

LOSS COSTS – IMPLEMENTATION

MAY 29, 2019

BUSINESSOWNERS

LI-BP-2019-048

## CONNECTICUT BUSINESSOWNERS ADVISORY PROSPECTIVE LOSS COST REVISION TO BE IMPLEMENTED

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### KEY MESSAGE

Revised loss costs representing a combined -7.8% statewide change to be implemented.

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### BACKGROUND

In circular [LI-BP-2019-032](#), we provided you with information about the Businessowners loss cost experience review.

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### ISO ACTION

We are implementing BP-2019-RLA1, which presents a review of Businessowners loss cost experience. Refer to the attachment(s) for complete details.

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### SUPPLEMENTARY INFORMATION

We are including the following supplementary information:

- A Connecticut Supplement, which provides additional information on the loss costs level experience review.
- The loss cost exhibits contained in this filing in a Microsoft® Excel workbook.

NOTE: This supplementary information is **not** part of the experience review document and, in states where we are making a filing, is **not** part of the filing.

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### EFFECTIVE DATE

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

These changes are applicable to all policies effective on or after February 1, 2020.

This effective date applies only to those insurers who have filed their Businessowners loss cost adjustments to be automatically applicable to future ISO loss cost revisions.

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### COMPANY ACTION

You must independently determine the final rates you will use. The action, if any, you must take in response to this filing is dependent upon how you filed to have your loss cost adjustments apply to subsequent revisions of ISO loss costs. Any submission you make with respect to this revision must comply with applicable regulatory filing requirements.

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

WE WILL SUBMIT OUR REFERENCE FILING TO THE INSURANCE DEPARTMENT ON DECEMBER 31, 2019. ANY SUBMISSION YOU MAY MAKE WITH THE INSURANCE DEPARTMENT WITH RESPECT TO THIS FILING SHOULD NOT BE SUBMITTED PRIOR TO THIS DATE.

In all correspondence with the Insurance Department on this revision, you should refer to ISO Reference Filing Number [BP-2019-RLA1](#), NOT this circular number.

CAUTION: This reference filing revises only certain advisory prospective loss costs for Businessowners in this state. In determining whether or not to revise your rates, you should consider the application of your loss cost adjustments to any loss costs not included in this revision.

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## **RATING SOFTWARE IMPACT**

No new attributes are being introduced with this revision.

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## **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.

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## **REVISION DISTRIBUTION**

We will issue a Notice to Manualholders with an edition date of 2-20 (or the earliest possible subsequent date), along with any new and/or revised manual pages.

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## **REFERENCE(S)**

- [LI-BP-2019-032](#) (04/15/2019) Businessowners Policy Experience Reviewed By Staff
- [LI-CL-2018-044](#) (11/27/2018) Revised Lead Time Requirements Listing

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## **ATTACHMENT(S)**

- Filing [BP-2019-RLA1](#)
- Connecticut Supplement
- Excel Workbook

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## **FILES AVAILABLE FOR DOWNLOAD**

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

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

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## DATA QUALITY

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

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## ACKNOWLEDGMENT OF ACTUARIAL QUALIFICATIONS

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

I, David Terné, am a Managing Director of Strategic Actuarial Operations for ISO and I, Erin Davidson, am an Actuarial Product Director for Businessowners 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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## AIR WORLDWIDE CORPORATION

This filing incorporates the use of AIR Worldwide Corporation's (AIR) tropical cyclone model to produce hurricane modeled loss costs as part of the Extended Coverage ratemaking procedure. AIR is the world's premier risk modeling and technology firm specializing in risks associated with natural and man-made catastrophes, weather and climate. AIR has developed models covering all major natural hazards, including hurricanes and earthquakes, and man-made perils (terrorist events) for more than 40 countries throughout North America, the Caribbean, South America, Europe, and the Asia-Pacific region. AIR provides a full suite of integrated products for underwriting, pricing, portfolio management, risk transfer and financing.

For more information concerning AIR Worldwide Corporation, please refer to the Contact Information block.

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## CONTACT INFORMATION

If you have any questions concerning:

- The actuarial content of this circular, please contact:  
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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](http://www.verisk.com/iso). To keep abreast of the latest Insurance Lines Services updates, view [www.verisk.com/ils](http://www.verisk.com/ils).

CONNECTICUT

ADVISORY LOSS COST LEVEL REVIEW - BUSINESSOWNERS

FILING BP-2019-RLA1

EXECUTIVE SUMMARY

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PURPOSE

This document:

- revises advisory prospective loss costs for the major Businessowners coverages. These loss costs represent a combined -7.8% statewide change from the current loss costs for all classes.
- incorporates hurricane modeled loss costs based on Touchstone Version 5.0 of AIR Worldwide Corporation's (AIR) tropical cyclone model, including modeled loss costs resulting from hurricane losses due to business interruption (time element).
- provides the analyses used to derive these advisory loss costs.

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DEFINITION OF  
THE ISO  
ADVISORY  
PROSPECTIVE  
LOSS COST

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

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LOSS COST  
LEVEL CHANGES

The statewide indicated and filed loss cost level changes are:

	<u>Indicated</u>	<u>Filed</u>
Lessors/Occupants	-12.6%	-12.3%
Sales	-28.5%	-15.0%
Payroll	-8.4%	-8.4%
Liability Sub-Total	-14.8%	-12.0%
Property Sub-Total	-6.3%	-6.3%
TOTAL	-8.5%	-7.8%

Indicated and filed loss cost level changes are changes from the current loss costs.

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INDICATED VS  
FILED

Indicated and filed statewide changes may differ due to the rounding of the filed territory loss costs and the territory weights used to calculate the statewide loss cost level changes. For Liability Sales, a capped change of -15.0% was selected to mitigate swings in loss costs.

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ADVISORY LOSS COST LEVEL REVIEW - BUSINESSOWNERS

FILING BP-2019-RLA1

EXECUTIVE SUMMARY

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HISTORICAL  
SOURCE DATA

The data used in this review is based on accident year experience through 3/31/2018 (evaluated as of 6/30/2018) of ISO reporting companies. Hurricane loss costs are generated by a computer model based on over 100 years of hurricane data.

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WINDSTORM OR HAIL  
EXCLUSION CREDITS

The windstorm or hail exclusion credits shown on Table 29.A.39.d.(LC) in Section D are calculated by taking a percentage of the base loss cost. This percentage is based on the ratio of adjusted wind and hail losses to adjusted total property losses.

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HURRICANE  
MODEL

The indications developed in this review are based on Touchstone Version 5.0 of AIR Worldwide Corporation's (AIR) tropical cyclone model. The historical dataset from which the stochastic hurricane catalog is derived has been updated to incorporate the most recent release of the North Atlantic Hurricane Database (HURDAT2). This version also includes modeled loss costs based on hurricane losses due to business interruption (time element).

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PRIOR ISO  
REVISIONS

The latest loss cost revisions in this state are:

<u>Filing</u>	BP-2018-RLA1	BP-2017-RLA1	BP-2016-RLA1
<u>Dates</u>			
Effective	1/1/2019	1/1/2018	4/1/2017
<u>Changes</u>			
Indicated	-0.8%	-4.3%	+4.2%
Filed	-0.8%	-4.3%	+4.2%
Implemented	-0.8%	-4.3%	+4.2%

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CHANGES TO  
METHODOLOGY

In the past, ISO used a combined trend factor that applied to both Lessors and Occupants. After additional analysis was completed during this review, we determined that separate trend factors for Lessors and Occupants would be more beneficial in determining loss costs for both Lessors and Occupants. See Section C for further information regarding the trend factors.

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## CONNECTICUT

### ADVISORY LOSS COST LEVEL REVIEW - BUSINESSOWNERS

FILING BP-2019-RLA1

#### EXECUTIVE SUMMARY

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##### ADJUSTMENTS TO REPORTED EXPERIENCE

To adjust the loss and exposure data to levels expected to prevail during the period when the revised loss costs will be in effect, historical losses and exposures have been multiplied by trend factors. These trend factors are based on the changes in claim cost, claim frequency and inflation sensitive exposure base that are expected to arise between the historical experience period and prospective period during which the revised loss costs will be in effect.

Standard actuarial procedures have been used in calculating the loss costs including adjusting the liability losses to ultimate settlement level and for all coverages, reflecting all loss adjustment expenses. In addition, smoothing procedures have been applied to recognize the potential for large or excess losses.

To trend losses and exposures to a future level, a prospective effective date must be assumed. In this review, the assumed effective date is September 1, 2019.

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##### TEN LARGEST GROUPS IN ISO DATABASE

Insurers are listed in descending order based on the percent of statewide Businessowners written premium volume from ISO's 2017 Premium Reporting Form. The Premium Reporting Form is submitted by all companies affiliated to report statistics to ISO. This list does not necessarily correspond to the ten largest groups included in the calculation of the statewide advisory loss cost level changes shown on Tables B1-1 and B1-2.

1. Travelers Insurance Commercial Lines
  2. The Hartford
  3. National Grange Mutual Insurance Company
  4. Vermont Mutual Insurance Company
  5. Andover Companies
  6. Liberty Mutual Insurance Company
  7. Quincy Mutual Fire Insurance Company
  8. Nationwide Insurance Company
  9. Guard Insurance Group
  10. Selective Insurance Group
- 

##### SIZE OF ISO DATABASE

The market share of ISO participating insurers cannot be measured by Annual Statement Page 15 written premium because Businessowners data is combined with Commercial Package Policy data. The market share of ISO participating insurers as measured by the Premium Reporting Form written premium for the year ending 12/31/2017 is:

Businessowners: 55.2%

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ADVISORY LOSS COST LEVEL REVIEW - BUSINESSOWNERS

FILING BP-2019-RLA1

EXECUTIVE SUMMARY

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COMPANY  
DECISION

We encourage each insurer to decide independently whether the judgments made and the procedures or data used by ISO in developing the loss costs contained herein are appropriate for its use. We have included within this document the information upon which ISO relied in order to enable companies to make such independent judgments.

The data underlying the enclosed material comes from companies reporting to Insurance Services Office, Inc. Therefore, the ISO experience permits the establishment of a much broader statistical ratemaking base than could be employed by using any individual company's data. A broader data base enhances the validity of ratemaking analysis derived therefrom. At the same time, however, an individual company may benefit from a comparison of its own experience to the aggregate ISO experience, and may reach valid conclusions with respect to the manner in which its own costs can be expected to differ from ISO's projections based on the aggregate data.

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

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

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 BUSINESSOWNERS  
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SECTION A – SCOPE OF REVISION

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TABLE A1

LOSS COST LEVEL CHANGE SUMMARY

	Statewide Aggregate Loss Costs <u>at Current Level</u>	<u>Loss Cost Level Change</u>	
		Indicated	Filed
<u>Property Total</u>	\$ 41,156,651	-6.3%	-6.3%
Lessors/Occupants	\$ 9,073,885	-12.6%	-12.3%
Sales	2,787,997	-28.5%	-15.0%
Payroll	2,879,401	-8.4%	-8.4%
<u>Liability Total</u>	\$ 14,741,283	-14.8%	-12.0%
 GRAND TOTAL	 \$ 55,897,934	 -8.5%	 -7.8%

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TABLE A2-1  
LOSS COST LEVEL CHANGES  
PROPERTY

Buildings

<u>Territory</u>	<u>Aggregate Loss Costs at Current Level(a)</u>	<u>Loss Cost Level Changes</u>
701	\$ 1,325,491	-2.0%
703	1,496,227	+4.0%
704	3,915,210	-4.8%
705	1,446,588	+4.2%
706	2,046,638	-0.7%
707	16,687,306	-6.5%
708	1,576,844	-1.3%
709	810,898	-2.5%
Statewide Total	\$ 29,305,202	-4.2%

Business Pers. Prop.

<u>Territory</u>	<u>Aggregate Loss Costs at Current Level(a)</u>	<u>Loss Cost Level Changes</u>
701	\$ 507,871	-8.2%
703	802,079	-3.2%
704	1,573,496	-11.2%
705	466,585	-2.6%
706	979,754	-7.8%
707	6,939,372	-14.1%
708	442,181	-8.2%
709	140,111	-9.4%
Statewide Total	\$ 11,851,449	-11.5%

All Property

<u>Territory</u>	<u>Aggregate Loss Costs at Current Level(a)</u>	<u>Loss Cost Level Changes</u>
701	\$ 1,833,362	-3.7%
703	2,298,306	+1.5%
704	5,488,706	-6.6%
705	1,913,173	+2.5%
706	3,026,392	-3.0%
707	23,626,678	-8.7%
708	2,019,025	-2.8%
709	951,009	-3.5%
Statewide Total	\$ 41,156,651	-6.3%

(a) Includes the hurricane portion of the current loss costs.

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 TABLE A2-2  
 LOSS COST LEVEL CHANGES  
 LIABILITY

Lessors

<u>Territory</u>	Aggregate Loss Costs at Current Level	Loss Cost Level Changes
701	\$ 175,190	-4.8%
703	177,211	-6.1%
704	492,822	-8.9%
705	177,577	0.0%
706	152,722	0.0%
707	1,723,918	-2.9%
708	169,320	0.0%
709	122,348	-2.0%
Statewide Total	\$ 3,191,108	-3.6%

Occupants

<u>Territory</u>	Aggregate Loss Costs at Current Level	Loss Cost Level Changes
701	\$ 367,149	-17.8%
703	402,828	-18.2%
704	965,968	-22.0%
705	223,835	-14.0%
706	330,628	-15.0%
707	3,387,557	-16.0%
708	145,370	-13.4%
709	59,442	-15.2%
Statewide Total	\$ 5,882,777	-17.0%

Lessors/Occupants

<u>Territory</u>	Aggregate Loss Costs at Current Level	Loss Cost Level Changes
701	\$ 542,339	-13.6%
703	580,039	-14.5%
704	1,458,790	-17.6%
705	401,412	-7.8%
706	483,350	-10.3%
707	5,111,475	-11.6%
708	314,690	-6.2%
709	181,790	-6.3%
Statewide Total	\$ 9,073,885	-12.3% #

# Due to rounding of the loss costs to three decimal places, this change varies from the overall statewide change on Table B1-2.

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TABLE A2-3

LOSS COST LEVEL CHANGES

LIABILITY-SALES

	Statewide Aggregate Loss Costs <u>at Current Level</u>	Loss Cost <u>Level Changes</u>
Statewide Total	\$ 2,787,997	-15.0%

LIABILITY-PAYROLL

	Statewide Aggregate Loss Costs <u>at Current Level</u>	Loss Cost <u>Level Changes</u>
Statewide Total	\$ 2,879,401	-8.4%

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TABLE A3  
PRESENT AND REVISED LOSS COSTS

<u>PRESENT LOSS COSTS</u>			<u>REVISED LOSS COSTS</u>		
<u>Territory</u>	PROPERTY(a)		<u>Territory</u>	PROPERTY(a)	
	<u>Buildings</u>	Business Personal <u>Property</u>		<u>Buildings</u>	Business Personal <u>Property</u>
701	0.398	0.511	701	0.390	0.469
703	0.252	0.281	703	0.262	0.272
704	0.335	0.410	704	0.319	0.364
705	0.307	0.430	705	0.320	0.419
706	0.429	0.510	706	0.426	0.470
707	0.307	0.355	707	0.287	0.305
708	0.396	0.538	708	0.391	0.494
709	0.322	0.416	709	0.314	0.377

  

<u>LIABILITY</u>			<u>LIABILITY</u>		
<u>Territory</u>	<u>Lessors</u>	<u>Occupants</u>	<u>Territory</u>	<u>Lessors</u>	<u>Occupants</u>
701	0.083	0.152	701	0.079	0.125
703	0.033	0.066	703	0.031	0.054
704	0.056	0.123	704	0.051	0.096
705	0.052	0.100	705	0.052	0.086
706	0.040	0.080	706	0.040	0.068
707	0.035	0.081	707	0.034	0.068
708	0.058	0.082	708	0.058	0.071
709	0.050	0.092	709	0.049	0.078

  

<u>LIABILITY</u>			<u>LIABILITY</u>		
<u>Territory</u>	<u>Sales</u>	<u>Payroll</u>	<u>Territory</u>	<u>Sales</u>	<u>Payroll</u>
701	6.902	7.269	701	5.867	6.658
703	3.552	7.179	703	3.019	6.576
704	4.562	7.275	704	3.878	6.664
705	4.861	7.303	705	4.132	6.690
706	2.868	7.226	706	2.438	6.619
707	4.690	7.352	707	3.987	6.734
708	4.095	7.296	708	3.481	6.683
709	4.361	7.269	709	3.707	6.658

(a) Includes the hurricane portion of the loss costs.

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SECTION B – CALCULATION OF CHANGES

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OVERVIEW OF ISO ACTUARIAL PROCEDURES

INTRODUCTION

Businessowners advisory prospective loss costs are determined by evaluating the adequacy of the current loss costs to pay for our best estimate of losses and all loss adjustment expenses that will be incurred in the prospective (or future) period.

STEP 1:  
CALCULATION  
OF STATEWIDE  
NON-HURRICANE  
LOSS COST  
INDICATION

The first step in this process is the calculation of the statewide non-hurricane loss cost indication. In other words, what percentage change on average must be made to the current loss costs in order to achieve adequacy for the prospective conditions? The percentage change is presented on the table labeled "Calculation of Statewide Advisory Non-Hurricane Loss Cost Level Change." Due to the revised extended coverage ratemaking procedure which incorporates modeled hurricane loss costs, the statewide loss cost level review is based on non-hurricane losses and non-hurricane aggregate loss costs. Subsequently, it is used to determine the prospective cost level of the non-hurricane portion of the revised loss costs. For Liability, separate calculations are done for classes with amount of insurance, sales, and payroll exposure bases. For sales and payroll classes, the loss cost indication is based on multistate data due to the paucity of data on a statewide basis.

STEP 2:  
RELATIVE CHANGE  
ANALYSIS OF  
STATEWIDE NON-  
HURRICANE LOSS COST  
INDICATION

For Property, ISO calculates relative changes by territory and coverage using a minimum bias iterative technique. For Liability, an equivalent technique is used to calculate relative changes by territory and by lessors vs. occupants. For further explanation of this minimum bias technique, refer to the "Explanatory Notes To Relative Change Analysis" in Section B.

STEP 3:  
APPLICATION OF  
PERCENTAGE  
CHANGES

The last step is the calculation of the advisory prospective loss costs. For Liability sales and payroll, this is achieved by simply applying the indicated changes to the current loss costs. For Property and Liability lessors/occupants, this is achieved by applying the product of the indicated non-hurricane changes and the combined relativity changes to the current loss costs. Percent changes for individual loss costs may be capped to mitigate loss cost swings. (See footnotes for Table A2 for a description of the capping, if any, for individual loss costs.) If capping is applied, a "build-back" factor is utilized to ensure that the selected overall changes for property and liability are achieved. After the build-back procedure is completed, the revised loss costs are added to the expected hurricane modeled loss costs (see Section D). The resulting loss costs are displayed in Section E.

