



LOSS COSTS – IMPLEMENTATION

JULY 8, 2020

BUSINESSOWNERS

LI-BP-2020-065

## MICHIGAN BUSINESSOWNERS ADVISORY PROSPECTIVE LOSS COST REVISION TO BE IMPLEMENTED; EXHIBITS NEWLY PRESENTED IN EXCEL

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### KEY MESSAGE

Revised loss costs representing a combined -1.9% statewide change to be implemented.

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### BACKGROUND

In circular [LI-BP-2020-043](#), we provided you with information about the Businessowners loss cost experience review.

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### CONSIDERATION OF COVID-19

In anticipation of long-term behavioral, social and economic changes as a result of COVID-19, we expect, based on the information currently available, that those changes will have a modest but material impact on prospective loss costs for certain risks, and in this filing we have adjusted loss costs to reflect these changes by applying a factor of 0.98 to loss costs for Liability Lessors and Occupants.

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

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### ISO ACTION

We are implementing BP-2020-RLA1, which presents a review of Businessowners loss cost experience. Refer to the attachment(s) for complete details.

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### IMPORTANT NOTE

#### Change in Format

This circular offers several enhancements for customers. In addition to the PDF version, exhibits and loss cost tables are now available in user-friendly Excel format rather than Word. Where possible, exhibits are linked together formulaically to clarify how calculations flow through the entire ratemaking process and to enable customers to test the effects of different assumptions on the results.

To facilitate this change, the filing has been restructured. All explanatory text, for all sections of the filing, appears first; all exhibits and tables are grouped together and appear thereafter. Exhibits have been relabeled (Exhibit A1, Exhibit A2, etc.).

We invite customers to share feedback on this revised format and suggestions for further enhancements by contacting the individuals listed in the Contact Information block.

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## SUPPLEMENTARY INFORMATION

We are including a Michigan Supplement, which provides additional information on the loss cost level experience review.

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 written on or after December 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 **OCTOBER 30, 2020**. 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 Filing Number **BP-2020-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-2019-057](#) 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 12-20 (or the earliest possible subsequent date), along with any new and/or revised manual pages.

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## REFERENCE(S)

- [LI-BP-2020-043](#) (05/08/2020) Businessowners Policy Experience Reviewed By Staff
- [LI-CL-2019-057](#) (12/10/2019) Revised Lead Time Requirements Listing

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## ATTACHMENT(S)

- Filing [BP-2020-RLA1](#)
- Michigan Supplement

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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 involving an even more customized data review for this line were performed by staff. During these processes, various data records were excluded from the review. The ISO staff responsible for this circular also reviewed the data for reasonableness.

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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, Nancy A. Narisi, am a Senior Actuarial Associate of Strategic Actuarial Operations for ISO, and I, Michael Doyle, am an Actuarial Product Director for Specialty Lines for ISO. We are jointly responsible for the content of this Statement of Actuarial Opinion and we both meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

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## CONTACT INFORMATION

If you have any questions concerning:

- The actuarial content of this circular, please contact:  
 Meyer Gilden  
 Actuarial Operations, Property  
 201-469-4440  
[Meyer.Gilden@verisk.com](mailto:Meyer.Gilden@verisk.com)  
[propertyactuarial@verisk.com](mailto:propertyactuarial@verisk.com)
- The non-actuarial content of this circular, please contact:  
 William Jones  
 Production Operations, Compliance and Product Services  
 201-469-2815  
[productionoperations@verisk.com](mailto:productionoperations@verisk.com)
- PCS catastrophe information, please contact:  
 Joe Louwagie  
 Property Claim Services  
 201-469-3126  
[Joseph.Louwagie@verisk.com](mailto:Joseph.Louwagie@verisk.com)
- Other issues for this circular, please contact Customer Support:  
 E-mail: [info@verisk.com](mailto:info@verisk.com)  
 Phone: 800-888-4476

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).

## MICHIGAN

### ADVISORY LOSS COST LEVEL REVIEW - BUSINESSOWNERS FILING BP-2020-RLA1

#### EXECUTIVE SUMMARY

##### PURPOSE

This document:

- revises advisory prospective loss costs for the major Businessowners coverages. These loss costs represent a combined - 1.9% statewide change from the current loss costs for all classes.
- provides the analyses used to derive these advisory loss costs.

##### 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.

##### CONSIDERATION OF COVID-19

In anticipation of long-term behavioral, social and economic changes as a result of COVID-19, we expect, based on the information currently available, that those changes will have a modest but material impact on prospective loss costs for certain risks, and in this filing we have adjusted loss costs to reflect these changes by applying a factor of 0.98 to loss costs for Liability Lessors and Occupants.

