TABLE 17
TENNESSEE
LOCAL PRODUCTS/COMPLETED OPERATIONS
BASIC LIMIT RELATIVE CHANGE ANALYSIS

SUMMARY OF EXPERIENCE USED IN RELATIVE CHANGE ANALYSIS

TYPE OF POLICY	CLASS GROUP	(1) CALENDAR A.Y.E. 12/31/2016 AGGREGATE LOSS COSTS AT CURRENT LEVEL	(2) CALENDAR A.Y.E. 2012 - 2016 AGG LOSS COST CURRENT LEVEL	(3) FIVE YEAR EXPERIENCE RATIO	(4) RELATIV.	(5) NUMBER OF OCCURRENCES	(6) BAL CELL RELATIV.
10 MONOLINE	01 RET. STRS-FOOD/DRG	\$53,611	\$217,774	1.551	1.615	23	0.870
	02 RET. STRS-NTFD/DRG	31,454	172,981	0.134	0.139	3	0.971
	11 COMP. OPS. (LOW)	107,596	444,359	0.070	0.073	3	0.979
	12 COMP. OPS. (MED)	1,974,440	8,530,104	0.759	0.790	183	0.978
	13 COMP. OPS. (HGH)	172,567	772,286	0.219	0.229	5	0.899
	TOTAL *	\$2,339,668	\$10,137,504	0.697		217	
34 MULT MERCANTILE	01 RET. STRS-FOOD/DRG	\$214,781	\$976,937	1.487	1.548	163	0.891
	02 RET. STRS-NTFD/DRG	130,135	566,507	1.085	1.129	27	0.995
	12 COMP. OPS. (MED)	42,090	215,360	5.318	5.538	3	1.002
	TOTAL *	\$387,006	\$1,758,804	1.768		193	
36 MULT SERVICES	01 RET. STRS-FOOD/DRG	\$40,016	\$175,470	1.073	1.117	16	0.874
	02 RET. STRS-NTFD/DRG	194,129	826,919	0.733	0.763	46	0.976
	11 COMP. OPS. (LOW)	36,299	144,597	1.042	1.085	9	0.983
	12 COMP. OPS. (MED)	89,481	439,310	1.178	1.227	23	0.983
	13 COMP. OPS. (HGH)	8,409	44,893	1.427	1.486	2	0.903
	TOTAL *	\$368,334	\$1,631,189	0.924		96	
37 MULT INDUST/PROC.	01 RET. STRS-FOOD/DRG	\$0	\$20	0.000	0.000	0	0.857
	11 COMP. OPS. (LOW)	317	1,564	0.000	0.000	0	0.964
	12 COMP. OPS. (MED)	69,068	336,557	3.676	3.828	10	0.963
	13 COMP. OPS. (HGH)	0	273	0.000	0.000	0	0.886
	TOTAL *	\$69,385	\$338,414	3.659		10	
38 MULT CONTRACTORS	11 COMP. OPS. (LOW)	\$188,976	\$884,139	1.403	1.461	14	0.964
	12 COMP. OPS. (MED)	3,031,268	14,892,730	0.878	0.914	269	0.964
	13 COMP. OPS. (HGH)	393,152	1,855,132	0.108	0.113	7	0.886
	TOTAL *	\$3,613,396	\$17,632,001	0.821		290	
TOTAL ALL TOP	01 RET. STRS-FOOD/DRG	\$308,408	\$1,370,201	1.444		202	
	02 RET. STRS-NTFD/DRG	355,718	1,566,407	0.808		76	
	11 COMP. OPS. (LOW)	333,188	1,474,659	0.932		26	
	12 COMP. OPS. (MED)	5,206,347	24,414,061	0.911		488	
	13 COMP. OPS. (HGH)	574,128	2,672,584	0.161		14	
	TOTAL *	\$6,777,789	\$31,497,912	0.867		806	

* TOTALS IN COLUMN (3) ARE AVERAGES USING COLUMN (1) AS WEIGHTS.