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OVERVIEW OF ACTUARIAL PROCEDURES

STEP 1 - CALCULATION OF STATEWIDE ADVISORY NON-HURRICANE  
LOSS COST LEVEL CHANGES

OBJECTIVE	The objective of this procedure is to determine the indicated statewide advisory non-hurricane loss cost level change. This procedure answers the question: what percentage change must be made on average to the current loss costs, excluding the hurricane portion, in order for them to be adequate to cover non-hurricane indemnity losses and all associated loss adjustment expenses incurred in the prospective period in which the revised loss costs will be used? The statewide non-hurricane loss cost level change is used to determine the change in current level to calculate the non-hurricane portion of the revised loss costs.
DESCRIPTION	This procedure compares the developed (for liability) and trended non-hurricane incurred losses and loss adjustment expenses with the aggregate loss costs, excluding the hurricane portion, at current loss cost level, which is the aggregate amount that would have been collected if the current loss costs were used during the experience period. This experience ratio (losses and all loss adjustment expenses divided by aggregate loss costs) is calculated for five years and a weighted average is calculated. The average experience ratio is then credibility-weighted with an expected experience ratio in order to minimize the impact of random variation in the observed losses. This credibility-weighted experience ratio is the indicated statewide advisory non-hurricane loss cost level change in decimal form.
EXPERIENCE INCLUDED	The review of the statewide loss cost level is based on the latest available experience on Businessowners policies reported to ISO under the Commercial Statistical Plan (CSP) and the Commercial Minimum Statistical Plan (CMSP). In this review we have used accident year data through March 31, 2018 evaluated as of June 30, 2018.
EXPERIENCE EXCLUDED	Experience reported on miscellaneous coverages such as Employee Dishonesty, Outdoor Signs, Glass, Money and Securities and Hired and Non-Owned Auto Liability is not part of this review. Liability indemnity loss experience in excess of the \$300,000 basic coverage has also been excluded from the review. For extended coverage, property damage and time element losses incurred during the month of a hurricane reflected in the modeled hurricane loss costs have been excluded from the database and replaced with average non-hurricane losses by month and territory.

CONNECTICUT  
BUSINESSOWNERS - PROPERTY

TABLE B1-1

CALCULATION OF STATEWIDE ADVISORY LOSS COST LEVEL CHANGE

Fiscal Year Ending	(1)	(2)	(3)	(3a)	(3b)	(3c)	(3d)
	Aggregate Loss Costs at Current Level(a)	Incurring Losses and Loss Adjustment Expenses(b)	Experience Ratio	Partial Experience Ratios			
				Fire	EC	Burg	AOP
3/31/2014	\$ 27,437,646	\$ 30,963,521	1.129	0.384	0.042	0.019	0.684
3/31/2015	27,107,871	31,831,122	1.174	0.518	0.037	0.019	0.600
3/31/2016	28,254,818	22,712,931	0.804	0.291	0.046	0.017	0.450
3/31/2017	31,128,736	24,320,197	0.781	0.427	0.027	0.019	0.308
3/31/2018	34,268,696	31,260,058	0.912	0.355	0.095	0.022	0.439
(4) Weighted Experience Ratio			=	0.919			
(5) Credibility			=	0.993			
(6) Expected Experience Ratio			=	1.000			
(7) Credibility-Wtd. Experience Ratio			=	0.920			
(8) Indicated Non-Hurricane Loss Cost Level Change(c)			=	0.920	or	-8.0%	
(9) Selected Non-Hurricane Loss Cost Level Change			=	-8.0%			
(10) Indicated Total Loss Cost Level Change			=	0.937	or	-6.3%	
(11) Selected Total Loss Cost Level Change			=	-6.3%			

- (a) Excludes the hurricane portion of the current loss costs.
- (b) Excludes hurricane losses.
- (c) Average loss cost change to current loss cost if there were to be no funding for potential hurricane (i.e. modeled) losses.

NOTE: The assumed effective date for trending is 9/1/2019.

CONNECTICUT

BUSINESSOWNERS - LIABILITY LESSORS & OCCUPANTS

TABLE B1-2

CALCULATION OF STATEWIDE ADVISORY LOSS COST LEVEL CHANGE

Fiscal Year <u>Ending</u>	(1) Aggregate Loss Costs at <u>Current Level</u>	(2) Incurred Losses and Loss Adjustment <u>Expenses</u>	(3) Experience <u>Ratio</u>
3/31/2014	\$ 8,459,347	\$ 8,108,280	0.958
3/31/2015	8,879,448	8,193,604	0.923
3/31/2016	8,972,769	7,730,800	0.862
3/31/2017	9,064,258	5,921,695	0.653
3/31/2018	9,073,885	6,637,219	0.731
(4) Weighted Experience Ratio		= 0.789	
(5) Credibility		= 0.565	
(6) Expected Experience Ratio		= 0.985	
(7) Credibility-Wtd. Experience Ratio		= 0.874	
(8) Indicated Loss Cost Level Change		= 0.874	or -12.6%
(9) Selected Loss Cost Level Change		= -12.6%	

NOTE: The assumed effective date for trending is 9/1/2019.

CONNECTICUT

BUSINESSOWNERS - LIABILITY SALES

TABLE B1-3

CALCULATION OF STATEWIDE ADVISORY LOSS COST LEVEL CHANGE

Fiscal Year Ending	(1) Multistate Aggregate Loss Costs at <u>Current Level</u>	(2) Multistate Incurred Losses and Loss Adjustment <u>Expenses</u>	(3) Experience <u>Ratio</u>
3/31/2014	\$ 77,440,084	\$ 51,538,536	0.666
3/31/2015	99,753,098	67,853,382	0.680
3/31/2016	117,122,140	75,191,987	0.642
3/31/2017	125,558,418	80,037,233	0.637
3/31/2018	120,036,750	103,486,132	0.862

(4) Weighted Experience Ratio	=	0.715	
(5) Credibility	=	1.000	
(6) Expected Experience Ratio	=	1.019	
(7) Credibility-Wtd. Experience Ratio	=	0.715	
(8) Indicated Loss Cost Level Change	=	0.715	or -28.5%
(9) Selected Loss Cost Level Change	=	-15.0%	

NOTE: The assumed effective date for trending is 9/1/2019.

CONNECTICUT

BUSINESSOWNERS - LIABILITY PAYROLL

TABLE B1-4

CALCULATION OF STATEWIDE ADVISORY LOSS COST LEVEL CHANGE

Fiscal Year <u>Ending</u>	(1) Multistate Aggregate Loss Costs at <u>Current Level</u>	(2) Multistate Incurred Losses and Loss Adjustment <u>Expenses</u>	(3) Experience <u>Ratio</u>
3/31/2014	\$ 56,398,412	\$ 55,307,040	0.981
3/31/2015	57,404,893	58,230,135	1.014
3/31/2016	61,080,574	55,124,626	0.902
3/31/2017	63,283,360	56,654,869	0.895
3/31/2018	60,225,568	52,595,246	0.873

(4) Weighted Experience Ratio	=	0.916	
(5) Credibility	=	1.000	
(6) Expected Experience Ratio	=	1.005	
(7) Credibility-Wtd. Experience Ratio	=	0.916	
(8) Indicated Loss Cost Level Change	=	0.916	or -8.4%
(9) Selected Loss Cost Level Change	=	-8.4%	

NOTE: The assumed effective date for trending is 9/1/2019.

CONNECTICUT

BUSINESSOWNERS

EXPLANATORY NOTES TO TABLE B1

COLUMN (1)

AGGREGATE LOSS COSTS AT CURRENT LEVEL

In this analysis, aggregate loss costs at current level are calculated by re-rating each policy premium transaction using the current manual loss costs, excluding the hurricane portion of the current loss costs, and applicable rating variables such as territory, occupancy and building construction, and the number of exposures (buildings or contents amount of insurance in hundreds of dollars, sales and payroll in thousands of dollars). Where appropriate, certain reported data elements have been adjusted prior to being used in the calculations. In addition, exposures are trended using exposure trend factors developed from Commercial Property and General Liability data as shown in Section C.

COLUMN (2)

INCURRED LOSSES AND LOSS ADJUSTMENT EXPENSES

The incurred losses displayed are losses including all loss adjustment expenses and trend, and for liability are developed to an ultimate settlement basis. Where appropriate, certain reported data elements have been adjusted prior to being used in the calculations. In this review, the assumed effective date for trending purposes is September 1, 2019.

Businessowners losses are adjusted separately by type of loss. Each Businessowners loss is assigned to one of the following type of loss groups: fire, extended coverage (wind, hail, explosion, vandalism and malicious mischief, and riot), all other property, burglary and theft, or liability. Adjustment procedures by type of loss group are summarized below and detailed in Section C. Hurricane model procedures are detailed in Section D.

Adjustment of Fire Losses

Fire losses are trended and loaded for all loss adjustment expenses. Large fire losses have been smoothed by calculating the normal portion of each loss and replacing the actual excess portion with an expected excess amount.

CONNECTICUT

BUSINESSOWNERS

EXPLANATORY NOTES TO TABLE B1 (Cont'd)

COLUMN (2)  
(Cont'd)

Adjustment of Extended Coverage Losses

Extended coverage losses are trended and loaded for all loss adjustment expenses. Property damage and time element losses due to hurricanes reflected in the modeled hurricane loss costs have been removed from the experience and replaced with average non-hurricane losses for each rating territory and loss month. Abnormal non-hurricane extended coverage losses have been smoothed by calculating normal losses and accounting for non-hurricane excess losses by applying a state excess multiplier to the normal losses.

Adjustment of All Other Property Losses

All other property losses are trended and loaded for all loss adjustment expenses. Large all other property losses have been smoothed by calculating normal losses and accounting for excess losses by applying a state excess multiplier to the normal losses.

Adjustment of Burglary and Theft Losses

Burglary and theft losses are trended and loaded for all loss adjustment expenses. Large burglary and theft losses have been smoothed by calculating the normal portion of each loss and replacing the actual excess portion with an expected excess amount.

Adjustment of Liability Losses

Liability losses are trended and loaded for unallocated loss adjustment expenses. Liability losses are also adjusted to their ultimate settlement value by application of loss development factors.

Businessowners basic limits coverage includes \$300,000 for liability. Therefore, liability losses greater than \$300,000 are excluded from this analysis. Losses between \$50,000 and \$300,000 are smoothed by replacing actual excess losses with expected excess losses.

COLUMN (3)

EXPERIENCE RATIO

The experience ratios in this column are calculated by dividing the incurred losses and loss adjustment expenses in column (2) by the aggregate loss costs at current level in column (1).

CONNECTICUT

BUSINESSOWNERS

EXPLANATORY NOTES TO TABLE B1 (Cont'd)

COLUMNS (3a)-(3d)

PARTIAL EXPERIENCE RATIOS

Partial experience ratios are displayed for each of the four Property type of loss groups. These partial experience ratios are calculated by taking the ratio of the incurred losses and loss adjustment expenses in each of the groups to the indivisible aggregate loss costs at current level in column (1). Because all these ratios are rounded, the sum of the partial experience ratios in columns (3a) to (3d) may not exactly equal the total experience ratio in column (3).

Line (4)

WEIGHTED EXPERIENCE RATIO

The experience ratios shown in column (3) are weighted using weights of .10, .15, .20, .25 and .30 from earliest to most recent accident year.

Line (5)

CREDIBILITY

Credibility is based on the five-year number of earned risks. See "Explanatory Notes to Relative Change Analysis" in Section B.

Line (6)

EXPECTED EXPERIENCE RATIO

The expected experience ratio is our best prediction of the experience ratio if the most recent data was not available. For this review we have assumed that the current loss costs were adequate when implemented and will be inadequate for the prospective period to the extent of the net trend. The net trend is calculated as the combined trend factor (loss trend/premium trend) projected for the number of years between the last revision (or review) and this revision. See Table B3.

Line (7)

CREDIBILITY WEIGHTED EXPERIENCE RATIO

The credibility weighted experience ratio is calculated using the formula:

$$(WER) (Z) + (EER) (1 - Z)$$

where WER = Weighted Experience Ratio

Z = Credibility Factor

EER = Expected Experience Ratio

CONNECTICUT

BUSINESSOWNERS

EXPLANATORY NOTES TO TABLE B1 (Cont'd)

Line (8) INDICATED NON-HURRICANE LOSS COST LEVEL CHANGE

The indicated statewide non-hurricane loss cost level change is equal to the credibility weighted experience ratio. The indication is converted to a percentage by subtracting one, and multiplying by 100.

Line (9) SELECTED NON-HURRICANE LOSS COST LEVEL CHANGE

The selected non-hurricane loss cost level change is equal to the indicated non-hurricane loss cost level change.

For Liability Sales, the indication was capped at -15.0% to mitigate swings in loss costs.

Line (10) INDICATED TOTAL LOSS COST LEVEL CHANGE

The indicated total loss cost level change results from combining the indicated non-hurricane loss costs with the hurricane loss costs.

Line (11) SELECTED TOTAL LOSS COST LEVEL CHANGE

The selected total loss cost level change is equal to the indicated total loss cost level change.

CONNECTICUT

BUSINESSOWNERS

OVERVIEW OF ACTUARIAL PROCEDURES

STEP 2 - EXPLANATORY NOTES TO RELATIVE CHANGE ANALYSIS

**OBJECTIVE** The objective of this procedure is to determine the indicated changes to the Businessowners' territory and coverage relativities for property as well as the indicated changes to the territory and lessors/occupant relativities for liability.

**EXPERIENCE BASE** The review is based on Businessowners state data for five policy years ending 3/31/2018. Losses were trended and developed to an ultimate settlement basis.

**SIMULTANEOUS DETERMINATION OF RATING VARIABLE RELATIVE CHANGES** Once the aggregate loss costs at current level and incurred losses used in the analysis have been appropriately adjusted, experience ratios are calculated by dividing the trended and developed losses by the aggregate loss costs at current level for each rating variable. A Bailey's minimum bias iterative procedure, the two-dimensional balance principle multiplicative model, is used to calculate the relative changes for each rating variable. The purpose of the simultaneous review procedure is to arrive at a set of relative changes for each rating variable that best represent the experience by minimizing the errors between actual and estimated relativity changes.

**RATING VARIABLES USED** The rating variables used in the relative change analysis are as follows:

- Property - territory and coverage
- Liability - territory and lessors/occupant

**ITERATIVE PROCEDURE** The iterative technique referred to in the previous paragraph solves for a set of relative changes for each rating variable based on the experience for the cells. This experience 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 or rating variables combined. Specifically, the iterative procedure uses the following formulas:

For Property:

$$TERR_i = \frac{\sum_j W_{ij} R_{ij}}{\sum_j W_{ij} COV_j}$$

$$COV_j = \frac{\sum_i W_{ij} R_{ij}}{\sum_i W_{ij} TERR_i}$$

CONNECTICUT

BUSINESSOWNERS

OVERVIEW OF ACTUARIAL PROCEDURES

STEP 2 - EXPLANATORY NOTES TO RELATIVE CHANGE ANALYSIS (Cont'd)

ITERATIVE  
PROCEDURE (Cont'd)

Where:

$$1 \leq i \leq m \quad \text{And} \quad 1 \leq j \leq 2.$$

TERR<sub>i</sub> = the relative change for the i<sup>th</sup> territory,

COV<sub>j</sub> = the relative change for the j<sup>th</sup> coverage,  
where j=1 is buildings and j=2 is contents.

W<sub>ij</sub> = the aggregate loss cost at current level (ALCCL),

R<sub>ij</sub> = the loss ratio relativities for the i<sup>th</sup> territory and  
j<sup>th</sup> coverage,  
m = the number of territories in the analysis.

For Liability:

$$TERR_i = \frac{\sum_j W_{ij} R_{ij}}{\sum_j W_{ij} EIND_j}$$

$$EIND_j = \frac{\sum_i W_{ij} R_{ij}}{\sum_i W_{ij} TERR_i}$$

Where:

$$1 \leq i \leq m \quad \text{And} \quad 1 \leq j \leq 2.$$

TERR<sub>i</sub> = the relative change for the i<sup>th</sup> territory,

EIND<sub>j</sub> = the relative change for the j<sup>th</sup> exposure indicator,  
where j=1 is lessors and j=2 is occupant.

W<sub>ij</sub> = the aggregate loss cost at current level (ALCCL),

R<sub>ij</sub> = the loss ratio relativities for the i<sup>th</sup> territory and j<sup>th</sup>  
exposure indicator,

m = the number of territories in the analysis.

CONNECTICUT

BUSINESSOWNERS

OVERVIEW OF ACTUARIAL PROCEDURES

STEP 2 - EXPLANATORY NOTES TO RELATIVE CHANGE ANALYSIS (Cont'd)

ITERATIVE  
PROCEDURE  
(Cont'd)

For example, for property the procedure starts by inserting the actual relative changes for territory into the second formula to get a coverage relative change. This result is then entered into the first formula to get a new territory relative change. The process continues on until there is no appreciable difference from one iteration to the next. After completion of all iterations, the relative changes are balanced to assure that the average relativity change across all rating variables remains at unity.

APPLICATION OF  
CREDIBILITY

Consideration is then given to the credibility of experience for each rating variable using the following classic credibility formula:

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

Where:

P is the five-year aggregate earned risks;

K is the full standard credibility.

The partial credibility standards for property and liability respectively are:

$$Z = \sqrt{P/312,080} \quad \& \quad Z = \sqrt{P/447,720}$$

Credibility-weighted relative changes are then calculated as follows:

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

Z is the credibility,

R is the minimum bias relative change,

W is the credibility-weighted relative change for a given rating variable

CALCULATION OF  
FINAL RELATIVE  
CHANGES

Once again rebalancing is used to assure the credibility-weighted relativity changes remain at unity across all rating variables. This process results in the indicated relative changes for both territory and coverage within property, and for both territory and lessors/occupant within liability.

CONNECTICUT

BUSINESSOWNERS - PROPERTY

TABLE B2-1

CALCULATION OF RELATIVE CHANGES

<u>TERRITORY</u>	(1) 5-YEAR AGGREGATE LOSS COST AT CURRENT LEVEL(a)	(2) 5-YEAR ADJUSTED LOSSES(b)	(3) 5-YEAR EXPERIENCE RATIO (2) / (1)	(4) EXPERIENCE RELATIVITY (3) / ToT(3)	(5) BALANCED MINIMUM BIAS RELATIVE CHANGE	(6) EARNED RISKS	(7) CREDI- BILITY	(8) CREDI- BILITY WEIGHTED CHANGE	(9) BALANCED CHANGE	(10) FINAL BALANCED INDICATED CHANGE
701	\$6,306,274	\$6,524,634	1.035	1.087	1.087	8,876	0.169	1.014	1.043	1.043
703	6,712,015	8,060,893	1.201	1.262	1.274	21,368	0.262	1.066	1.096	1.096
704	19,832,528	17,736,904	0.894	0.939	0.941	35,507	0.337	0.980	1.008	1.008
705	7,018,384	9,878,785	1.408	1.479	1.472	12,806	0.203	1.082	1.113	1.113
706	10,719,189	10,949,341	1.021	1.072	1.076	17,611	0.238	1.018	1.047	1.047
707	86,742,232	76,541,741	0.882	0.926	0.927	198,200	0.797	0.941	0.968	0.968
708	7,505,562	8,034,630	1.070	1.124	1.116	8,547	0.165	1.018	1.047	1.047
709	3,361,583	3,360,901	1.000	1.050	1.034	4,595	0.121	1.004	1.032	1.032
TOTAL	148,197,767	141,087,829	0.952	1.000		307,510			1.000	1.000
Buildings	\$98,203,546	\$96,459,185	0.982	1.032	1.032	122,206	0.626	1.020	1.023	1.023
Bus. Pers. Prop.	49,994,221	44,628,644	0.893	0.938	0.938	185,304	0.771	0.952	0.955	0.955
TOTAL	148,197,767	141,087,829	0.952	1.000		307,510			1.000	1.000

(a) Excludes the hurricane portion of the current loss costs.

(b) Excludes hurricane losses.

CONNECTICUT

BUSINESSOWNERS - LIABILITY

TABLE B2-2

CALCULATION OF RELATIVE CHANGES

<u>TERRITORY</u>	(1) 5-YEAR AGGREGATE LOSS COST AT CURRENT LEVEL	(2) 5-YEAR ADJUSTED LOSSES	(3) 5-YEAR EXPERIENCE RATIO (2) / (1)	(4) EXPERIENCE RELATIVITY (3) / ToT(3)	(5) BALANCED MINIMUM BIAS RELATIVE CHANGE	(6) EARNED RISKS	(7) CREDI- BILITY	(8) CREDI- BILITY WEIGHTED CHANGE	(9) BALANCED CHANGE	(10) FINAL BALANCED INDICATED CHANGE
701	\$2,446,294	\$1,714,200	0.701	0.881	0.899	4,081	0.095	0.990	0.993	0.993
703	2,595,804	1,776,160	0.684	0.859	0.872	11,193	0.158	0.979	0.982	0.982
704	7,091,374	3,968,379	0.560	0.704	0.711	15,901	0.188	0.938	0.941	0.941
705	1,718,292	1,971,303	1.147	1.441	1.400	4,726	0.103	1.035	1.038	1.038
706	2,401,983	2,276,955	0.948	1.191	1.200	8,255	0.136	1.025	1.028	1.028
707	23,619,875	19,034,413	0.806	1.013	1.018	83,467	0.432	1.008	1.011	1.011
708	1,485,500	1,876,847	1.263	1.587	1.479	3,819	0.092	1.037	1.040	1.040
709	847,856	990,144	1.168	1.467	1.371	1,722	0.062	1.020	1.023	1.023
TOTAL	42,206,978	33,608,401	0.796	1.000		133,164			1.000	1.000
Lessors	\$14,067,558	\$14,958,941	1.063	1.335	1.315	25,195	0.237	1.067	1.102	1.102
Occupants	28,139,420	18,649,460	0.663	0.833	0.842	107,969	0.491	0.919	0.949	0.949
TOTAL	42,206,978	33,608,401	0.796	1.000		133,164			1.000	1.000

CONNECTICUT

BUSINESSOWNERS

EXPLANATORY NOTES TO TABLE B2

COLUMN (1)

AGGREGATE LOSS COSTS AT CURRENT LEVEL

In this analysis, aggregate loss costs at current level are calculated by re-rating each policy premium transaction using the current manual loss costs, excluding the hurricane portion of the current loss costs, and applicable rating variables such as territory, occupancy and building construction, and the number of exposures (buildings or contents amount of insurance in hundreds of dollars). Where appropriate, certain reported data elements have been adjusted prior to being used in the calculations. In addition, exposures are trended using exposure trend factors developed from Commercial Property data as shown in Section C.

COLUMN (2)

INCURRED LOSSES AND LOSS ADJUSTMENT EXPENSES

The incurred losses displayed are losses including all loss adjustment expenses and trend, and for liability are developed to an ultimate settlement basis. Where appropriate, certain reported data elements have been adjusted prior to being used in the calculations. In this review, the assumed effective date for trending purposes is September 1, 2019.

Businessowners losses are adjusted separately by type of loss. Each Businessowners loss is assigned to one of the following type of loss groups: fire, extended coverage (wind, hail, explosion, vandalism and malicious mischief, and riot), all other property, burglary and theft, or liability. Adjustment procedures by type of loss group are summarized below and detailed in Section C. Hurricane model procedures are detailed in Section D.

Adjustment of Fire Losses

Fire losses are trended and loaded for all loss adjustment expenses. Large fire losses have been smoothed by calculating the normal portion of each loss and replacing the actual excess portion with an expected excess amount.

Adjustment of Extended Coverage Losses

Extended coverage losses are trended and loaded for all loss adjustment expenses. Property damage and time element losses due to hurricanes reflected in the modeled hurricane loss costs have been removed from the experience and replaced with average non-hurricane losses for each rating territory and loss month. Abnormal non-hurricane extended coverage losses have been smoothed by calculating normal losses and accounting for non-hurricane excess losses by applying a state excess multiplier to the normal losses.

CONNECTICUT

BUSINESSOWNERS

EXPLANATORY NOTES TO TABLE B2 (Cont'd)

COLUMN (2)  
(Cont'd)

Adjustment of All Other Property Losses

All other property losses are trended and loaded for all loss adjustment expenses. Large all other property losses have been smoothed by calculating normal losses and accounting for excess losses by applying a state excess multiplier to the normal losses.

Adjustment of Burglary and Theft Losses

Burglary and theft losses are trended and loaded for all loss adjustment expenses. Large burglary and theft losses have been smoothed by calculating the normal portion of each loss and replacing the actual excess portion with an expected excess amount.

Adjustment of Liability Losses

Liability losses are trended and loaded for unallocated loss adjustment expenses. Liability losses are also adjusted to their ultimate settlement value by application of loss development factors.

Businessowners basic limits coverage includes \$300,000 for liability. Therefore, liability losses greater than \$300,000 are excluded from this analysis. Losses between \$50,000 and \$300,000 are smoothed by replacing actual excess losses with expected excess losses.

COLUMN (3)

EXPERIENCE RATIO

The experience ratios in this column are calculated by dividing the incurred losses and loss adjustment expenses in column (2) by the aggregate loss costs at current level in column (1).

COLUMNS (4)

EXPERIENCE RELATIVITY

The experience relativities in this column are calculated by dividing each experience ratio in column (3) by the total experience ratio in column (3).

COLUMNS (5)

MINIMUM BIAS RELATIVE CHANGE

The relative changes in this column are the final balanced results of the relative change iterative process as described in the "Explanatory Notes to Relative Change Analysis" in Section B.

COLUMNS (6)

EARNED RISKS

This is the number of earned risks in the state for the five-year period ending March 31, 2018.

CONNECTICUT

BUSINESSOWNERS

EXPLANATORY NOTES TO TABLE B2 (Cont'd)

COLUMNS (7)

CREDIBILITY

Credibility is based on the five-year number of earned risks. See "Explanatory Notes to Relative Change Analysis" in Section B.

COLUMNS (8)

CREDIBILITY WEIGHTED CHANGE

The credibility change is calculated using the formula:

$$W = R^z$$

Where:

Z is the credibility,

R is the minimum bias relative change,

W is the credibility-weighted relative change for a given rating variable.

COLUMNS (9)

BALANCED CHANGE

The balanced change is the rebalancing of the credibility weighted changes to assure that the average relative change for each rating variable remains at unity.

COLUMNS (10)

FINAL BALANCED INDICATED CHANGES

The final balanced indicated changes are the result of multiple rebalancing iterations.

CONNECTICUT  
 BUSINESSOWNERS  
 TABLE B3  
 CALCULATION OF EXPECTED EXPERIENCE RATIOS

LOSS TREND

PROPERTY	<u>Buildings Adjusted Losses</u>	<u>Trend Factor</u>	<u>Business Pers. Prop. Adjusted Losses</u>	<u>Trend Factor</u>	
Fire	42,496,419	0.998	15,778,385	0.999	
EC	6,623,656	1.056	936,323	1.025	
AOP	47,087,925	1.042	25,286,701	1.038	All Property
Burglary			2,878,420	1.024	<u>Trend Factor</u>
	96,208,000	1.024	44,879,829	1.023	1.024
LIABILITY		<u>Trend Factor</u>			
	<u>Adjusted Losses</u>				
Lessors	14,958,941	1.009			
Occupants	18,649,460	0.988			
		<u>Trend Factor</u>			
AOI Lessors & Occupants		0.997			
Sales		1.045			
Payroll		1.037			

PREMIUM TREND

PROPERTY	<u>Buildings Adjusted Losses</u>	<u>Trend Factor</u>	<u>Business Pers. Prop. Adjusted Losses</u>	<u>Trend Factor</u>	<u>All Property Trend Factor</u>
	96,208,000	1.026	44,879,829	1.019	1.024
LIABILITY		<u>Trend Factor</u>			
AOI Lessors & Occupants		1.019			
Sales		1.016			
Payroll		1.029			

ANNUAL NET TRENDS (LOSS TREND/PREMIUM TREND)

	<u>Annual Net Trend Factor</u>	<u>Expected Experience Ratio (a)</u>
ALL PROPERTY	1.000	1.000
LIABILITY - AOI LESSORS AND OCCUPANTS	0.978	0.985
LIABILITY - SALES	1.029	1.019
LIABILITY - PAYROLL	1.008	1.005

(a) The projection period is from the data of the last approval, 1/1/2019, to the assumed effective trend date of 9/1/2019. For ALL PROPERTY,  $1.000 = 1.000^{(8/12)}$ .

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SECTION C - SUPPORTING MATERIAL

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#### CALCULATION OF ADJUSTED FIRE LOSSES

##### DEFINITION OF FIRE TYPE OF LOSS GROUP

Fire losses are defined as losses due to fire, lightning and removal that cause property damage to buildings, property damage to contents and time element losses.

##### CALCULATION OF LOSS TREND FACTORS

For fire, the loss trend factors are referred to as Current Cost Factors (CCFs) and Loss Projection Factors (LPFs). Both of these factors are based on the following external economic indices:

1. Xactware Commercial Index (XCI) for buildings loss projection factors and current cost factors beginning 1/1/08
2. Producer Price Index (PPI) published by the US Department of Labor (Finished Goods Less Energy, Not Seasonally Adjusted) for contents factors

The CCFs adjust losses for inflationary changes, as measured by the external indices, which have taken place between the actual accident date and the midpoint of the latest period of external trend information. The LPF adjusts losses for projected inflationary changes from the midpoint of the latest period of external trend information to the anticipated average accident date for policies written under the proposed loss costs (assumed to be 12.0 months after the assumed revision date). For external trend purposes, the CCF's and LPF's in Table C5 are calculated annually to correspond with other components of the external trend that are calculated annually.

Since the CCFs and LPFs are calculated separately for buildings and contents coverages and the losses reported under CSP and CMSP are adjusted on an individual occurrence basis, the building trend factors are applied to building losses and the contents trend factors to business personal property losses.

The most recent CCFs and LPFs are calculated in Table C4. Due to the historical volatility of the PPI index, the CCFs for contents were calculated as ratios of weighted average of the latest two PPI points to the average annual indexes. The weights assigned to the latest PPI points for the purpose of this calculation are 67% to the latest point and 33% to the earliest point. This procedure should enhance stability of the contents CCFs.

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#### CALCULATION OF ADJUSTED FIRE LOSSES (Cont'd)

##### CALCULATION OF LOSS TREND ADJUSTMENTS

An evaluation of the latest Businessowners insurance data shows that the cost and frequency levels inherent in these coverages are changing at a different rate than those measured by the external indices. Therefore, to insure adequate loss cost levels during the period for which loss costs are to be determined, Loss Trend Adjustments (LTAs) have been applied. These factors were developed by comparing the annual rates of change in the internal and external indices. (Refer to Table C5 for the underlying data and calculations). The LTAs vary by coverage (building vs. contents) and type of loss.

The method of internal trend determination utilized in this review makes use of the Least Squares Method fitted to the reported time series data; specifically, an exponential curve represented by the equation  $Y = Ae^{Bx}$  is fitted to the occurrence cost and occurrence frequency data. The parameters A and B are calculated constants; x is the unit of time; e is the natural logarithm base with a numerical value of 2.7182818...; and Y is the fitted value on the curve. The occurrence cost and occurrence frequency curves are determined from the latest 10 year-ended experience periods. The historical data and the selected internal annual rates of change are shown in Tables C1-2 and C1-3.

##### CALCULATION OF TRENDED INCURRED LOSSES

Building and contents losses are trended separately using the Current Cost Factors, Loss Projection Factors and Loss Trend Adjustments. These factors are summarized in Table C1-1. Since cost changes affect the whole loss (loss to the insured) and not just the loss net of the deductible, the deductible must be included in the trend calculation. Since this review tests aggregate loss costs and incurred losses at the standard \$500 deductible level, this calculation varies based on the reported deductible amount.

##### FIRE LARGE LOSS PROCEDURE

If left untreated, the presence or absence of large fire losses during the review period can produce significant fluctuations in loss cost levels. Consequently, in order to develop a more stable body of experience, the fire loss experience has been smoothed. This smoothing is accomplished by removing the excess portion of every loss occurrence from the unadjusted experience and applying multistate excess loss factors to the resultant aggregate state normal losses. The adjusted incurred losses developed in this manner replace the unadjusted incurred losses in the loss cost level evaluation.

The first step in the smoothing procedure is the extraction of the large fire loss experience from the trended loss experience. Individual occurrence amounts that result from the same occurrence are grouped together, and when the sum of these occurrences exceeds \$50,000 at average 1985 cost levels, the total loss is identified as a large loss. Each large loss is then split into its normal and excess portions based on a variable normal loss cutoff; that is, the procedure employs a minimum normal breakpoint of \$50,000, which increases, with the size of loss (for losses greater than \$50,000) up to a maximum normal amount (approached asymptotically) of \$250,000.

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CALCULATION OF ADJUSTED FIRE LOSSES (Cont'd)

FIRE LARGE  
LOSS  
PROCEDURE  
(Cont'd)

Specifically, the formula used to calculate the normal losses is:

$$y = b[1 - [(b-c)^2/b]/[x - (2c-b)]]$$

where: b = the maximum normal amount = \$250,000  
c = the normal break point = \$50,000  
y = normal loss  
x = total loss

As noted above, the excess loss procedure is performed on trended loss experience (i.e., loss experience adjusted to prospective cost levels by the CCFs, LPFs and severity LTAs). Since the normal breakpoint of \$50,000 and the other parameters in the normal loss formula are at 2008 cost levels, they have been similarly adjusted to prospective cost levels.

For each adjusted large loss, the portion exceeding the cutoff is considered excess and the portion up to the cutoff is considered normal.

Each individual normal loss is adjusted by a multistate excess loss factor, which is equal to the ratio of multistate 5-year trended incurred losses to multistate 5-year trended normal losses. Multiplying the normal losses by the excess loss factor yields smoothed incurred losses (actual normal losses plus expected excess losses). The formula for trended incurred losses adjusted for large losses is thus:

$$SL = (TL - E) \times F$$

where: SL = trended incurred losses smoothed for  
excess occurrences  
TL = trended incurred losses  
E = trended excess losses  
F = multistate excess loss factor

In this analysis, F is calculated to be 1.394.

LOSS  
ADJUSTMENT  
EXPENSE

Trended and smoothed losses are loaded for all loss adjustment expenses using the factor selected based on the data displayed in Table C11-1.

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TABLE C1-1

SUMMARY OF FIRE LOSS TREND

<u>Year</u>	<u>Buildings Current Cost Factors*</u>	<u>Contents Current Cost Factors*</u>
3/31/2014	1.152	1.080
3/31/2015	1.122	1.053
3/31/2016	1.082	1.044
3/31/2017	1.063	1.038
3/31/2018	1.030	1.019
Loss Projection Factor**	1.053	1.030
Annual Loss Trend Adjustments	-2.9%	-1.7%

\* Adjusts losses for inflationary changes which have taken place between the actual accident date and the midpoint of the latest period of external trend information.

\*\* Adjusts losses for the projected inflationary changes from the midpoint of the latest period of external trend information to the anticipated average accident date for policies written under the proposed loss costs.

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TABLE C1-2

FIRE  
BUILDINGS  
MULTISTATE  
SEVERITY AND FREQUENCY TREND

Accident <u>Year</u>	Trended <u>Exposures</u>	Total <u>Losses</u>	Normal <u>Losses</u>	Incurred <u>Occurrences</u>	Average Occurrence <u>Cost (Total)</u>	Average Occurrence <u>Cost (Normal)</u>	Average Occurrence <u>Frequency*</u>
2009	6,545,585,730	258,605,433	193,289,282	3,356	77,058	57,595	0.0513
2010	6,944,245,655	243,101,319	185,615,471	3,394	71,627	54,689	0.0489
2011	7,017,540,590	214,405,700	173,249,142	3,546	60,464	48,858	0.0505
2012	6,936,150,421	253,018,336	198,169,930	3,470	72,916	57,109	0.0500
2013	6,655,956,257	260,461,783	196,586,941	3,081	84,538	63,806	0.0463
2014	6,482,137,778	250,412,166	188,751,878	2,562	97,741	73,674	0.0395
2015	6,231,924,776	223,787,523	166,900,170	2,366	94,585	70,541	0.0380
2016	6,229,427,716	245,878,199	178,801,248	2,262	108,699	79,046	0.0363
2017	6,711,769,015	286,099,572	194,885,850	2,430	117,736	80,200	0.0362
2018	7,004,017,366	288,329,375	183,981,497	2,198	131,178	83,704	0.0314

Total Losses

		<u>Severity</u>	<u>Frequency</u>	<u>R-Squared</u>	
		<u>Severity</u>	<u>Frequency</u>	<u>Severity</u>	<u>Frequency</u>
Observed annual rate of change (10 years)	=	+7.6%	-5.4%	0.824	0.912
Observed annual rate of change (8 years)	=	+10.7%	-6.6%	0.955	0.946
Observed annual rate of change (6 years)	=	+8.6%	-6.2%	0.944	0.893

Normal Losses

		<u>Severity</u>	<u>Frequency</u>	<u>R-Squared</u>	
		<u>Severity</u>	<u>Frequency</u>	<u>Severity</u>	<u>Frequency</u>
Observed annual rate of change (10 years)	=	+5.8%	-5.4%	0.833	0.912
Observed annual rate of change (8 years)	=	+7.5%	-6.6%	0.897	0.946
Observed annual rate of change (6 years)	=	+5.1%	-6.2%	0.860	0.893
Selected annual rate of change	=	+7.0%	-5.5%		

\* in 100,000's

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BUSINESSOWNERS

TABLE C1-3

FIRE  
CONTENTS  
MULTISTATE  
SEVERITY AND FREQUENCY TREND

Accident Year	Trended Exposures	Total Losses	Normal Losses	Incurred Occurrences	Average Occurrence Cost (Total)	Average Occurrence Cost (Normal)	Average Occurrence Frequency*
2009	1,154,236,015	75,438,483	61,038,240	2,402	31,407	25,411	0.2081
2010	1,150,408,203	94,798,612	74,438,587	2,645	35,841	28,143	0.2299
2011	1,134,073,336	87,820,617	72,087,095	2,817	31,175	25,590	0.2484
2012	1,107,087,375	88,445,959	73,043,446	2,823	31,330	25,874	0.2550
2013	1,049,439,844	79,412,754	65,507,901	2,298	34,557	28,506	0.2190
2014	1,051,516,559	81,273,436	69,658,203	2,169	37,470	32,115	0.2063
2015	1,064,543,195	81,359,852	68,256,725	1,984	41,008	34,404	0.1864
2016	1,073,015,492	75,723,085	63,623,936	1,904	39,771	33,416	0.1774
2017	1,156,332,972	90,849,031	76,043,528	1,915	47,441	39,709	0.1656
2018	1,267,962,793	112,468,421	77,739,001	1,867	60,240	41,638	0.1472

Total Losses

				<u>Severity</u>	<u>Frequency</u>	<u>R-Squared</u>	<u>Severity</u>	<u>Frequency</u>
Observed annual rate of change (10 years)	=	+6.2%	-4.8%	0.758	0.698			
Observed annual rate of change (8 years)	=	+8.9%	-7.5%	0.898	0.973			
Observed annual rate of change (6 years)	=	+10.4%	-7.4%	0.861	0.987			

Normal Losses

				<u>Severity</u>	<u>Frequency</u>	<u>R-Squared</u>	<u>Severity</u>	<u>Frequency</u>
Observed annual rate of change (10 years)	=	+5.7%	-4.8%	0.873	0.698			
Observed annual rate of change (8 years)	=	+7.5%	-7.5%	0.956	0.973			
Observed annual rate of change (6 years)	=	+7.4%	-7.4%	0.917	0.987			
Selected annual rate of change	=	+7.0%	-5.0%					

\* in 100,000's

## CONNECTICUT

### BUSINESSOWNERS

#### CALCULATION OF ADJUSTED EXTENDED COVERAGE LOSSES

##### DEFINITION OF EXTENDED COVERAGE TYPE OF LOSS GROUP

Extended coverage losses are defined as losses causing property damage to buildings, property damage to contents and time element losses due to wind and hail, explosion, riot, riot attending a strike and civil commotion, and vandalism and malicious mischief.

##### CALCULATION OF LOSS TREND FACTORS

The Current Cost Factors and Loss Projection Factors for fire losses are also applied to extended coverage losses. The Loss Trend Adjustments applied to extended coverage losses are summarized in Table C2-1, along with the annual CCFs and LPFs from Table C4.

The method used to determine fire trend is also applied to extended coverage losses. The historical data and the selected internal annual rates of change are shown in Tables C2-2 and C2-3.

Because the Businessowners deductible applies to all property losses, the same deductible trending procedure used with the fire losses is used with the extended coverage losses.