TABLE 18
MULTISTATE
LOCAL PRODUCTS/COMPLETED OPERATIONS
BASIC LIMIT RELATIVE CHANGE ANALYSIS

SUMMARY OF EXPERIENCE USED IN RELATIVE CHANGE ANALYSIS

TYPE OF POLICY	CLASS GROUP	(1) CALENDAR A.Y.E. 12/31/2016 AGGREGATE LOSS COSTS AT CURRENT LEVEL	(2) CALENDAR A.Y.E. 2012 - 2016 AGG LOSS COST CURRENT LEVEL	(3) FIVE YEAR EXPERIENCE RATIO	(4) RELATIV.	(5) NUMBER OF OCCURRENCES	(6) BAL CELL RELATIV.
10 MONOLINE	01 RET. STRS-FOOD/DRG	\$3,182,470	\$12,836,961	0.802		767	
	02 RET. STRS-NTFD/DRG	2,924,031	13,338,270	1.084		529	
	11 COMP. OPS. (LOW)	4,590,082	20,152,490	1.003		479	
	12 COMP. OPS. (MED)	89,807,887	402,728,315	1.020		6,697	
	13 COMP. OPS. (HGH)	9,315,286	47,098,800	0.569		288	
	TOTAL *	\$109,819,756	\$496,154,836	0.977		8,760	
34 MULT MERCANTILE	01 RET. STRS-FOOD/DRG	\$11,237,823	\$48,248,320	0.852		4,326	
	02 RET. STRS-NTFD/DRG	6,276,333	28,286,473	0.989		731	
	12 COMP. OPS. (MED)	2,175,660	11,035,192	1.187		135	
	TOTAL *	\$19,689,816	\$87,569,985	0.932		5,192	
36 MULT SERVICES	01 RET. STRS-FOOD/DRG	\$987,041	\$4,702,276	0.977		241	
	02 RET. STRS-NTFD/DRG	12,282,390	51,445,436	0.994		2,617	
	11 COMP. OPS. (LOW)	3,800,013	17,251,395	1.019		578	
	12 COMP. OPS. (MED)	4,607,097	22,619,676	0.874		739	
	13 COMP. OPS. (HGH)	1,134,525	6,178,738	1.015		99	
	TOTAL *	\$22,811,066	\$102,197,521	0.974		4,274	
37 MULT INDUST/PROC.	01 RET. STRS-FOOD/DRG	\$21,424	\$92,620	4.539		1	
	11 COMP. OPS. (LOW)	149,163	688,925	0.443		17	
	12 COMP. OPS. (MED)	4,495,367	21,801,280	0.926		305	
	13 COMP. OPS. (HGH)	51,766	453,230	0.413		1	
	TOTAL *	\$4,717,720	\$23,036,055	0.921		324	
38 MULT CONTRACTORS	11 COMP. OPS. (LOW)	\$9,456,335	\$43,962,865	1.026		677	
	12 COMP. OPS. (MED)	171,965,665	815,820,275	0.958		13,853	
	13 COMP. OPS. (HGH)	17,646,239	82,295,884	0.866		809	
	TOTAL *	\$199,068,239	\$942,079,024	0.953		15,339	
TOTAL ALL TOP	01 RET. STRS-FOOD/DRG	\$15,428,758	\$65,880,177	0.854		5,335	
	02 RET. STRS-NTFD/DRG	21,482,754	93,070,179	1.005		3,877	
	11 COMP. OPS. (LOW)	17,995,593	82,055,675	1.014		1,751	
	12 COMP. OPS. (MED)	273,051,676	1,274,004,738	0.978		21,729	
	13 COMP. OPS. (HGH)	28,147,816	136,026,652	0.773		1,197	
	TOTAL *	\$356,106,597	\$1,651,037,421	0.960		33,889	

* TOTALS IN COLUMN (3) ARE AVERAGES USING COLUMN (1) AS WEIGHTS.

EXPLANATORY NOTES TO GENERAL LIABILITY
RELATIVITY ANALYSIS - TABLES 10 THROUGH 18.

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 eight liability Commercial Package Policy (CPP) Package Modification Factors (PMFs) based on Premises/Operations and Products/Completed Operations data.

EXPERIENCE
BASE

The experience used in this relativity analysis is the latest five (5) years of accident year data, as reported under the Commercial Statistical Plan with aggregate loss costs adjusted to current loss cost level (multiline aggregate loss costs adjusted additionally by the current Implicit Package Modification Factors). Losses have been trended and developed in the Relativity Analysis. ALCCCL have been trended.