##### EC EXCESS LOSS PROCEDURE

Losses due to hurricanes reflected in the modeled hurricane loss costs have been removed from the experience and replaced with average non-hurricane losses for each rating territory and loss month. Since wind caused by non-hurricane events can cause large and unexpected losses, a long-term excess procedure is used.

The EC excess procedure identifies periods of overall adverse experience, rather than individual large losses, since catastrophic non-hurricane wind losses affect both the frequency and severity of losses. We have adjusted the data for abnormal frequencies and severities so that it reflects long-term excess potential exhibited on a state and regional basis. Losses incurred during the month of a hurricane have been replaced with average monthly non-hurricane losses. Normal non-hurricane losses by state and year are defined to be equal to the total Businessowners non-hurricane EC losses multiplied by the ratio of normal non-hurricane losses to incurred non-hurricane losses calculated using the Businessowners experience database. The potential for catastrophes is recognized by applying the state excess multiplier to the normal losses. The calculation of the EC excess multiplier is shown in Table C2-4.

##### LOSS ADJUSTMENT EXPENSE

Trended and smoothed losses are loaded for all loss adjustment expenses using the factor selected based on the data displayed in Table C11-1.

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TABLE C2-1

SUMMARY OF EXTENDED COVERAGE LOSS TREND

<u>Year</u>	<u>Buildings Current Cost Factors*</u>	<u>Contents Current Cost Factors*</u>
3/31/2014	1.152	1.080
3/31/2015	1.122	1.053
3/31/2016	1.082	1.044
3/31/2017	1.063	1.038
3/31/2018	1.030	1.019
Loss Projection Factor**	1.053	1.030
Annual Loss Trend Adjustments	+2.7%	+0.9%

\* Adjusts losses for inflationary changes which have taken place between the actual accident date and the midpoint of the latest period of external trend information.

\*\* Adjusts losses for the projected inflationary changes from the midpoint of the latest period of external trend information to the anticipated average accident date for policies written under the proposed loss costs.

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TABLE C2-2

EXTENDED COVERAGE  
BUILDINGS  
MULTISTATE  
SEVERITY TREND

<u>Accident Year</u>	<u>Total Losses</u>	<u>Normal Losses</u>	<u>Incurred Occurrences</u>	<u>Average Occurrence Cost (Total)</u>	<u>Average Occurrence Cost (Normal)</u>
2009	154,574,748	107,248,895	12,038	12,841	8,909
2010	194,310,564	115,232,093	11,240	17,287	10,252
2011	291,030,296	127,054,236	11,810	24,643	10,758
2012	382,765,778	175,588,901	17,822	21,477	9,852
2013	245,381,635	126,481,197	12,006	20,438	10,535
2014	135,473,608	88,987,748	6,872	19,714	12,949
2015	184,932,267	104,893,186	7,535	24,543	13,921
2016	142,439,286	110,352,102	6,720	21,196	16,421
2017	219,100,681	132,213,729	7,652	28,633	17,278
2018	200,123,490	114,891,461	7,077	28,278	16,234

Total Losses

R-squared

Observed annual rate of change (10 years)	=	+6.4%	0.616
Observed annual rate of change (8 years)	=	+3.3%	0.303
Observed annual rate of change (6 years)	=	+7.7%	0.707

Normal Losses

R-squared

Observed annual rate of change (10 years)	=	+7.8%	0.895
Observed annual rate of change (8 years)	=	+8.8%	0.869
Observed annual rate of change (6 years)	=	+9.6%	0.833
Selected annual rate of change	=	+7.0%	

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TABLE C2-3

EXTENDED COVERAGE  
CONTENTS  
MULTISTATE  
SEVERITY TREND

Accident Year	Total Losses	Normal Losses	Incurred Occurrences	Average Occurrence Cost (Total)	Average Occurrence Cost (Normal)
2009	14,884,390	11,488,707	2,025	7,350	5,673
2010	13,740,684	10,862,138	2,057	6,680	5,281
2011	14,840,229	11,441,405	1,918	7,737	5,965
2012	47,024,825	19,335,602	3,345	14,058	5,780
2013	18,220,207	10,770,983	2,484	7,335	4,336
2014	12,657,325	9,185,108	1,587	7,976	5,788
2015	14,541,962	10,383,191	1,472	9,879	7,054
2016	13,002,169	10,500,078	1,507	8,628	6,968
2017	12,996,528	9,292,408	1,636	7,944	5,680
2018	16,762,102	10,915,134	1,640	10,221	6,656

<u>Total Losses</u>			<u>R-squared</u>
Observed annual rate of change (10 years)	=	+2.3%	0.100
Observed annual rate of change (8 years)	=	-0.2%	0.001
Observed annual rate of change (6 years)	=	+4.4%	0.378
<u>Normal Losses</u>			<u>R-squared</u>
Observed annual rate of change (10 years)	=	+2.2%	0.214
Observed annual rate of change (8 years)	=	+2.8%	0.185
Observed annual rate of change (6 years)	=	+6.1%	0.363
Selected annual rate of change	=	+3.0%	

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TABLE C2-4

DEVELOPMENT OF EXTENDED COVERAGE EXCESS MULTIPLIER\*

YEAR ENDING	(1) EARNED PREMIUMS	(2) INCURRED LOSSES	(3) NORMAL INCURRED LOSSES	(4) NORMAL LOSS RATIO	(5) STATE EXCESS LOSS RATIO	(6) REGIONAL EXCESS LOSS RATIO
3/31/1989	1,186,769	438,462	438,462	0.369		
3/31/1990	1,898,883	3,516,222	955,689	0.503	0.713	0.635
3/31/1991	2,261,127	639,519	639,519	0.283		
3/31/1992	2,227,286	729,677	729,677	0.328		
3/31/1993	2,215,432	1,567,995	1,523,693	0.688	0.020	
3/31/1994	2,238,918	1,011,833	1,011,833	0.452		
3/31/1995	2,221,961	2,848,506	1,450,769	0.653	0.509	0.120
3/31/1996	2,309,538	5,627,427	2,709,610	1.173	1.001	0.262
3/31/1997	2,285,777	1,288,284	1,288,284	0.564		
3/31/1998	2,266,788	858,910	858,910	0.379		
3/31/1999	2,348,799	1,265,842	1,180,430	0.503	0.036	0.001
3/31/2000	2,456,276	1,180,407	1,180,407	0.481		
3/31/2001	2,573,402	1,420,582	1,420,582	0.552		
3/31/2002	2,838,018	1,197,152	1,132,818	0.399	0.022	
3/31/2003	3,173,322	892,840	892,840	0.281		
3/31/2004	3,487,266	856,784	856,784	0.246		
3/31/2005	3,755,292	858,764	858,764	0.229		
3/31/2006	3,875,278	2,336,511	2,196,119	0.567	0.035	0.001
3/31/2007	3,885,200	924,618	924,618	0.238		
3/31/2008	3,981,631	1,200,091	1,200,091	0.301		
3/31/2009	3,874,446	989,061	989,061	0.255		
3/31/2010	3,759,324	3,754,799	2,124,735	0.565	0.339	0.094
3/31/2011	3,373,323	3,405,551	2,956,736	0.877	0.124	0.009
3/31/2012	3,203,230	3,650,640	2,125,674	0.664	0.371	0.105
3/31/2013	3,095,124	2,006,512	2,006,512	0.648		
3/31/2014	3,112,495	523,550	523,550	0.168		
3/31/2015	3,298,453	477,406	477,406	0.145		
3/31/2016	3,480,078	652,047	652,047	0.187		
3/31/2017	3,676,470	458,034	458,034	0.125		
3/31/2018	3,862,312	2,097,019	1,831,928	0.474	0.066	0.003
TOTALS				13.297	3.236	1.230

(7) STATE EXCESS COMPONENT = ( TOTAL (5) / TOTAL (4) ) 0.243

(8) REGIONAL EXCESS COMPONENT 0.084

(9) STATE EXCESS MULTIPLIER = ( 1 + (7) ) x ( 1 + (8) ) 1.347

\*LOSSES INCURRED DURING THE MONTH OF A HURRICANE HAVE BEEN REPLACED WITH AVERAGE MONTHLY NON-HURRICANE LOSSES.

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EXPLANATORY NOTES TO TABLE C2-4

OBJECTIVE

Due to the absence or presence of catastrophic wind losses, Extended Coverage (EC) experience can be extremely volatile; in recognition of this, an excess loss procedure is used to smooth the losses incurred during the experience period. Under this approach a given year's aggregate losses are split into normal and excess components (defined below). The excess loss experience of the long-term review period (1989-present) is used to develop a state excess multiplier which is applied to the normal losses for each accident year. The state excess multiplier is derived in such a manner as to provide an estimate, based on the long-term experience, of the expected volume of excess loss dollars per normal loss dollar in the review period. Therefore, by applying the state excess multiplier to each year's normal incurred losses, a normal review period ratemaking database is generated which reflects both normal loss experience and the expected, average annual excess loss experience (averaged over the long-term review period). The calculation of the state excess multiplier gives consideration to three layers of losses: normal, state excess, and regional excess.

COLUMN (1)

EARNED PREMIUMS

The earned premiums for EC are a portion of the total earned premium obtained by multiplying each individual year's statewide unadjusted earned premium by its long-term ratio of unadjusted EC losses to total losses.

COLUMN (2)

INCURRED NON-HURRICANE LOSSES

The unadjusted non-hurricane incurred losses are shown for each year.

COLUMN (3)

NORMAL INCURRED NON-HURRICANE LOSSES

Normal losses are defined as that portion of each month's non-hurricane losses which does not exceed the normal loss ratio cutoff, aggregated by fiscal year.

Note: 2.0 times the monthly earned premiums are defined to be the normal loss ratio cutoff.

COLUMN (4)

NORMAL LOSS RATIO

Normal loss ratios (NLR) are calculated by dividing the normal losses in Column (3) by the earned premiums in Column (1).

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EXPLANATORY NOTES TO TABLE C2-4 (Cont'd)

COLUMN (5)

STATE EXCESS LOSS RATIO

Excess losses are the portion of incurred losses exceeding the normal. Excess losses allocated to the state are determined on a monthly basis by the following formula:

Excess Loss = Excess Loss Ratio x Earned Premium, where

$$\text{Excess Loss Ratio} = \frac{20(\text{LR}-2.0)}{(\text{LR}-2.0)+20} \quad (\text{if LR} > 2.0), \text{ and}$$

LR = the monthly loss ratio.

State excess losses are the sum of the monthly excess losses calculated above, aggregated by fiscal year. The state excess loss ratio (SELR) is simply the state excess losses divided by the earned premiums in Column (1).

COLUMN (6)

REGIONAL EXCESS LOSS RATIO

If the unadjusted loss ratio (ULR) is greater than the normal loss ratio (NLR) then the regional excess loss ratio is:

$$\text{Regional Excess Loss Ratio} = \text{ULR} - \text{SELR} - \text{NLR}$$

where SELR = the State Excess Loss Ratio, Column (5),

NLR = the Normal Loss Ratio, Column (4), and

ULR = the Unadjusted Loss Ratio, Column(2) / Column(1).

LINE (7)

STATE EXCESS COMPONENT

The State Excess Component is determined by dividing the sum of all state excess loss ratios by the sum of all normal loss ratios (where the sum is taken across all accident years).

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EXPLANATORY NOTES TO TABLE C2-4 (Cont'd)

LINE (8)

REGIONAL EXCESS COMPONENT

The Regional Excess component is determined by dividing the weighted average (determined, in each case, against the latest year unadjusted earned premium distribution) of the sum of Regional Excess Loss Ratios of all the states in the region by the weighted average of the sum of all loss ratio points retained by a state (Normal and State Excess Loss Ratios) of all the states in the region.

LINE (9)

STATE EXCESS MULTIPLIER

The State Excess Multiplier is derived by taking the product of the State Excess Component and the Regional Excess Component.

CONNECTICUT

BUSINESSOWNERS

CALCULATION OF ADJUSTED ALL OTHER PROPERTY LOSSES

DEFINITION OF  
ALL OTHER  
PROPERTY TYPE  
OF LOSS GROUP

All other property losses are defined as losses due to sprinkler leakage and all other insurable perils which cause property damage to the building, property damage to the contents or time element losses. Included in this type of loss group are losses due to water damage, freezing, vehicles, aircraft and smoke.

CALCULATION  
OF LOSS TREND  
FACTORS

The Current Cost Factors and Loss Projection Factors for fire losses are also applied to all other property losses. The Loss Trend Adjustments applied to all other property losses are summarized in Table C3-1, along with the annual CCFs and LPFs from Table C4.

The method used to determine fire trend is also applied to all other property losses. The historical data and the selected internal annual rates of change are shown in Tables C3-2 and C3-3.

Because the Businessowners deductible applies to all property losses, the same deductible trending procedure used with the fire losses is used with the all other property losses.

ALL OTHER PROPERTY  
LARGE LOSS  
PROCEDURE

In analyzing the Businessowners AOP losses, we have adjusted the data for abnormal frequencies and severities so that it reflects long term excess potential exhibited on a statewide basis. Normal losses by state and year are defined to be equal to the total Businessowners AOP losses multiplied by the ratio of normal losses to incurred losses calculated using the long term Businessowners experience database. The potential for catastrophes is recognized by applying the state excess multiplier to the normal losses. The calculation of the AOP excess multiplier is shown in Table C3-4.

LOSS  
ADJUSTMENT  
EXPENSE

Trended and smoothed losses are loaded for all loss adjustment expenses using the factor selected based on the data displayed in Table C11-1.

CONNECTICUT

BUSINESSOWNERS

TABLE C3-1

SUMMARY OF ALL OTHER PROPERTY LOSS TREND

<u>Year</u>	<u>Buildings Current Cost Factors*</u>	<u>Contents Current Cost Factors*</u>
3/31/2014	1.152	1.080
3/31/2015	1.122	1.053
3/31/2016	1.082	1.044
3/31/2017	1.063	1.038
3/31/2018	1.030	1.019
Loss Projection Factor**	1.053	1.030
Annual Loss Trend Adjustments	+1.4%	+2.2%

\* Adjusts losses for inflationary changes which have taken place between the actual accident date and the midpoint of the latest period of external trend information.

\*\* Adjusts losses for the projected inflationary changes from the midpoint of the latest period of external trend information to the anticipated average accident date for policies written under the proposed loss costs.

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BUSINESSOWNERS

TABLE C3-2

ALL OTHER PROPERTY  
BUILDINGS  
MULTISTATE  
SEVERITY TREND

Accident Year	Total Losses	Normal Losses	Incurred Occurrences	Average Occurrence Cost (Total)	Average Occurrence Cost (Normal)
2009	179,365,013	155,913,618	15,979	11,225	9,757
2010	188,154,779	168,561,138	16,160	11,643	10,431
2011	237,362,241	195,014,914	17,298	13,722	11,274
2012	171,907,888	156,347,920	14,390	11,946	10,865
2013	161,370,883	150,503,721	12,854	12,554	11,709
2014	232,271,390	185,109,509	15,443	15,041	11,987
2015	253,588,288	184,686,281	15,555	16,303	11,873
2016	149,510,306	140,276,454	10,120	14,774	13,861
2017	152,102,895	143,870,384	9,889	15,381	14,549
2018	221,643,377	195,369,528	11,641	19,040	16,783

Total Losses

R-squared

Observed annual rate of change (10 years)	=	+5.1%	0.797
Observed annual rate of change (8 years)	=	+5.0%	0.663
Observed annual rate of change (6 years)	=	+6.0%	0.651

Normal Losses

R-squared

Observed annual rate of change (10 years)	=	+5.3%	0.898
Observed annual rate of change (8 years)	=	+5.8%	0.854
Observed annual rate of change (6 years)	=	+7.5%	0.886
Selected annual rate of change	=	+5.0%	

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TABLE C3-3

ALL OTHER PROPERTY  
CONTENTS  
MULTISTATE  
SEVERITY TREND

Accident Year	Total Losses	Normal Losses	Incurred Occurrences	Average Occurrence Cost (Total)	Average Occurrence Cost (Normal)
2009	92,437,739	82,330,117	9,598	9,631	8,578
2010	98,188,963	90,051,923	10,365	9,473	8,688
2011	108,686,052	98,402,188	10,210	10,645	9,638
2012	103,900,835	97,471,585	11,127	9,338	8,760
2013	107,643,132	101,697,439	10,005	10,759	10,165
2014	117,433,938	96,671,407	9,777	12,011	9,888
2015	103,970,030	91,548,590	8,296	12,533	11,035
2016	99,574,249	93,135,297	7,743	12,860	12,028
2017	102,601,565	99,342,128	7,623	13,459	13,032
2018	131,541,268	116,249,484	8,657	15,195	13,428

Total Losses

R-squared

Observed annual rate of change (10 years)	=	+5.3%	0.887
Observed annual rate of change (8 years)	=	+6.0%	0.866
Observed annual rate of change (6 years)	=	+6.2%	0.942

Normal Losses

R-squared

Observed annual rate of change (10 years)	=	+5.4%	0.911
Observed annual rate of change (8 years)	=	+6.0%	0.887
Observed annual rate of change (6 years)	=	+6.8%	0.934
Selected annual rate of change	=	+5.0%	

CONNECTICUT

TABLE C3-4

DEVELOPMENT OF ALL OTHER PROPERTY EXCESS MULTIPLIER

<u>YEAR ENDING</u>	(1) <u>EARNED PREMIUMS</u>	(2) <u>INCURRED LOSSES</u>	(3) <u>NORMAL INCURRED LOSSES</u>	(4) <u>NORMAL LOSS RATIO</u>	(5) <u>STATE EXCESS LOSS RATIO</u>
3/31/1989	6,224,414	1,612,387	1,612,387	0.259	
3/31/1990	9,959,343	4,731,574	4,731,574	0.475	
3/31/1991	11,859,252	3,672,132	3,672,132	0.310	
3/31/1992	11,681,762	3,341,328	3,341,328	0.286	
3/31/1993	11,619,588	5,855,448	5,855,448	0.504	
3/31/1994	11,742,770	14,501,875	7,277,375	0.620	0.615
3/31/1995	11,653,835	5,604,264	5,604,264	0.481	
3/31/1996	12,113,160	10,256,257	7,071,935	0.584	0.263
3/31/1997	11,988,538	4,839,532	4,839,532	0.404	
3/31/1998	11,888,944	3,992,644	3,992,644	0.336	
3/31/1999	12,319,077	6,075,146	6,075,146	0.493	
3/31/2000	12,882,779	10,923,983	8,901,630	0.691	0.157
3/31/2001	13,497,083	5,896,386	5,896,386	0.437	
3/31/2002	14,884,956	5,936,761	5,936,761	0.399	
3/31/2003	16,643,574	6,524,786	6,524,786	0.392	
3/31/2004	18,290,158	8,428,874	7,712,920	0.422	0.039
3/31/2005	19,695,914	7,886,798	7,886,798	0.400	
3/31/2006	20,325,220	7,279,791	7,279,791	0.358	
3/31/2007	20,377,256	7,993,070	7,993,070	0.392	
3/31/2008	20,883,024	7,373,527	7,373,527	0.353	
3/31/2009	20,320,858	10,942,798	10,324,731	0.508	0.030
3/31/2010	19,717,058	8,136,382	8,136,382	0.413	
3/31/2011	17,692,544	30,537,700	13,299,254	0.752	0.974
3/31/2012	16,800,436	13,772,527	10,797,528	0.643	0.177
3/31/2013	16,233,433	11,310,722	11,099,249	0.684	0.013
3/31/2014	16,324,541	10,724,185	10,552,271	0.646	0.011
3/31/2015	17,299,864	10,991,146	9,495,257	0.549	0.086
3/31/2016	18,252,456	9,154,541	7,878,999	0.432	0.070
3/31/2017	19,282,500	6,138,328	6,138,328	0.318	
3/31/2018	20,257,214	10,845,196	10,089,862	0.498	0.037
TOTALS				14.039	2.472
(6) STATE EXCESS COMPONENT = ( TOTAL (5) / TOTAL (4) )					0.176
(7) STATE EXCESS MULTIPLIER = ( 1 + (6) )					1.176

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EXPLANATORY NOTES TO TABLE C3-4

OBJECTIVE	Similar to Extended Coverage, the All Other Property (AOP) smoothing procedure uses a loss ratio approach to reflect both the frequency and severity of unusual loss events. The excess procedure uses longer term statewide AOP experience (1989 - present) to account for the volatile nature of weather related losses (water damage from bursting pipes, or the weight of ice, sleet or snow) which are the predominant causes of large AOP losses in a given experience period. A monthly normal loss ratio cutoff of 2.0 is used to define normal and excess losses. The resulting ratio of excess to normal losses over the long-term experience period is then applied to the normal losses used in the loss cost level review.
COLUMN (1)	<u>EARNED PREMIUMS</u>  The unadjusted earned premiums for AOP each year and are a portion of the total earned premium obtained by multiplying each individual state's ratio of AOP losses to total losses.
COLUMN (2)	<u>INCURRED LOSSES</u>  These are the unadjusted incurred losses for each year.
COLUMN (3)	<u>NORMAL INCURRED LOSSES</u>  The normal incurred losses are shown for each year and are defined to be that portion of each month's losses which does not exceed 2.0 times the monthly earned premiums.
COLUMN (4)	<u>NORMAL LOSS RATIO</u>  The normal loss ratio for each year is the ratio of the normal incurred losses for each year divided by the earned premiums for the year. Column (4) = Column (3) ÷ Column (1)
COLUMN (5)	<u>EXCESS LOSS RATIO</u>  The excess loss ratio for each year is the ratio of the excess losses to the earned premium for the year. The excess losses are calculated as the incurred losses minus the normal incurred losses for each year.

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EXPLANATORY NOTES TO TABLE C3-4 (Cont'd)

LINE (6)

EXCESS COMPONENT

The excess component is determined by dividing the sum of all excess loss ratios by the sum of all normal loss ratios where the sum is taken across all years in the excess review period.

LINE (7)

EXCESS MULTIPLIER

The excess multiplier is derived by adding unity to the excess component.

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TABLE C4

DEVELOPMENT OF CURRENT COST FACTORS AND LOSS PROJECTION FACTORS

Period Ending December 31, 2018

**Part A: Quarterly Indices for Buildings and Contents**

Buildings - Xactware Commercial Index (XCI) (Base: 2008 = 100.0)  
 Contents - Producer Price Index (PPI) - U.S. Dept. of Labor,  
 (Finished Goods Less Energy) (Base: 2008 = 100.0)

Quarter	<u>XCI</u>	<u>PPI</u>
<u>Ending</u>		
3/31/2016	114.0	116.2
6/30/2016	114.2	116.1
9/30/2016	114.8	116.1
12/31/2016	115.5	116.4
3/31/2017	116.2	117.3
6/30/2017	117.5	118.3
9/30/2017	118.6	118.1
12/31/2017	119.1	118.9
3/31/2018	120.3	119.4
6/30/2018	121.2	119.9
9/30/2018	122.1	120.1
12/31/2018	122.5	121.4

**Part B: Calculation of Current Cost Factors (CCF)**

<u>Fiscal</u> <u>Year Ending</u>	<u>Year Ending Averages</u>		<u>Current Cost Factors to</u> <u>Period Ending December 31, 2018</u>	
	<u>XCI</u>	<u>PPI</u>	<u>Buildings*</u>	<u>Contents*</u>
3/31/2014	106.3	111.9	122.5/106.3 = 1.152	120.9/111.9 = 1.080
3/31/2015	109.2	114.8	122.5/109.2 = 1.122	120.9/114.8 = 1.053
3/31/2016	113.2	115.8	122.5/113.2 = 1.082	120.9/115.8 = 1.044
3/31/2017	115.2	116.5	122.5/115.2 = 1.063	120.9/116.5 = 1.038
3/31/2018	118.9	118.7	122.5/118.9 = 1.030	120.9/118.7 = 1.019

\*The CCF's for Buildings are calculated using the latest point. The CCF's for Contents are calculated using a 67% / 33% weighted average of the latest two quarter ending points.

**Part C: Computation of Loss Projection Factors**

	<u>Buildings</u>	<u>Contents</u>
Annual Rate of Change	+2.92%	+1.66%
Loss Projection Factor**	1.053	1.030

\*\*To project losses from the midpoint of the latest quarter, 11/15/2018, to the average accident date of 9/1/2020. (21.5/12)

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### BUSINESSOWNERS

#### EXPLANATORY NOTES TO TABLE C4

##### PART A: QUARTERLY XACTWARE AND PRODUCER PRICE INDICES

###### XCI

The Xactware Commercial Index, based on Xactware's XactAnalysis reports, measures the costs of building material and repairs for commercial properties. The index, which has been available since 2nd Quarter 2005, is being used by ISO to calculate trends in building costs. The Xactware index is based on regular surveys of nearly 25,000 material and equipment suppliers and contractors, in addition to claims settlement data. The index values are created by estimating the cost to rebuild a sample set of different structures ranging in size, style, and quality in each economic market. The Xactware index is used in this filing to adjust for current cost from in determining the loss projection factor.

###### PPI

The Producer Price Index is a time series which measures the price level for a predetermined group of goods produced in all stages of processing relative to the price level for an earlier point in time (which is denoted the base and is currently 2008). There are many sub-indices which comprise the PPI, however the composite index based on the weights assigned by the U.S. government is used.

##### PART B: CALCULATION OF CURRENT COST FACTORS (CCFs)

###### FISCAL YEAR AVERAGES

The fiscal year averages are simply the means of the appropriate quarterly indices for the given fiscal years ending March 31. These measure the average cost level of the year relative to the base year.

###### CURRENT COST FACTORS

The current cost factors are the ratios of the indices for the latest period of cost information divided by the fiscal year average indices for each year. These factors measure the changes in cost levels which have occurred from the midpoint of the given year to the latest point of cost information; in this regard they represent average factors which would result if each year's losses were distributed evenly throughout the year.

##### PART C: COMPUTATION OF LOSS PROJECTION FACTORS

This part of the table shows the calculation of the Loss Projection Factors. This is done by fitting a least squares exponential curve to the quarterly points. For this review, 12 points are used for buildings, and 12 points are used for contents.

The indices for the points used in fitting the curve are displayed in Part A. The annual rates of change in the indices based on the exponential fit are displayed in Part C. These annual rates of change are projected over the period which extends from the latest period of cost information to the average accident date in order to calculate the respective Loss Projection Factors.

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TABLE C5

DEVELOPMENT OF LOSS TREND ADJUSTMENT (LTA)  
BOP SEVERITY AND FREQUENCY USING EXPOSURES

**I. EXTERNAL RATE OF CHANGE**

		BUILDINGS		CONTENTS		
		(1)	(2a)	(2b)		
		Fire, EC and AOP	Current	Current		
Year		Weights	<u>Cost Factors</u>	<u>Cost Factors</u>		
	2014	0.10	1.152	1.080		
	2015	0.15	1.122	1.053		
	2016	0.20	1.082	1.044		
	2017	0.25	1.063	1.038		
	2018	0.30	1.030	1.019		
(3)	Average CCF for Fire, EC and AOP		1.075	1.040		
(4a)	Annual Rate of Change		0.0292	0.0166		
(4b)	Projection Period (a)		21.50	21.50		
(4c)	Loss Projection Factor (LPF)		1.053	1.030		
	$(1 + (4a)) ^ ((4b) / 12)$					
(5a)	Total Trend (3) x (4c)		1.132	1.071		
(5b)	Projection Period (b)		53.00	53.00		
(5c)	Annualized Total Trend for Fire, EC and AOP		1.028	1.016		
	$(5a) ^ (12 / (5b))$					

**II. INTERNAL ANNUAL RATE OF CHANGE**

		(6)	
		<u>Selected BOP</u>	
		BUILDINGS	CONTENTS
	Fire	1.070	1.070
	EC	1.070	1.030
	AOP	1.050	1.050

- (a) The number of months from the midpoint of the latest quarter of external trend used, 11/15/2018, to the assumed average accident date of 9/1/2020.
- (b) The number of months from the weighted midpoint of the experience period, 4/1/2016, to the assumed average accident date of 9/1/2020.

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TABLE C5 (Cont'd)

DEVELOPMENT OF LOSS TREND ADJUSTMENT (LTA)  
BOP SEVERITY AND FREQUENCY USING EXPOSURES

**III. LTA CALCULATION**

	(7)	(8)	(9)	(10)	(11)	(12)
	Annual <u>External</u>	Annual <u>Internal</u>	Indicated Severity LTA <u>(8)/(7)</u>	Formula Severity LTA (c)	Frequency <u>Effect</u>	Final LTA <u>(10) x (11)</u>
<b>BUILDINGS</b>						
Fire	1.028	1.070	1.041	1.027	0.945	0.971
EC	1.028	1.070	1.041	1.027	1.000	1.027
AOP	1.028	1.050	1.021	1.014	1.000	1.014
<b>CONTENTS</b>						
Fire	1.016	1.070	1.053	1.035	0.950	0.983
EC	1.016	1.030	1.014	1.009	1.000	1.009
AOP	1.016	1.050	1.033	1.022	1.000	1.022

- (c) The formula LTA is calculated as two-thirds of the indicated LTA. This is equivalent to calculating the overall severity trend giving 33% weight to the external trend and 67% weight to the selected internal trend.

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EXPLANATORY NOTES TO TABLE C5

I. EXTERNAL RATE OF CHANGE

COLUMN (1)

WEIGHTS

The selected weights are the same for each type of loss group.

COLUMN (2)

CURRENT COST FACTORS (CCF)

The CCFs are shown here for buildings and contents.

LINE (3)

AVERAGE CCFs

The average CCFs for the experience period are calculated based on the weights shown in column (1).

LINE (4)

LOSS PROJECTION FACTORS

The annual rate of change, projection period in years (Exponent), and LPF are shown here.

LINE (5)

TOTAL TREND

The total trend is the product of the average CCF and LPF. The total trend is converted to an annual basis by raising it to the reciprocal of the number of years between the weighted midpoint of the experience period and the assumed average accident date. For Fire, EC and AOP the weighted midpoint of the experience period is 4/1/2016. Accordingly, there are 53 months to the assumed average accident date of 9/1/2020.

II. INTERNAL ANNUAL RATES OF CHANGE

COLUMN (6)

SELECTED BOP

The displayed annual rates of change in the average claim costs for Fire, EC, and AOP were selected based on several least squares exponential fits of the annual claim costs for each type of loss group. This was done to the most recent nine years of Businessowners data. Refer to Tables C1, C2 and C3 for the least squares exponential fits.

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EXPLANATORY NOTES TO TABLE C5 (Cont'd)

III. LTA CALCULATION

COLUMN (7)

ANNUAL EXTERNAL

The annual external rates of change from line (5c) are shown here.

COLUMN (8)

ANNUAL INTERNAL

The annual internal rates of change in average loss from column (6) are shown here.

COLUMN (9)

INDICATED LTA

The indicated severity LTAs are calculated by dividing the annual internal rates of change by the annual external rates of change.

COLUMN (10)

FORMULA LTA

The severity LTAs in column (10) were selected to temper the full effect of internal trend data. Without such tempering, full weight would in effect be given to the internal data without any consideration of the external cost indices.

COLUMN (11)

FREQUENCY EFFECT

The displayed annual rates of change in claim frequency for Fire, EC and AOP were selected based on several least squares exponential fits of the claim frequency by type of loss group.

COLUMN (12)

FINAL LTA

The final LTA is the combination of the severity and frequency trend adjustments, calculated as column (10) times column (11).

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BUSINESSOWNERS

CALCULATION OF ADJUSTED BURGLARY AND THEFT LOSSES

DEFINITION OF BURGLARY AND THEFT TYPE OF LOSS GROUP	Burglary and theft losses are defined as losses due to burglary, theft and robbery of property other than money and securities. This includes time element losses and losses resulting from property damage to contents.
CALCULATION OF LOSS TREND FACTORS	<p>The method used to determine internal fire trend is also applied to burglary losses. The historical internal data and the selected annual rates of change are shown in Table C6.</p> <p>Because the Businessowners deductible applies to all property losses, the same deductible trending procedure used with the fire losses is used with the burglary and theft losses.</p>
BURGLARY AND THEFT LARGE LOSS PROCEDURE	The presence or absence of large losses during the review period can produce large fluctuations in loss cost levels if not appropriately treated. To stabilize the experience, large loss factors have been applied to normal losses. In the large loss procedure, the portion of a loss over \$20,000 at the 1989 cost level is defined as an excess loss, and the portion of a loss under \$20,000 at the 1989 cost level is defined as a normal loss. The state's loss amounts adjusted for excess occurrences are derived by multiplying the normal losses by the multistate ratio of total losses to normal losses.
LOSS ADJUSTMENT EXPENSE	Trended and smoothed losses are loaded for all loss adjustment expenses using the factor selected based on the data displayed in Table C11-2.

CONNECTICUT  
BUSINESSOWNERS  
TABLE C6

BURGLARY  
MULTISTATE  
SEVERITY AND FREQUENCY TREND

Accident <u>Year</u>	Trended <u>Exposures</u>	Total <u>Losses</u>	Normal <u>Losses</u>	Incurred <u>Occurrences</u>	Average Occurrence <u>Cost (Total)</u>	Average Occurrence <u>Cost Normal</u>	Average Occurrence <u>Frequency*</u>
2009	7,699,821,745	20,491,797	19,564,620	3,845	5,329	5,088	0.0499
2010	8,094,653,858	18,055,390	17,480,216	3,377	5,347	5,176	0.0417
2011	8,151,613,926	17,412,049	16,917,012	3,136	5,552	5,394	0.0385
2012	8,043,237,795	18,186,648	17,111,901	3,072	5,920	5,570	0.0382
2013	7,705,396,101	16,156,274	15,540,830	2,597	6,221	5,984	0.0337
2014	7,533,654,336	18,844,287	17,756,033	2,765	6,815	6,422	0.0367
2015	7,296,467,971	20,026,561	18,597,718	2,720	7,363	6,837	0.0373
2016	7,302,443,208	19,561,319	18,740,033	2,755	7,100	6,802	0.0377
2017	7,868,101,988	23,290,031	21,856,124	3,040	7,661	7,190	0.0386
2018	8,271,980,159	25,708,226	22,927,083	3,036	8,468	7,552	0.0367

Total Losses

		<u>Severity</u>	<u>Frequency</u>	<u>R-squared</u>	
		<u>Severity</u>	<u>Frequency</u>	<u>Severity</u>	<u>Frequency</u>
Observed annual rate of change (10 years)	=	+5.4%	-2.0%	0.965	0.358
Observed annual rate of change (8 years)	=	+5.8%	+0.1%	0.956	0.003
Observed annual rate of change (6 years)	=	+5.4%	+1.7%	0.894	0.460

Normal Losses

		<u>Severity</u>	<u>Frequency</u>	<u>R-squared</u>	
		<u>Severity</u>	<u>Frequency</u>	<u>Severity</u>	<u>Frequency</u>
Observed annual rate of change (10 years)	=	+4.8%	-2.0%	0.980	0.358
Observed annual rate of change (8 years)	=	+5.0%	+0.1%	0.972	0.003
Observed annual rate of change (6 years)	=	+4.4%	+1.7%	0.951	0.460
Selected annual rate of change	=	+4.5%	-2.0%		

\* in 100,000's

## CONNECTICUT

### BUSINESSOWNERS

#### CALCULATION OF ADJUSTED LIABILITY LOSSES

##### DEFINITION OF LIABILITY TYPE OF LOSS GROUP

Liability losses and allocated loss adjustment expenses include the data reported as premises/operations liability, products liability, medical payments and all other liability.

##### EXCESS LOSS PROCEDURE

The liability coverage included with the basic Businessowners coverage is subject to a limit on loss payments equal to \$300,000. This limit is applied to all indemnity losses resulting from an occurrence. When the total of indemnity losses on an occurrence exceeds \$300,000, the portion over \$300,000 has been excluded from this review.

For smoothing purposes, we considered the impact of all losses from an occurrence. This was accomplished by combining the capped indemnity losses and defense costs. The procedure sums losses by occurrence, calculates the normal portion of the occurrence (defined as that part of loss and ALAE less than \$50,000), and replaces the actual excess with an expected excess amount based on the yearly multistate experience. This excess loss factor is equal to the ratio of the total multistate capped indemnity losses plus all allocated loss adjustment expense to the total multistate normal losses.

##### CALCULATION OF LOSS TREND FACTORS

The method used to determine internal fire trend is also applied to liability losses.

Loss Trend Factors for Businessowners liability lessors/occupants, and liability sales and payroll losses are based on \$300,000 limit Businessowners occurrence cost and frequency rates of change.

These combined rates of change are projected to an assumed average loss date of September 1, 2020 based on an assumed effective date for trending of September 1, 2019.

The historical data underlying the selected annual rates of change are shown in Table C7 for liability lessors, liability occupants, liability sales, and liability payroll risks.

In this review, multistate dollars of losses and number of occurrences contained in the trend exhibits are based on reported paid amounts developed to ultimate using paid development factors. This has been done in the interest of stability of ultimate loss and occurrence estimates from one review to another.

CONNECTICUT

BUSINESSOWNERS

CALCULATION OF ADJUSTED LIABILITY LOSSES (Cont'd)

LOSS  
DEVELOPMENT  
PROCEDURE

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

The incurred losses and loss adjustment expenses underlying the statewide loss cost level indications were evaluated as of June 30, 2018.

Fiscal accident year ending March 31, 2018 includes all losses and loss adjustment expenses paid on accidents from April 1, 2017 to March 31, 2018 and all losses and loss adjustment expenses outstanding on those accidents as of June 30, 2018, 15 months after the inception of the accident year.

Similarly, fiscal accident years ending March 31, 2017, 2016, 2015, and 2014 include all losses paid and outstanding as of 27, 39, 51 and 63 months, respectively, after the inception of the accident year.

Thus, the immature experience reported as of 15, 27, 39, 51 or 63 months must be adjusted to an ultimate settlement basis. For liability sales and liability payroll, this adjustment is accomplished through the use of multistate loss development factors. For liability lessors/occupants, statewide loss development factors are credibility weighted with multistate factors. A Bayesian credibility study was done on multistate 15 to 27 and 27 to 39 months link ratios. The study concluded that there is significant statewide variation through 39 months. For these two link ratios, statewide credibility is determined by the formula  $Z=L/(L+K)$ , where Z is the credibility, and L is the 3-year total losses for the particular state (at the earliest of the two evaluations). K is a constant that varies as follows:

<u>15 to 27 Months</u>	<u>27 to 39 Months</u>
\$ 5,000,000	\$ 65,000,000

The complement of credibility is assigned to multistate link ratios. Three-year averages are calculated for each link ratio using a “best three of five” approach. Specifically, for the latest five years, the highest and lowest factors were removed from the calculations and the three-year average was calculated using the remaining factors. Development after 123 months is assumed to be unity.

UNALLOCATED  
LOSS  
ADJUSTMENT  
EXPENSE

The final adjustment to the liability losses is to include unallocated loss adjustment expenses using the factor selected based on the data displayed in Table C11-3.