SIMULTANEOUS
DETERMINATION
OF RATING
VARIABLE
RELATIVITIES

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, relativities to the statewide 5-year experience ratio are calculated. These relativities are then used in a minimum bias iterative review procedure, which simultaneously determines the relativities for each rating variable.

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

RATING
VARIABLES
USED

For Premises/Operations and Products/Completed Operations, the rating variables used in the relativity analysis are as follows:

Manufacturers and Contractors -	type of policy and class group
Owners, Landlords and Tenants -	type of policy, territory and class group
Products -	type of policy and class group
Local Products/Completed Operations-	type of policy, state and class group

EXPLANATORY NOTES TO GENERAL LIABILITY
RELATIVITY ANALYSIS - TABLES 10 THROUGH 18.

ITERATIVE
PROCEDURE

The iterative technique referred to in the previous paragraph solves for a set of relativities 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 Owners, Landlords and Tenants:

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

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

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

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

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

TER_k is the relative change for the k^{th} territory;

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

type of policy, j^{th} class group and k^{th} territory;

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

j^{th} class group and k^{th} territory;

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 territories in the analysis;

EXPLANATORY NOTES TO GENERAL LIABILITY
RELATIVITY ANALYSIS - TABLES 10 THROUGH 18.

For Manufacturers and Contractors, and 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^{th} type of policy;

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

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

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

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

and j^{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 GENERAL LIABILITY
RELATIVITY ANALYSIS - TABLES 10 THROUGH 18.

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^{th} type of policy;

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

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

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

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

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

j^{th} class group and k^{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 GENERAL LIABILITY
RELATIVITY ANALYSIS - TABLES 10 THROUGH 18.

ITERATIVE
PROCEDURE
(Cont'd)

For example, for Owners, Landlords and Tenants, the procedure starts by inserting the actual relativities for type of policy and class group into the third formula to get a territory relativity. This result is then used with the class group relativity in the first formula to get a new type of policy relativity, which in turn is substituted along with the territory relativity into the second formula to get a new class group relativity. 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 $Z = \sqrt{P/18,000}$ for Owners, Landlords and Tenants, $Z = \sqrt{P/18,000}$ for Manufacturers and Contractors and $Z = \sqrt{P/20,000}$ for Products, where P is the 5 year occurrence total for a given class group, territory 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 relativities are then calculated as follows:

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

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

R is the class group, territory, state or type of policy relativity;

W is the credibility-weighted relativity.

The resulting credibility-weighted relativities are then balanced to assure that the average relativity remains at unity.

EXPLANATORY NOTES TO GENERAL LIABILITY
RELATIVITY ANALYSIS - TABLES 10 THROUGH 18.

MULTILINE
CONSIDERATIONS

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

$$\text{TOP y indicated IPMF} = \frac{(\text{TOP y current IPMF}) \times (\text{TOP y relativity})}{(\text{monoline relativity})}$$

For each CPP Type of Policy the indicated IPMF is subject to a minimum value of 0.50 and a maximum value of 1.50. If an indicated IPMF falls outside one of those limits, it is capped at that amount, the aggregate loss costs for that Type of Policy are adjusted to the capped IPMF level, and the entire relativity review as described above is re-performed to take this into account.

COMMERCIAL PACKAGE POLICY

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SECTION C - REVISED CLM DIVISION NINE

Commercial Package Policy Package Modification Factors (Revised MLCP-PMF-1) C-2

COMMERCIAL LINES MANUAL
DIVISION NINE – MULTIPLE LINE
COMMERCIAL PACKAGE POLICY
PACKAGE MODIFICATION FACTORS

TENNESSEE (41)

PACKAGE MODIFICATION FACTORS

Package Modification Assignment (PMA)	Premium From CLM Division			
	Two	Three, Four, Five, Eight Property	Four, Six Liability	All Other Divisions
Apartment House	.90	.99	1.00	1.00
Contractors	.90	.91	.81	1.00
Industrial & Processing	.90	1.00	1.00	1.00
Institutional	.90	.98	.81	1.00
Mercantile	.90	.93	.92	1.00
Motel/Hotel	.90	1.00	1.00	1.00
Office	.90	.89	1.00	1.00
Service	.90	.95	.98	1.00

Table 1. Package Modification Factors