CONNECTICUT  
BUSINESSOWNERS  
TABLE C7-1  
LIABILITY- LESSORS  
MULTISTATE  
SEVERITY AND FREQUENCY TREND

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
					(3)/(5)	(4)/(5)	(5)/(2)
					Average	Average	Average
Accident	Trended	Paid Total	Paid Normal	Paid	Occurrence	Occurrence	Occurrence
<u>Year</u>	<u>Exposures</u>	<u>Losses</u>	<u>Losses*</u>	<u>Occurrences**</u>	<u>Cost (Total)</u>	<u>Cost (Normal)</u>	<u>Frequency***</u>
2009	3,546,988,737	104,391,476	48,656,368	4,236	24,644	11,486	0.1194
2010	3,875,888,214	101,436,983	50,235,601	4,221	24,029	11,900	0.1089
2011	3,971,297,755	124,567,688	57,650,682	5,007	24,879	11,514	0.1261
2012	4,358,079,201	103,384,277	45,648,695	3,767	27,443	12,117	0.0864
2013	4,282,279,612	111,305,663	51,495,312	3,700	30,086	13,919	0.0864
2014	4,224,082,688	175,409,626	83,382,203	5,333	32,891	15,635	0.1263
2015	3,957,789,050	158,940,121	73,063,793	4,545	34,967	16,074	0.1148
2016	3,861,538,195	118,708,520	63,330,658	3,568	33,269	17,749	0.0924
2017	4,249,936,705	99,679,543	72,481,006	3,595	27,724	20,160	0.0846
2018	4,378,847,463	82,701,199	74,822,481	3,404	24,298	21,984	0.0777

Total Losses

				<u>Severity</u>	<u>Frequency</u>	<u>R-Squared</u>	
						<u>Severity</u>	<u>Frequency</u>
Observed annual rate of change (10 years)	=		+1.9%	-3.5%	0.163	0.352	
Observed annual rate of change (8 years)	=		+0.3%	-4.0%	0.003	0.259	
Observed annual rate of change (6 years)	=		-4.6%	-5.4%	0.410	0.301	

Normal Losses

				<u>Severity</u>	<u>Frequency</u>	<u>R-Squared</u>	
						<u>Severity</u>	<u>Frequency</u>
Observed annual rate of change (10 years)	=		+8.0%	-3.5%	0.946	0.352	
Observed annual rate of change (8 years)	=		+9.8%	-4.0%	0.989	0.259	
Observed annual rate of change (6 years)	=		+9.4%	-5.4%	0.981	0.301	
Selected annual rate of change	=		+4.0%	-3.0%			

\* Includes basic indemnity and allocated loss adjustment expense developed separately to an ultimate settlement basis.

\*\* Developed to an ultimate settlement basis.

\*\*\* in 100,000's

CONNECTICUT  
BUSINESSOWNERS  
TABLE C7-2  
LIABILITY- OCCUPANTS  
MULTISTATE  
SEVERITY AND FREQUENCY TREND

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
					(3)/(5)	(4)/(5)	(5)/(2)
					Average	Average	Average
Accident	Trended	Paid Total	Paid Normal	Paid	Occurrence	Occurrence	Occurrence
<u>Year</u>	<u>Exposures</u>	<u>Losses</u>	<u>Losses*</u>	<u>Occurrences**</u>	<u>Cost (Total)</u>	<u>Cost (Normal)</u>	<u>Frequency***</u>
2009	828,994,056	152,402,401	86,228,875	10,719	14,218	8,044	1.2930
2010	810,457,789	172,325,037	84,011,144	10,660	16,165	7,881	1.3153
2011	793,416,844	182,006,776	83,129,858	10,223	17,804	8,132	1.2884
2012	756,302,073	144,759,580	61,040,999	7,494	19,316	8,145	0.9909
2013	755,689,921	120,876,598	56,594,445	5,683	21,269	9,958	0.7521
2014	938,279,702	157,467,908	74,392,421	7,024	22,420	10,592	0.7486
2015	1,053,787,452	157,746,777	72,561,362	6,297	25,049	11,522	0.5976
2016	950,197,889	146,584,100	71,965,759	5,382	27,237	13,372	0.5664
2017	995,941,372	141,599,879	90,811,763	5,063	27,968	17,937	0.5084
2018	1,175,509,806	190,926,597	131,237,197	4,980	38,339	26,353	0.4236

Total Losses

R-Squared

			<u>Severity</u>	<u>Frequency</u>	<u>Severity</u>	<u>Frequency</u>
Observed annual rate of change (10 years)	=	+10.0%	-12.7%	0.964	0.963	
Observed annual rate of change (8 years)	=	+10.1%	-13.5%	0.934	0.957	
Observed annual rate of change (6 years)	=	+11.1%	-11.0%	0.888	0.956	

Normal Losses

R-Squared

			<u>Severity</u>	<u>Frequency</u>	<u>Severity</u>	<u>Frequency</u>
Observed annual rate of change (10 years)	=	+12.9%	-12.7%	0.844	0.963	
Observed annual rate of change (8 years)	=	+16.9%	-13.5%	0.901	0.957	
Observed annual rate of change (6 years)	=	+20.7%	-11.0%	0.894	0.956	
Selected annual rate of change	=	+11.0%	-11.0%			

\* Includes basic indemnity and allocated loss adjustment expense developed separately to an ultimate settlement basis.

\*\* Developed to an ultimate settlement basis.

\*\*\* in 100,000's

CONNECTICUT  
 BUSINESSOWNERS  
 TABLE C7-3  
 LIABILITY - SALES  
 MULTISTATE SEVERITY AND FREQUENCY TREND

Accident <u>Year</u>	Trended <u>Exposures</u>	Paid Total <u>Losses</u>	Paid Normal <u>Losses*</u>	Paid <u>Occurrences**</u>	Occurrence Cost <u>(Total)</u>	Occurrence Cost <u>(Normal)</u>	Occurrence <u>Frequency***</u>
2009	17,151,293	23,987,002	13,865,423	2,867	8,367	4,836	0.0167
2010	16,332,254	20,073,937	12,642,142	2,752	7,294	4,594	0.0169
2011	15,617,010	20,186,848	11,042,238	2,595	7,779	4,255	0.0166
2012	15,894,770	25,573,962	12,241,022	2,396	10,674	5,109	0.0151
2013	17,810,947	31,613,062	15,082,463	2,388	13,238	6,316	0.0134
2014	25,697,115	38,877,796	20,817,975	3,150	12,342	6,609	0.0123
2015	31,632,239	52,576,615	28,442,628	3,989	13,181	7,131	0.0126
2016	35,978,807	64,998,092	36,815,830	4,109	15,817	8,959	0.0114
2017	39,136,054	65,183,392	45,830,757	3,843	16,961	11,926	0.0098
2018	48,902,602	85,196,838	69,679,703	3,611	23,594	19,297	0.0074

Total Losses

			<u>Severity</u>	<u>Frequency</u>	<u>R-Squared</u>	
					<u>Severity</u>	<u>Frequency</u>
Observed annual rate of change (10 years)	=		+12.4%	-7.9%	0.907	0.892
Observed annual rate of change (8 years)	=		+13.6%	-9.4%	0.897	0.902
Observed annual rate of change (6 years)	=		+12.2%	-10.2%	0.804	0.827

Normal Losses

			<u>Severity</u>	<u>Frequency</u>	<u>R-Squared</u>	
					<u>Severity</u>	<u>Frequency</u>
Observed annual rate of change (10 years)	=		+15.6%	-7.9%	0.845	0.892
Observed annual rate of change (8 years)	=		+20.9%	-9.4%	0.919	0.902
Observed annual rate of change (6 years)	=		+24.2%	-10.2%	0.881	0.827
Selected annual rate of change	=		+10.0%	-5.0%		

\* Includes basic indemnity and allocated loss adjustment expense developed separately to an ultimate settlement basis.

\*\* Developed to an ultimate settlement basis.

\*\*\* in 100,000's

CONNECTICUT  
BUSINESSOWNERS

TABLE C7-4

LIABILITY - PAYROLL  
MULTISTATE SEVERITY AND FREQUENCY TREND

Accident <u>Year</u>	Trended <u>Exposures</u>	Paid Total <u>Losses</u>	Paid Normal <u>Losses*</u>	Paid <u>Occurrences**</u>	Occurrence Cost <u>(Total)</u>	Occurrence Cost <u>(Normal)</u>	Occurrence <u>Frequency***</u>
2009	4,661,367	48,104,164	23,529,052	3,344	14,385	7,036	0.0717
2010	4,031,428	43,913,680	20,470,568	2,685	16,357	7,625	0.0666
2011	3,681,364	51,955,868	21,867,198	2,234	23,252	9,786	0.0607
2012	3,527,222	47,978,653	19,588,750	2,577	18,615	7,600	0.0731
2013	3,691,995	58,775,786	20,765,469	2,213	26,561	9,384	0.0599
2014	3,755,528	59,445,829	23,391,350	2,237	26,579	10,459	0.0596
2015	3,841,111	51,543,291	26,239,740	2,178	23,663	12,046	0.0567
2016	4,061,535	60,692,051	28,248,902	2,076	29,232	13,606	0.0511
2017	4,208,581	52,959,641	30,056,763	2,161	24,510	13,910	0.0513
2018	4,343,060	46,677,236	37,586,236	2,181	21,397	17,230	0.0502

<u>Total Losses</u>			<u>R-Squared</u>	
			<u>Severity</u>	<u>Frequency</u>

Observed annual rate of change (10 years)	=	5.1%	-4.0%	0.442	0.808
Observed annual rate of change (8 years)	=	1.2%	-4.2%	0.040	0.718
Observed annual rate of change (6 years)	=	-3.1%	-4.0%	0.299	0.895

<u>Normal Losses</u>				<u>R-Squared</u>	
				<u>Severity</u>	<u>Frequency</u>

Observed annual rate of change (10 years)	=	9.8%	-4.0%	0.905	0.808
Observed annual rate of change (8 years)	=	10.3%	-4.2%	0.846	0.718
Observed annual rate of change (6 years)	=	12.2%	-4.0%	0.972	0.895
Selected annual rate of change	=	8.0%	-4.0%		

\* Includes basic indemnity and allocated loss adjustment expense developed separately to an ultimate settlement basis.

\*\* Developed to an ultimate settlement basis.

\*\*\* in 100,000's

CONNECTICUT

BUSINESSOWNERS

TABLE C8-1

LOSS DEVELOPMENT  
LIABILITY - LESSORS/OCCUPANTS

\$ 300,000 LIMIT INCURRED LOSSES AS OF:

<u>YEAR</u>	<u>15 MONTHS</u>	<u>27 MONTHS</u>	<u>39 MONTHS</u>	<u>LINK RATIOS</u>	
				<u>27:15</u>	<u>39:27</u>
2004	6,432,178	9,760,738	11,265,052	1.517	1.154
2005	7,444,624	11,130,434	13,982,688	1.495	1.256
2006	4,322,698	7,658,398	10,725,854	1.772	1.401
2007	4,855,624	6,892,409	9,838,003	1.419	1.427
2008	4,931,862	7,840,866	11,272,667	1.590	1.438
2009	6,737,327	9,942,741	12,974,491	1.476	1.305
2010	6,169,320	8,608,054	10,428,445	1.395	1.211
2011	6,826,654	9,809,768	13,165,198	1.437	1.342
2012	6,158,335	8,473,911	9,212,787	1.376	1.087
2013	4,813,043	7,261,219	10,048,932	1.509	1.384
2014	5,490,564	7,705,237	11,066,223	1.403	1.436
2015	5,340,460	8,459,694	12,832,727	1.584	1.517
2016	5,271,969	7,558,167	11,048,403	1.434	1.462
2017	5,434,364	7,456,490		1.372	
2018	5,274,035				

(1) Average Best 3 of 5	(A) Statewide	1.449	1.427
	(B) Multistate	1.518	1.262
(2) Credibility		0.762	0.267
(3) Credibility Weighted Average		1.465	1.306

Summary of Factors

	<u>Factor</u>
63 to Ultimate**	1.016
51 to Ultimate**	1.038
39 to Ultimate**	1.127
27 to Ultimate	1.472
15 to Ultimate	2.156

\*\*Multistate

CONNECTICUT  
 BUSINESSOWNERS  
 TABLE C8-2  
 MULTISTATE LOSS DEVELOPMENT  
 LIABILITY - LESSORS/OCCUPANTS  
\$300,000 LIMIT INCURRED LOSSES AS OF:

<u>YEAR</u>	<u>15 MONTHS</u>	<u>27 MONTHS</u>	<u>39 MONTHS</u>	<u>51 MONTHS</u>	<u>63 MONTHS</u>	<u>75 MONTHS</u>	<u>87 MONTHS</u>	<u>99 MONTHS</u>	<u>111 MONTHS</u>	<u>123 MONTHS</u>
2004	168,608,288	248,388,368	300,467,343	323,920,263	328,562,369	324,916,416	322,970,426	322,508,513	322,622,496	323,681,629
2005	172,541,621	236,255,711	285,121,291	304,686,433	311,565,645	312,161,445	311,456,749	313,012,991	315,666,960	317,979,825
2006	171,237,838	241,308,226	295,706,902	310,021,300	308,453,728	308,672,078	310,340,785	311,848,635	312,746,158	315,402,217
2007	169,956,641	249,857,742	302,129,945	316,100,616	319,476,904	319,524,538	322,188,137	325,665,381	326,084,536	324,117,376
2008	196,593,598	274,651,315	327,908,648	350,945,118	354,502,210	351,576,961	352,999,987	353,152,062	353,234,972	353,627,208
2009	193,199,069	278,982,248	345,271,548	360,620,375	367,664,187	369,585,579	364,354,675	365,557,780	365,981,047	365,685,326
2010	199,560,296	275,546,000	334,944,790	358,137,543	364,032,484	361,555,585	362,544,239	362,701,808	363,145,007	
2011	197,512,046	285,866,804	354,218,550	384,368,479	392,556,704	394,411,445	397,857,912	402,773,907		
2012	174,721,506	249,306,434	301,891,414	324,377,680	329,756,433	330,734,736	332,335,134			
2013	154,721,158	227,595,788	272,484,313	291,779,490	303,158,209	304,972,866				
2014	164,661,983	249,266,193	328,200,635	371,466,679	381,473,951					
2015	156,541,966	249,777,923	335,425,377	368,245,519						
2016	154,736,706	242,685,041	305,614,550							
2017	168,420,423	247,458,942								
2018	170,604,377									

LINK RATIOS

<u>YEAR</u>	<u>27:15</u>	<u>39:27</u>	<u>51:39</u>	<u>63:51</u>	<u>75:63</u>	<u>87:75</u>	<u>99:87</u>	<u>111:99</u>	<u>123:111</u>
2004	1.473	1.210	1.078	1.014	0.989	0.994	0.999	1.000	1.003
2005	1.369	1.207	1.069	1.023	1.002	0.998	1.005	1.008	1.007
2006	1.409	1.225	1.048	0.995	1.001	1.005	1.005	1.003	1.008
2007	1.470	1.209	1.046	1.011	1.000	1.008	1.011	1.001	0.994
2008	1.397	1.194	1.070	1.010	0.992	1.004	1.000	1.000	1.001
2009	1.444	1.238	1.044	1.020	1.005	0.986	1.003	1.001	0.999
2010	1.381	1.216	1.069	1.016	0.993	1.003	1.000	1.001	
2011	1.447	1.239	1.085	1.021	1.005	1.009	1.012		
2012	1.427	1.211	1.074	1.017	1.003	1.005			
2013	1.471	1.197	1.071	1.039	1.006				
2014	1.514	1.317	1.132	1.027					
2015	1.596	1.343	1.098						
2016	1.568	1.259							
2017	1.469								
BEST 3 OF 5	1.518	1.262	1.086	1.022	1.004	1.004	1.005	1.001	1.002
	<u>15 to Ult.</u>	<u>27 to Ult.</u>	<u>39 to Ult.</u>	<u>51 to Ult.</u>	<u>63 to Ult.</u>	<u>75 to Ult.</u>	<u>87 to Ult.</u>	<u>99 to Ult.</u>	<u>111 to Ult.</u>
FACTORS	2.159	1.422	1.127	1.038	1.016	1.012	1.008	1.003	1.002

CONNECTICUT  
 BUSINESSOWNERS  
 TABLE C8-3  
 MULTISTATE LOSS DEVELOPMENT  
 LIABILITY - SALES  
\$300,000 LIMIT INCURRED LOSSES AS OF:

<u>YEAR</u>	<u>15 MONTHS</u>	<u>27 MONTHS</u>	<u>39 MONTHS</u>	<u>51 MONTHS</u>	<u>63 MONTHS</u>	<u>75 MONTHS</u>	<u>87 MONTHS</u>	<u>99 MONTHS</u>	<u>111 MONTHS</u>	<u>123 MONTHS</u>
2004	11,595,385	10,702,290	10,410,672	10,793,654	10,999,162	10,972,219	11,295,228	11,212,259	11,166,479	11,166,479
2005	11,456,604	10,619,249	11,602,320	12,496,779	12,795,903	12,960,098	12,922,735	12,926,383	12,827,787	12,827,787
2006	9,825,211	12,112,047	14,510,360	15,142,943	15,204,537	15,261,037	15,314,336	15,317,803	15,333,983	15,478,899
2007	12,208,163	15,787,970	18,131,628	19,034,084	19,033,260	19,032,626	18,847,957	18,930,128	18,895,879	18,907,156
2008	17,388,392	20,199,168	21,684,846	23,118,897	23,960,971	24,155,678	24,107,288	24,183,355	24,207,016	24,256,084
2009	19,299,158	22,792,205	26,823,870	28,817,741	28,967,666	29,107,425	29,016,159	28,974,948	28,975,272	29,007,242
2010	21,260,562	24,693,815	27,098,887	27,732,178	28,338,335	28,507,692	28,956,486	28,568,031	28,705,873	
2011	18,408,319	22,202,974	25,012,094	26,464,426	26,219,728	26,033,924	25,740,428	25,684,882		
2012	22,781,000	27,438,764	32,905,182	36,397,604	37,046,240	36,306,016	36,026,495			
2013	27,937,480	37,726,118	42,709,702	45,165,467	46,931,706	46,310,744				
2014	43,251,701	58,921,610	70,278,613	77,223,426	77,469,673					
2015	61,211,972	80,749,675	96,519,458	103,783,754						
2016	68,380,571	90,964,391	109,437,922							
2017	73,048,712	91,239,696								
2018	71,247,691									

LINK RATIOS

<u>YEAR</u>	<u>27:15</u>	<u>39:27</u>	<u>51:39</u>	<u>63:51</u>	<u>75:63</u>	<u>87:75</u>	<u>99:87</u>	<u>111:99</u>	<u>123:111</u>
2004	0.923	0.973	1.037	1.019	0.998	1.029	0.993	0.996	1.000
2005	0.927	1.093	1.077	1.024	1.013	0.997	1.000	0.992	1.000
2006	1.233	1.198	1.044	1.004	1.004	1.003	1.000	1.001	1.009
2007	1.293	1.148	1.050	1.000	1.000	0.990	1.004	0.998	1.001
2008	1.162	1.074	1.066	1.036	1.008	0.998	1.003	1.001	1.002
2009	1.181	1.177	1.074	1.005	1.005	0.997	0.999	1.000	1.001
2010	1.161	1.097	1.023	1.022	1.006	1.016	0.987	1.005	
2011	1.206	1.127	1.058	0.991	0.993	0.989	0.998		
2012	1.204	1.199	1.106	1.018	0.980	0.992			
2013	1.350	1.132	1.057	1.039	0.987				
2014	1.362	1.193	1.099	1.003					
2015	1.319	1.195	1.075						
2016	1.330	1.203							
2017	1.249								
BEST 3 OF 5	1.333	1.196	1.077	1.014	0.995	0.996	1.000	1.001	1.001
	<u>15 to Ult.</u>	<u>27 to Ult.</u>	<u>39 to Ult.</u>	<u>51 to Ult.</u>	<u>63 to Ult.</u>	<u>75 to Ult.</u>	<u>87 to Ult.</u>	<u>99 to Ult.</u>	<u>111 to Ult.</u>
FACTORS	1.730	1.298	1.085	1.007	0.993	0.998	1.002	1.002	1.001

CONNECTICUT  
BUSINESSOWNERS  
TABLE C8-4  
MULTISTATE LOSS DEVELOPMENT  
LIABILITY - PAYROLL  
\$300,000 LIMIT INCURRED LOSSES AS OF:

<u>YEAR</u>	<u>15 MONTHS</u>	<u>27 MONTHS</u>	<u>39 MONTHS</u>	<u>51 MONTHS</u>	<u>63 MONTHS</u>	<u>75 MONTHS</u>	<u>87 MONTHS</u>	<u>99 MONTHS</u>	<u>111 MONTHS</u>	<u>123 MONTHS</u>
2004	19,371,684	28,305,767	34,026,351	39,167,028	41,822,144	42,429,249	43,211,222	43,455,733	44,032,452	43,538,725
2005	27,248,889	35,381,965	43,767,133	45,566,472	47,958,829	48,248,560	48,574,591	48,105,992	48,586,167	49,045,765
2006	31,563,414	39,411,191	43,806,704	45,685,698	47,281,813	48,682,130	50,406,909	51,760,459	51,725,804	50,690,804
2007	37,704,265	47,045,520	53,192,200	57,136,446	58,814,276	60,811,929	61,576,456	62,364,883	61,938,580	62,049,589
2008	40,664,922	50,442,234	57,752,932	64,348,328	68,724,715	70,049,529	71,221,728	69,992,725	71,935,094	72,682,895
2009	45,554,382	53,863,403	64,469,091	66,923,167	70,997,633	71,446,652	71,429,932	73,728,037	75,702,936	76,755,467
2010	45,126,344	58,539,740	67,001,794	73,868,428	76,998,868	77,003,643	77,567,409	79,320,396	80,376,374	
2011	48,131,340	63,238,411	74,281,322	81,378,836	83,753,093	85,428,432	85,407,471	87,881,382		
2012	42,284,923	55,615,528	66,094,443	73,708,983	78,517,877	79,631,872	80,458,938			
2013	48,421,946	66,812,054	80,777,617	88,521,235	95,608,089	99,586,453				
2014	53,233,273	77,368,588	95,038,660	108,725,040	114,080,305					
2015	55,200,249	77,975,698	98,053,195	107,779,978						
2016	59,399,340	83,633,829	101,356,691							
2017	62,595,317	83,533,415								
2018	58,148,786									

LINK RATIOS

<u>YEAR</u>	<u>27:15</u>	<u>39:27</u>	<u>51:39</u>	<u>63:51</u>	<u>75:63</u>	<u>87:75</u>	<u>99:87</u>	<u>111:99</u>	<u>123:111</u>
2004	1.461	1.202	1.151	1.068	1.015	1.018	1.006	1.013	0.989
2005	1.298	1.237	1.041	1.053	1.006	1.007	0.990	1.010	1.009
2006	1.249	1.112	1.043	1.035	1.030	1.035	1.027	0.999	0.980
2007	1.248	1.131	1.074	1.029	1.034	1.013	1.013	0.993	1.002
2008	1.240	1.145	1.114	1.068	1.019	1.017	0.983	1.028	1.010
2009	1.182	1.197	1.038	1.061	1.006	1.000	1.032	1.027	1.014
2010	1.297	1.145	1.102	1.042	1.000	1.007	1.023	1.013	
2011	1.314	1.175	1.096	1.029	1.020	1.000	1.029		
2012	1.315	1.188	1.115	1.065	1.014	1.010			
2013	1.380	1.209	1.096	1.080	1.042				
2014	1.453	1.228	1.144	1.049					
2015	1.413	1.257	1.099						
2016	1.408	1.212							
2017	1.334								
BEST 3 OF 5	1.400	1.216	1.103	1.052	1.013	1.006	1.022	1.013	1.007
	<u>15 to Ult.</u>	<u>27 to Ult.</u>	<u>39 to Ult.</u>	<u>51 to Ult.</u>	<u>63 to Ult.</u>	<u>75 to Ult.</u>	<u>87 to Ult.</u>	<u>99 to Ult.</u>	<u>111 to Ult.</u>
FACTORS	2.097	1.498	1.232	1.117	1.062	1.048	1.042	1.020	1.007

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BUSINESSOWNERS

TABLE C9

DEVELOPMENT OF EXPOSURE TREND FACTORS

Buildings

<u>Year</u>	(1) Annual Written <u>Increase</u>	(2) Calendar Yr. Written <u>Factors</u>	(3) Fiscal Yr. Written <u>Factors(a)</u>	(4) Projection <u>Factor</u>	(5) Exposure Trend <u>Factors(a)</u>
2013	2.6%	1.122			
2014	2.5%	1.095	1.115	1.064	1.186
2015	2.3%	1.070	1.089	1.064	1.159
2016	2.1%	1.048	1.065	1.064	1.133
2017	2.1%	1.026	1.043	1.064	1.110
2018	2.6%	1.000	1.020	1.064	1.085

Contents

<u>Year</u>	(6) Annual Written <u>Increase</u>	(7) Calendar Yr. Written <u>Factors</u>	(8) Fiscal Yr. Written <u>Factors(a)</u>	(9) Projection <u>Factor</u>	(10) Exposure Trend <u>Factors(a)</u>
2013	2.1%	1.099			
2014	2.1%	1.076	1.093	1.047	1.144
2015	1.9%	1.056	1.071	1.047	1.121
2016	1.8%	1.037	1.051	1.047	1.100
2017	1.8%	1.019	1.033	1.047	1.082
2018	1.9%	1.000	1.014	1.047	1.062

Sales

Payroll

<u>Year</u>	(11) Selected Average <u>Annual Trend(b)</u>	(12) Exposure Trend <u>Factors(a)</u>	<u>Year</u>	(13) Selected Average <u>Annual Trend(b)</u>	(14) Exposure Trend <u>Factors(a)</u>
2014	1.6%	1.107	2014	2.9%	1.201
2015	1.6%	1.090	2015	2.9%	1.167
2016	1.6%	1.073	2016	2.9%	1.135
2017	1.6%	1.056	2017	2.9%	1.103
2018	1.6%	1.039	2018	2.9%	1.072

(a) Fiscal Year Ending March 31.

(b) Derived from data supplied by Moody's Analytics.

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EXPLANATORY NOTES TO TABLE C9

OBJECTIVE

Cost changes over time to both real and personal property result in the purchasing by insureds of increased amounts of insurance. In addition, certain Businessowners classes have sales and payroll exposure bases for liability, which are inflation sensitive. To reflect the impact of this phenomenon, exposure trend factors are applied to reported sales and payroll amounts of insurance to bring them to prospective exposure levels. In this analysis, exposure trend factors for Businessowners data with amount of insurance exposure bases have been developed from Commercial Property data for buildings and contents (see columns 1 through 10). Exposure trend factors for Businessowners data with sales and payroll exposure bases have been developed from General Liability data (see columns 11 through 14).

COLUMNS (1)  
AND (6)

ANNUAL WRITTEN INCREASE

The annual written increases for 2013 through 2018 for buildings and contents amount of insurance were developed from the actual changes in amount of insurance from one year to the next for a sample of renewal policies (based on BGI building and contents experience). Specifically, the change in amount of insurance for each policy in the sample was weighted with its prior year's aggregate loss costs to obtain a weighted change for each year. A sample of renewal policies was used because not all companies code their data so that identification of renewal policies is possible.

COLUMNS (2)  
AND (7)

CALENDAR YEAR WRITTEN FACTORS

The written factors for a given year are the product of the written annual changes for all years subsequent to that year.

COLUMNS (3)  
AND (8)

FISCAL YEAR WRITTEN FACTORS

Fiscal year written factors are calculated using a weighted average of current and prior Calendar year written factors based on the following:

<u>Fiscal Year Ending</u>	<u>Current Year Weight</u>	<u>Prior Year Weight</u>
March 31st	25%	75%
June 30th	50%	50%
September 30th	75%	25%
December 31st	100%	0%

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EXPLANATORY NOTES TO TABLE C9 (Cont'd)

COLUMNS (4)  
AND (9)

PROJECTION FACTORS

The projection factors are used to bring the fiscal year written factors at a 10/1/2017 level to the 3/1/2020 level (a time period of 29 months). This date is the average date of writing for policies written at the revised loss costs (i.e., 6 months beyond an assumed revision date of 9/1/2019). Based on selected average annual changes of 2.6% for buildings and 1.9% for contents, the projection factors are calculated as follows:

$$\text{Buildings: } (1.026)^{29/12} = 1.064$$

$$\text{Contents: } (1.019)^{29/12} = 1.047$$

COLUMNS (5)  
AND (10)

EXPOSURE TREND FACTORS

The exposure trend factors are calculated as the product of the fiscal year written factors and the projection factors.

COLUMNS (11)  
AND (13)

SELECTED AVERAGE ANNUAL TREND

The selected average annual trend for sales was based upon the average annual growth rates in consumption components. The selected average annual trend for payroll was based on average hourly earnings of contracting workers. These econometric models were supplied by Moody's Analytics.

COLUMNS (12)  
AND (14)

EXPOSURE TREND FACTORS

The exposure trend factors were derived to project the reported sales and payroll exposures from the midpoint of each accident year to 3/1/2020, which is the average date of writing for policies written at the revised loss costs (i.e., 6 months beyond an assumed revision date of 9/1/2019). The trend factors for accident year ending 3/31/2018 were calculated as follows:

$$\text{Sales: } (1.016)^{29/12} = 1.039$$

$$\text{Payroll: } (1.029)^{29/12} = 1.072$$

where 29 is the number of months between the midpoint of accident year ending 3/31/2018 (10/1/2017) and the average date of writing (3/1/2020).

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TABLE C10  
STATEWIDE CREDIBILITY CALCULATION

		<u>Statewide Property</u>	<u>Statewide Liability L/O</u>	<u>Multistate Sales</u>	<u>Multistate Payroll</u>
(1)	Full credibility occurrence standard for frequency with (P, K) = (95%, 5%)	1,537	1,537	1,537	1,537
(2)	Severity modification factor	5.412	3.360	4.966	3.404
(3)	Full credibility occurrence standard adjusted for severity ((1) X (2))	8,318	5,164	7,633	5,232
(4)	Selected credibility occurrence standard adjusted for severity	8,300	5,200	7,600	5,200
(5)	Multistate five-year ratio of earned risks to occurrences	37.6	86.1	9.8	43.2
(6)	Full credibility earned risks standard ((4) X (5))	312,080	447,720	74,480	224,640
(7)	Five-year earned risks	307,510	142,967	252,428	428,939
(8)	Statewide credibility [(7)/(6)] <sup>1/2</sup>	0.993	0.565	1.000	1.000

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BUSINESSOWNERS

EXPLANATORY NOTES TO TABLE C10

- LINE (1) FULL CREDIBILITY OCCURRENCE STANDARD FOR FREQUENCY
- Based on a Poisson distribution, the expected numbers of occurrences is determined such that the probability that the actual number of occurrences will be within 5.0% of the expected number of occurrences is greater than 95%.
- LINE (2) SEVERITY MODIFICATION FACTOR
- This factor defined as  $(1 + S^2 / M^2)$  is used to modify the frequency standard into a severity standard, where S is the standard deviation and M is the mean of the loss severity distribution (on a normal loss basis).
- LINE (3) FULL CREDIBILITY OCCURRENCE STANDARD ADJUSTED FOR SEVERITY
- This standard is the product of the frequency standard in line (1) and the severity modification factor in line (2).
- LINE (4) SELECTED CREDIBILITY OCCURRENCE STANDARD ADJUSTED FOR SEVERITY
- This standard is selected based on the calculated credibility occurrence standard in line (3).
- LINE (5) MULTISTATE FIVE-YEAR RATIO OF EARNED RISKS TO OCCURRENCE
- This ratio was determined based on Commercial Statistical Plan data.
- LINE (6) FULL CREDIBILITY EARNED RISKS STANDARD
- To translate the severity-adjusted occurrence standard to an equivalent standard based on earned risks the selected severity adjusted occurrence standard in line (4) is multiplied by the multistate five-year ratio of earned risks to occurrences in line (5).
- LINE (7) FIVE-YEAR STATEWIDE EARNED RISKS
- This is the number of earned risks in the state for the five-year period ending March 31, 2018.

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EXPLANATORY NOTES TO TABLE C10 (Cont'd)

LINE (8)

CREDIBILITY

The state's credibility is calculated by using the square root credibility formula:

$$Z = (R/C)^{1/2}$$

where  $Z$  = Credibility  
R = Statewide earned risks (line (6))  
C = Full Credibility Earned Risks Standard (line (5))

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LOSS ADJUSTMENT EXPENSE FACTORS

**OBJECTIVE** The reported indemnity losses must be loaded for any loss adjustment expenses (LAE) that are not reported in statistical detail to ISO.

**PROPERTY COVERAGES** For the property coverages, only the incurred indemnity losses are reported to ISO under the Commercial Statistical Plan. All loss adjustment expenses must be loaded in. A factor representing the ratio of incurred losses plus all LAE to incurred losses was selected based on multistate financial data (see Table C11-1 and C11-2 for the underlying data).

**LIABILITY COVERAGE** For liability coverage, allocated loss adjustment expenses are reported in detail to ISO under the Commercial Statistical Plan. Unallocated loss adjustment expenses must be loaded into the losses. A factor representing the ratio of the sum of the incurred indemnity losses plus all LAE to the sum of the incurred indemnity losses plus allocated LAE was selected based on multistate financial data (see Table C11-3 for the underlying data).

**SELECTED FACTORS** The following factors have been used in this review to load incurred losses for all loss adjustment expenses:

Fire	1.100
Extended Coverage	1.125
All Other Property	1.125
Burglary and Theft	1.220
Liability	1.085

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TABLE C11-1

Fire and Allied Lines Insurance  
Multistate Expense Experience  
Loss Adjustment Expense-IEE \*

		<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>
<b>(1) Fire</b>						
(a) Direct Losses Incurred	Agency	\$3,737,813	\$4,150,705	\$4,209,306	\$4,582,919	\$6,329,452
	Direct	946,648	1,298,861	1,094,635	1,043,683	1,390,830
	Combined	4,684,461	5,449,566	5,303,941	5,626,602	7,720,282
(b) Direct Loss Adjustment Expenses Incurred	Agency	389,501	432,005	445,344	473,862	584,799
	Direct	77,089	108,062	75,048	67,060	103,848
	Combined	466,590	540,067	520,392	540,922	688,647
<b>(2) Allied Lines**</b>						
(a) Direct Losses Incurred	Agency	3,631,784	3,321,196	3,577,308	4,930,158	14,815,768
	Direct	1,168,665	1,165,701	1,147,981	1,389,717	2,675,211
	Combined	4,800,449	4,486,897	4,725,289	6,319,875	17,490,979
(b) Direct Loss Adjustment Expenses Incurred	Agency	585,055	479,231	514,300	554,063	942,056
	Direct	115,740	138,338	135,748	153,832	170,680
	Combined	700,795	617,569	650,048	707,895	1,112,736
<b>Incurred Percentages**</b>						
		<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>
<b>(3) Loss Adjustment Expense as Ratio to Losses Incurred</b>						
(a) Fire (1b)/(1a)	Combined	10.0%	9.9%	9.8%	9.6%	8.9%
(b) Allied Lines (2b)/(2a)	Combined	14.6%	13.8%	13.8%	11.2%	6.4%

NOTE: All dollar amounts displayed in thousands.

\* Items (1) & (2) are from the Insurance Exhibit Information compiled by A.M. Best.

\*\* Incurred percentages have been calculated on a direct basis, rather than net of reinsurance.

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BUSINESSOWNERS

TABLE C11-2

Burglary  
Multistate Expense Experience  
Loss Adjustment Expense-IEE  
Agency and Direct Writers Combined\*

	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>
(1) Direct Losses Incurred	\$30,602	\$21,019	\$38,199	\$40,299	\$45,942
(2) Direct Loss Adjustment Expenses Incurred	7,807	8,202	9,327	4,868	8,625
	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>
(1) Direct Losses Incurred	\$22,872	\$29,226	\$59,413	\$50,793	\$30,453
(2) Direct Loss Adjustment Expenses Incurred	6,264	8,758	7,364	7,482	12,313

Incurred Percentages\*\*

	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>
(3) Loss Adj. Expenses Incurred as a ratio to Losses Incurred [(2)/(1)]	25.5%	39.0%	24.4%	12.1%	18.8%
	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>
(3) Loss Adj. Expenses Incurred as a ratio to Losses Incurred [(2)/(1)]	27.4%	30.0%	12.4%	14.7%	40.4%

NOTE: All dollar amounts displayed in thousands.

\* Items (1) & (2) are from the Insurance Exhibit Information compiled by A.M Best.

\*\* Incurred percentages have been calculated on a direct basis, rather than net of reinsurance.

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TABLE C11-3

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

	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>
(1) Direct Losses Incurred	\$14,885,863	\$15,938,895	\$20,351,196	\$21,432,549	\$18,135,177
(2) Allocated Loss Adjustment Expenses Incurred	3,436,244	3,216,757	4,023,146	2,899,057	3,972,718
(3) Unallocated Loss Adjustment Expenses Incurred	1,582,048	1,686,868	1,863,674	1,945,399	1,741,646

Incurred Percentages\*\*

	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>
(4) Unallocated Loss Adjustment Expense as Ratio to Losses + Allocated Loss Adjustment Expense (3)/[(1)+(2)]	8.6%	8.8%	7.6%	8.0%	7.9%

Ten Years of Historical Multistate Expense Experience  
Unallocated Loss Adjustment Expense Factor  
Incurred Percentages\*\*

2008	6.8%
2009	7.7%
2010	8.6%
2011	7.9%
2012	7.6%
2013	8.6%
2014	8.8%
2015	7.6%
2016	8.0%
2017	7.9%

NOTE: All dollar amounts displayed in thousands.

\* Items (1), (2), and (3) are based in available ISO Special Call submissions.

\*\* Incurred percentages have been calculated on a direct basis, rather than net of reinsurance.

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SECTION D - HURRICANE MODEL PROCEDURES

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## CONNECTICUT

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#### HURRICANE PROCEDURES

##### INTRODUCTION

The extended coverage ratemaking procedures in hurricane-prone states incorporate the use of a computerized hurricane model which can estimate hurricane losses more accurately and with greater geographic specificity than traditional experience-based techniques. The model uses a meteorological database of both landfalling and nonlandfalling tropical cyclones since 1900, a sophisticated wind field model, and engineering and insurance-based damage relationships to develop reliable estimates of expected hurricane losses. The model relates the probability of a hurricane at a specific location, the duration of the wind speeds at that location and the damageability relationship by type of structure to the current distribution of exposures.

The hurricane loss costs contained in this filing are based on Touchstone Version 5.0 of AIR Worldwide Corporation's Atlantic Tropical Cyclone Model. This model version includes historical catalog updates based on the most recent release of the North Atlantic Hurricane Database (HURDAT2), stochastic updates to the Standard and the Warm Sea Surface Temperature (WSST) 10K, 50K, and 100K stochastic catalogs, and wind vulnerability and damage estimation updates due to updated building code adoption and enforcement at the local level.

##### OVERVIEW OF HURRICANE MODELED RATEMAKING

The model provides hurricane loss costs (expected hurricane losses per \$100 of replacement cost) by zip code, construction and coverage (building vs. contents vs. time element). The time element loss costs are loaded into buildings and contents using a 50%/50% allocation. These building and contents loss costs are then weighted together to derive expected hurricane loss costs for each rating territory and coverage, using the latest three years of Businessowners exposures. The expected hurricane loss costs are then adjusted to reflect a \$500 deductible level and all loss adjustment expenses. Finally, the loss costs are brought to a base loss cost level by dividing out the average relativity (excluding coverage). The non-hurricane portion of the prospective loss costs is calculated by applying the statewide non-hurricane change, based on the latest five years of non-hurricane experience, to the non-hurricane portion of the current loss costs. The revised loss costs are equal to the sum of the modeled hurricane loss costs and the non-hurricane portion of the prospective loss costs.

## CONNECTICUT

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#### DESCRIPTION OF THE HURRICANE MODEL

##### HURRICANE DEFINED

A hurricane is a tropical cyclone technically defined as a non-frontal, low pressure synoptic-scale system in which the maximum sustained surface wind speed is at least 74 miles per hour.

##### HURRICANE MODEL OVERVIEW

The model consists of several components or modules - an event generation, local intensity and damage module. The event generation module is used to create the stochastic storm catalog. Over 100 years of historical data on the frequency of hurricanes and their meteorological characteristics were used to fit statistical distributions for each parameter. By stochastically drawing from these distributions, the fundamental characteristics of each simulated storm are generated. These parameters include storm track, landfall location and track angle at landfall, and the intensity variables of central pressure, radius of maximum winds, and forward speed. The result is a large, representative catalog of potential events. The model generates simulated "years" of activity. A simulated year represents a hypothetical year of catastrophe experience, which could happen in the current year. The AIR model allows for the possibility of multiple events occurring within a single year. Many thousands of these scenarios are run to produce the complete and stable range of potential annual experience of catastrophe event activity as well as ensuring full coverage of extreme events.

Once the model generates the characteristics of a simulated event, it propagates the event along its track. Peak gust wind speeds and wind duration are estimated for each geographical location affected by the storm, and the local intensity is estimated as a function of the magnitude of the event, distance from the source of the event, and a variety of local conditions. Damageability functions are then used to determine the relationship between the local intensity and the resulting damage to buildings and contents. Expected hurricane losses are calculated by applying the appropriate damage functions to the replacement value of the insured properties.

Following is a discussion of those elements reflected in the AIR tropical cyclone model for the Gulf and Atlantic Coasts of the continental United States.

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DESCRIPTION OF THE HURRICANE MODEL (Cont'd)

EVENT  
GENERATION  
MODULE

The following storm characteristics are modeled as part of the event generation module.

Frequency of Occurrence – The model estimates frequency of occurrence based on tropical cyclones occurring since 1900.

Landfall Location – The model estimates the probability of a hurricane occurring at points along the smoothed coastline from Texas to Maine.

Central Pressure - Central pressure is the primary determinant of hurricane wind speed and therefore of intensity. All else being equal, as central pressure decreases, wind speeds increase or, more precisely, wind speed is an increasing function of the difference between the central and peripheral pressure.

Radius of Maximum Winds - The radius of maximum winds is the distance from the storm's center, or eye, to where the strongest winds are found. On average, the radius of maximum winds tends to be larger at higher latitudes. Similarly, the radius will be smaller, on average, for more intense storms. These relationships are explicitly accounted for in the model. While a smaller radius of maximum winds corresponds to greater storm intensity, it does not necessarily follow that losses will be greater. This is because a smaller radius usually results in a smaller affected area.

Forward Speed - Forward, or translational, speed is the rate at which a hurricane moves from point to point along its track. In general, the higher the latitude, the faster the hurricane's translational speed. Faster moving storms result in higher losses further inland. On the other hand, the faster a storm travels, the shorter the duration that a building is subjected to high wind speeds. In some areas, particularly along the coast, this can lead to lower losses than would otherwise be the case.

Track Angle at Landfall - Separate distributions for track angle at landfall are estimated for segments of coastline that are variable in length, depending upon the coastal orientation of that segment.

Storm Track - Once landfall location and the track angle at landfall are identified, the simulated storm track is generated using conditional probability matrices which resemble the curving and recurving tracks actually observed from the stochastic storm database.

Multiple-Landfalling Storms - In order to model multiple landfalling events as single storms, simulated storm tracks are joined statistically based on consistency of certain storm parameters.

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#### DESCRIPTION OF THE HURRICANE MODEL (Cont'd)

##### LOCAL INTENSITY MODULE

Once the model probabilistically generates the hurricane's meteorological characteristics, it simulates the storm's movement along its track. Calculations of local intensity begin with maximum over-water windspeed and adjustments are then made for the asymmetric nature of the hurricane windfield, storm filling over land, surface friction, and relative wind speed profiles.

**Asymmetry Effect** - In the Northern Hemisphere, hurricane winds rotate in a counter-clockwise direction. The combined effects of hurricane winds and forward motion (or translational speed) will produce higher wind speeds on the right-hand-band side of the storm. The model accounts for the dynamic interaction of the translational and rotational speeds, and the inflow angle.

**Filling Effect** - As the storm moves inland its intensity begins to dissipate. Central pressure rises and the eye of the hurricane begins to "fill" as it moves away from its energy source, i.e., warm ocean water. The model filling equations are a function of the geographic location (particularly distance from coastline) and the time elapsed since landfall. Rates of fill vary by region, as is consistent with historical observation.

**Surface Friction Effect** - Differences in surface terrain also affect windspeeds. Wind velocity profiles typically show higher wind speeds at higher elevations. Winds travel more slowly at ground-level because of the horizontal drag force of the earth's surface, or surface friction. The addition of obstacles such as buildings will further degrade wind speed. In general, the rougher the terrain, due to both natural and man-made obstacles, the more quickly wind speeds dissipate.

**Relative Wind Speeds** - The wind speed at any particular location is dependent on the radial distance between the eye of the storm and the location of interest.

##### DAMAGE ESTIMATION MODULE

The tropical cyclone model develops a complete time profile of wind speeds for each location affected by the storm, thus capturing the effect of wind duration on structures as well as the effect of peak wind speed. Damage estimation for hurricanes begins at sustained wind speeds of 40 mph and is calculated cumulatively until sustained winds are once again below 40 mph.

Separate damageability estimates exist by construction type (e.g., frame, joisted masonry, masonry non-combustible) and coverage (buildings vs. contents). Estimated hurricane damage is measured as the ratio of repair cost (i.e. hurricane losses) to the replacement cost.

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DESCRIPTION OF THE HURRICANE MODEL (Cont'd)

DEMAND SURGE

Demand surge is an observable economic phenomenon of sudden inflation following a catastrophe. To the extent that individual insured properties' hurricane losses are partial, demand surge will raise the cost of covered losses, and consequently what the insurer ultimately pays. Demand surge is applied separately by coverage and varies by territory. One set of factors is applied to building and other structure losses. A factor of one is applied to contents losses, as AIR's research indicates that the items covered under contents coverage do not see significant price increases following catastrophic events.

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RATEMAKING PROCEDURES AND LOSS COST CALCULATIONS

The following is an overview of the extended coverage ratemaking procedures incorporating computer modeled hurricane loss costs in the hurricane-prone states.

REMOVAL OF HURRICANE LOSSES

Property damage and time element losses due to hurricanes reflected in the modeled hurricane loss costs are excluded from the extended coverage loss database. Storm track data from several meteorological sources are analyzed to determine the date, location, and wind speed of each hurricane during the experience period, and those losses incurred during the month of a hurricane reflected in the model are replaced with the average monthly non-hurricane losses for each rating territory. The resulting non-hurricane losses are used in the calculation of the statewide non-hurricane coverage change and excess procedure.

EXCESS PROCEDURE

The excess procedure has been revised to smooth catastrophic losses due to perils other than hurricane and it reflects long term excess potential exhibited on a state and regional basis. Property damage and time element losses incurred during the month of a hurricane have been replaced by average non-hurricane losses as described above. The normal loss ratio cutoff for each month is 2.0. From this follows the following definitions:

$$\text{Loss Ratio (LR)} = \frac{\text{Non - Hurricane Losses}}{\text{Earned Premium}}$$

$$\text{State Excess Loss Ratio (SELR)} = \frac{20(\text{LR}-2.0)}{(\text{LR}-2.0)+20}, \text{ (if LR > 2.0)}$$

$$\text{Normal Loss Ratio Cutoff (NLRC)} = 2.0$$

$$\text{Normal Loss Ratio (NLR)} = \text{the lesser of the Loss Ratio and the NLRC}$$

$$\text{Regional Excess Loss Ratio (RELR)} = \text{LR} - \text{SELR} - \text{NLR}$$

These ratios are calculated by month. Annual ratios are calculated by summing the monthly losses in each category, and dividing by the earned premium for that particular year.

The Excess Multiplier is equal to the state excess component plus 1.000, times the regional excess component plus 1.000, and is applied to the normal non-hurricane losses used in the statewide experience review.

The Normal incurred losses for each month are those losses which do not exceed 2.0 times the earned premium for the month. The Excess incurred losses for each year are equal to the Incurred losses minus the Normal losses for the year.

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RATEMAKING PROCEDURES AND LOSS COSTS CALCULATIONS (Cont'd)

STATEWIDE  
EXPERIENCE  
LEVEL REVIEW

The statewide experience review (Table B1-1) is based on the latest five years of non-hurricane loss experience. The losses are normal non-hurricane losses (i.e., hurricane losses reflected by the model have been replaced by average non-hurricane losses and the resulting losses have been capped at 2.0 times the earned premium for each month), multiplied by the excess multiplier, loss adjustment expense factor and trend factors. The non-hurricane aggregate loss costs are at current manual level and have been trended to the average date of writing in the assumed effective period.

MODELED  
HURRICANE  
LOSS COSTS

The model produces hurricane loss costs (expected hurricane loss per \$100 of replacement cost) by zip code, coverage (buildings, contents and time element), and construction. The time element loss costs are loaded into buildings and contents using a 50%/50% allocation. These building and contents loss costs are then weighted together to derive expected hurricane loss costs for each rating territory and coverage, using the latest three years of Businessowners exposures.

The expected hurricane loss costs are then adjusted to reflect a \$500 deductible level and all loss adjustment expenses. The loss costs are brought to a base loss cost level by dividing out the average relativity (excluding coverage).

The present and revised modeled hurricane loss costs are displayed in Table D1.

LOSS COST  
LEVEL CHANGES

The statewide change shown on Table A2-1 is calculated as a weighted average of the individual loss cost changes for each territory (where applicable), occupancy, protection, construction, etc.

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WINDSTORM OR HAIL EXCLUSION CREDITS

WINDSTORM OR  
HAIL EXCLUSION  
CREDITS

The windstorm or hail exclusion credits shown on Table 29.A.39.d.(LC) are calculated using losses for the five accident years ending March 31, 2018. The five-year losses attributable to the wind and hail causes of loss were compared to the five-year losses attributable to all causes of loss for property excluding hurricanes to determine the portion of the property base loss cost that covers wind and hail. This was done on a territory basis, separately for building and business personal property (BPP). The resulting percentages were rounded to the nearest 5% and capped at a minimum of 10% and a maximum of 50% for buildings, and a minimum of 5% and a maximum of 50% for BPP. The calculations are shown below:

Territory	Coverage	(1) Total Losses	(2) Wind and Hail Losses	(3) Percent (2)/(1)
701	Building	4,223,192	108,912	10%
		2,301,442	-	5%
703	Building	4,819,806	465,475	10%
		3,241,087	36,840	5%
704	Building	10,892,545	481,790	10%
		6,844,359	29,571	5%
705	Building	7,639,201	844,941	10%
		2,239,584	16,737	5%
706	Building	6,992,012	243,098	10%
		3,957,329	107,226	5%
707	Building	53,371,057	2,935,906	10%
		23,170,684	396,484	5%
708	Building	5,383,328	401,545	10%
		2,651,302	-	5%
709	Building	3,138,044	310,576	10%
		222,857	-	5%

The resulting percentages were applied to the proposed non-hurricane portion of the base building and BPP loss costs, respectively, and then added to the proposed hurricane portion of the loss cost to determine the loss cost credits (i.e., the loss costs to be subtracted from the base loss costs when the new Windstorm or Hail Exclusion endorsement is applicable.)

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TABLE D1

PRESENT AND REVISED MODELED HURRICANE LOSS COSTS

<u>PRESENT HURRICANE LOSS COSTS</u>			<u>REVISED HURRICANE LOSS COSTS</u>		
PROPERTY			PROPERTY		
<u>Territory</u>	<u>Buildings</u>	Business Personal <u>Property</u>	<u>Territory</u>	<u>Buildings</u>	Business Personal <u>Property</u>
701	0.069	0.032	701	0.068	0.031
703	0.090	0.037	703	0.095	0.037
704	0.068	0.034	704	0.067	0.032
705	0.034	0.016	705	0.035	0.015
706	0.103	0.050	706	0.106	0.048
707	0.064	0.028	707	0.066	0.028
708	0.038	0.018	708	0.039	0.017
709	0.039	0.016	709	0.040	0.015

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SECTION E - REVISED STATE LOSS COSTS

Revised State Loss Costs ..... E-2-3

**LOSS COSTS**

Territory	BASE LOSS COSTS					
	PROPERTY		LIABILITY			
	Building Per \$100 Of Limit Of Ins.	Business Personal Property Per \$100 Of Limit Of Ins.	Occupant Liability Per \$100 Of Limit Of Ins.	Occupant Liability Per \$1,000 Of Annual Gross Sales	Occupant Liability Per \$1,000 Of Annual Payroll	Lessors Liability Per \$100 Of Limit Of Ins.
701	0.390	0.469	0.125	5.867	6.658	0.079
703	0.262	0.272	0.054	3.019	6.576	0.031
704	0.319	0.364	0.096	3.878	6.664	0.051
705	0.320	0.419	0.086	4.132	6.690	0.052
706	0.426	0.470	0.068	2.438	6.619	0.040
707	0.287	0.305	0.068	3.987	6.734	0.034
708	0.391	0.494	0.071	3.481	6.683	0.058
709	0.314	0.377	0.078	3.707	6.658	0.049

Table #1(LC) Base Loss Costs – Property And Liability

**SECTION III  
 RATING AND ELIGIBILITY RULES**

**RULE 23.  
 PREMIUM DEVELOPMENT – MANDATORY  
 COVERAGES**

- C. Premium Determination
  - 6. Premium Determination
    - c. Additional Rating Considerations
      - (3) Permanent Yards – Maintenance Or Storage

Territory	Loss Cost Per \$100		
	Public Protection (Fire) Classification		
	01-04	05-08	09-10
701, 703-709	0.207	0.242	0.277

Table 23.C.6.c.(3)(LC) Permanent Yards – Maintenance Or Storage Premium Determination

**RULE 29.  
 ENDORSEMENTS**

**A. Property Endorsements  
 39. Windstorm Or Hail Exclusion  
 d. Rate Modification**

Territory	Coverage (Code)	Credit
701	Buildings (1) Business Personal Property (2)	0.100 0.053
703	Buildings (1) Business Personal Property (2)	0.112 0.049
704	Buildings (1) Business Personal Property (2)	0.092 0.049
705	Buildings (1) Business Personal Property (2)	0.064 0.035
706	Buildings (1) Business Personal Property (2)	0.138 0.069
707	Buildings (1) Business Personal Property (2)	0.088 0.042
708	Buildings (1) Business Personal Property (2)	0.074 0.041
709	Buildings (1) Business Personal Property (2)	0.067 0.033

**Table 29.A.39.d.(LC) Windstorm Or Hail Exclusion Credits**

**B. Liability Endorsements  
 7. Employment-Related Practices Liability  
 b. Employment-Related Practices Liability Coverage Endorsement  
 (5) Premium Determination**

Number Of Employees	Loss Cost Per Employee		
	Mercantile Restaurant	Wholesale	All Other
1-25	\$ 8.130	\$ 12.100	\$ 9.680
Each Additional Employee	5.700	8.480	6.780

**Table 29.B.7.b.(5)(LC) Employment-Related Practices Liability Premium Determination**

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SUPPLEMENTARY INFORMATION

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PURPOSE This document provides additional information on the attached loss costs level experience review including:

- A summary of significant factors used in the development of loss cost indications that underlie the loss costs in the current 2019 filing and prior 2018 filing.
- A five-year analysis of loss experience by type of loss
- A discussion of the experience underlying the current loss cost level indications and how it compares to the prior filing
- A distribution of property losses by type of loss

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UNALLOCATED LOSS ADJUSTMENT EXPENSE		<u>Current</u>	<u>Prior</u>
	Liability	8.5%	8.5%
	Fire	10.0%	10.0%
	Extended Coverage	12.5%	12.5%
	All Other Property	12.5%	12.5%
	Burglary/Theft	22.0%	21.0%

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LOSS DEVELOPMENT FACTORS For Lessors/Occupants this review continues to incorporate credibility-weighted statewide and multistate development for the 15 and 27 to ultimate factors and multistate only for all other ultimate factors.

	<u>Current</u>	<u>Prior</u>
63 to ultimate	1.016	1.012
51 to ultimate	1.038	1.032
39 to ultimate	1.127	1.110
27 to ultimate	1.472	1.430
15 to ultimate	2.156	2.071

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SUPPLEMENTARY INFORMATION

LOSS TREND  
FACTORS

External Trend

The annual rates of change are based on external Xactware indices for Buildings and external PPI indices for Contents. The annual external loss trend factors are:

<u>Coverage</u>	<u>Current Review</u>	<u>Prior Review</u>
Buildings	+2.8%	+2.6%
Contents	+1.6%	+1.3%

Loss Trend Adjustments (LTA's)

The annual loss trend adjustment factors are:

<u>Type of Loss</u>	<u>Current Review</u>		<u>Prior Review</u>	
	<u>Bldg.</u>	<u>Cnts.</u>	<u>Bldg.</u>	<u>Cnts.</u>
Fire	-2.9%	-1.7%	-1.9%	+0.5%
Extended Coverage	+2.7%	+0.9%	+2.5%	+1.1%
All Other Property	+1.4%	+2.2%	+0.9%	+2.1%
Burglary	+2.4%		-0.2%	
Liability (Lessors/Occupants)	N/A		+2.7%	
Liability Lessors	+0.9%		N/A	
Liability Occupants	-1.2%		N/A	

PREMIUM TREND  
FACTORS

Premium trend factors are based on annual changes in amounts of insurance written. The annual premium trend factors are:

<u>Coverage</u>	<u>Current Review</u>	<u>Prior Review</u>
Buildings	+2.6%	+2.0%
Contents	+1.9%	+1.7%

NET TREND

Beginning in 2015, loss trend for All Property was calculated using statewide instead of multistate weights by type of loss. The resulting annual net trend factors are:

<u>Coverage</u>	<u>Current Review</u>	<u>Prior Review</u>
All Property	0.0%	+0.6%
Liability Lessors/Occupants	-2.2%	+1.0%
Liability Sales	+2.9%	+4.0%
Liability Payroll	+0.8%	+2.5%

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 SUPPLEMENTARY INFORMATION

TYPE OF LOSS  
 ANALYSIS

A brief description of loss patterns for the five years of the current review are shown below.

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Fire	The relatively high Fire partial experience ratio in 2015 was due to unfavorable experience across several companies.
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Extended Coverage	The relatively high Extended Coverage partial experience ratio in 2018 was due to unfavorable experience across several companies.
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Burglary	Burglary losses were consistent over the five-year experience period.
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All Other Property	The relatively high All Other Property partial experience ratios in 2014 and 2015 were due to unfavorable experience across several companies.
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Liability	The relatively low Liability partial experience ratios in 2017 and 2018 were due to favorable experience across several companies.
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EXPLANATION  
 OF CHANGES

The information below is provided to explain large statewide loss cost level indicated changes.

Property	No large indicated change.
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Liability Lessors/Occ	The -12.6% indication is mainly due to an improvement in experience of about 6.4% and a decrease in trend of about 13.9%.
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Liability Sales	The -28.5% indication is driven by an improvement in experience.
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Liability Payroll	No large indicated change.
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SUPPLEMENTARY INFORMATION

PERCENTAGES OF ADJUSTED PROPERTY LOSSES BY TYPE OF LOSS\*

Property losses for Fire, EC, Burglary and AOP can result from property damage or time element losses. For Buildings, time element losses refer to loss of rental value while Contents time element losses refer to business interruption. The statewide percentage breakdown by coverage and peril, based on adjusted losses, for each type of loss is shown below:

BUILDINGS

	<u>Fire</u>	<u>EC</u>	<u>Burglary</u>	<u>AOP</u>
Property Damage	94.8%	99.4%	95.5%	98.5%
Time Element	5.2%	0.6%	4.5%	1.5%

CONTENTS

	<u>Fire</u>	<u>EC</u>	<u>Burglary</u>	<u>AOP</u>
Property Damage	79.1%	85.9%	99.2%	78.8%
Time Element	20.9%	14.1%	0.8%	21.2%

\* Data from Accident Year ending 3/31/2014 through Accident Year ending 3/31/2018.