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

##### LOSS COST LEVEL CHANGES

The statewide indicated and filed loss cost level changes are:

	<u>Indicated</u>	<u>Filed</u>
Lessors/Occupants	-8.5%	-9.2%
Sales	-17.4%	-17.4%
Payroll	+4.3%	+4.3%
Liability Sub-Total	-9.7%	-10.2%
Property Sub-Total	-0.6%	-0.5%
TOTAL	-2.0%	-1.9%

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

## MICHIGAN

### ADVISORY LOSS COST LEVEL REVIEW - BUSINESSOWNERS FILING BP-2020-RLA1

#### EXECUTIVE SUMMARY

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. The filed loss costs for Liability Lessors/Occupants have been adjusted by a factor of 0.98 to reflect the impact of COVID-19.																														
HISTORICAL SOURCE DATA	The data used in this review is based on accident year experience through 3/31/2019 (evaluated as of 6/30/2019) of ISO reporting companies.																														
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.																														
PRIOR ISO REVISIONS	<p>The latest loss cost revisions in this state are:</p> <table><tr><td><u>Filing</u></td><td>BP-2019-RLA1</td><td>BP-2018-RLA1</td><td>BP-2017-RLA1</td></tr><tr><td><u>Dates</u></td><td></td><td></td><td></td></tr><tr><td>Effective</td><td>11/1/2019</td><td>10/1/2018</td><td>10/1/2017</td></tr><tr><td><u>Changes</u></td><td></td><td></td><td></td></tr><tr><td>Indicated</td><td>-12.2%</td><td>-3.3%</td><td>-10.3%</td></tr><tr><td>Filed</td><td>-11.5%</td><td>-3.4%</td><td>-10.3%</td></tr><tr><td>Implemented</td><td>-11.5%</td><td>-3.4%</td><td>-10.3%</td></tr></table>			<u>Filing</u>	BP-2019-RLA1	BP-2018-RLA1	BP-2017-RLA1	<u>Dates</u>				Effective	11/1/2019	10/1/2018	10/1/2017	<u>Changes</u>				Indicated	-12.2%	-3.3%	-10.3%	Filed	-11.5%	-3.4%	-10.3%	Implemented	-11.5%	-3.4%	-10.3%
<u>Filing</u>	BP-2019-RLA1	BP-2018-RLA1	BP-2017-RLA1																												
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Indicated	-12.2%	-3.3%	-10.3%																												
Filed	-11.5%	-3.4%	-10.3%																												
Implemented	-11.5%	-3.4%	-10.3%																												
CHANGES TO FORMAT	In this document, all explanatory material appears first, followed by all exhibits and the revised prospective loss cost pages. Explanatory pages are numbered BP-1 through BP-39, and exhibits are labeled Exhibit A1 through D1. The revised loss cost pages are numbered BP-40 through BP-41.																														

## MICHIGAN

### ADVISORY LOSS COST LEVEL REVIEW - BUSINESSOWNERS FILING BP-2020-RLA1

#### EXECUTIVE SUMMARY

##### 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, 2020.

##### 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 2018 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 Exhibits B1-1 and B1-2.

1. The Hartford
2. Travelers Insurance Commercial Lines
3. The Hanover Insurance Company
4. Country Mutual Insurance Company
5. Acuity Mutual Insurance
6. Guard Insurance Group
7. Employers Mutual Casualty Company
8. The Allied Group
9. Selective Insurance Group, Inc.
10. Liberty Mutual Insurance Company

##### 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 12/31/2018 is:

Businessowners: 35.0%

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ADVISORY LOSS COST LEVEL REVIEW - BUSINESSOWNERS  
FILING BP-2020-RLA1

EXECUTIVE SUMMARY

COMPANY  
DECISION

We encourage each insurer to decide independently whether the judgments made and the procedures or data used by ISO in developing the 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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SECTION A: SCOPE OF REVISION

EXHIBIT A1

LOSS COST LEVEL CHANGE SUMMARY

Please refer to **Exhibit A1** for a summary of Aggregate Loss Costs at Current Level and Filed Loss Cost Level Changes.

Aggregate loss costs at current level are for year ending 3/31/2019 and based on ISO staff developed loss costs contained in the latest implemented filing.

EXHIBIT A2

LOSS COST LEVEL CHANGES

Please refer to **Exhibit A2** for a comparison of Aggregate Loss Costs at Current Level and Filed Loss Cost Level Changes by Territory for Property and Liability, and on a multistate basis for Sales and Payroll.

Aggregate loss costs at current level are for year ending 3/31/2019 and based on ISO staff developed loss costs contained in the latest implemented filing.

EXHIBIT A3

PRESENT AND REVISED LOSS COSTS

Please refer to **Exhibit A3** for the Present and Revised Base Loss Costs.

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SECTION B: CALCULATION OF CHANGES

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 LOSS COST INDICATION	The first step in this process is the calculation of the statewide 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 changes are presented in <b>Exhibits B1-1</b> through <b>B1-4</b> . 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 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 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 <b>Exhibit A2</b> 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 resulting loss costs are displayed in Section D.

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SECTION B: CALCULATION OF CHANGES  
OVERVIEW OF ACTUARIAL PROCEDURES

STEP 1 - CALCULATION OF STATEWIDE ADVISORY  
LOSS COST LEVEL CHANGES

OBJECTIVE	The objective of this procedure is to determine the indicated statewide advisory loss cost level change. This procedure answers the question: what percentage change must be made on average to the current loss costs in order for them to be adequate to cover indemnity losses and all associated loss adjustment expenses incurred in the prospective period in which the revised loss costs will be used?
DESCRIPTION	This procedure compares the developed (for liability) and trended incurred losses and loss adjustment expenses with the aggregate loss costs 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 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, 2019 evaluated as of June 30, 2019.
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.

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SECTION B: CALCULATION OF CHANGES

CALCULATION OF STATEWIDE ADVISORY NON-HURRICANE  
LOSS COST LEVEL CHANGES

Exhibit B1

CALCULATION OF STATEWIDE ADVISORY LOSS COST LEVEL  
CHANGE

Please refer to **Exhibits B1-1** through **B1-4** for the calculations of the prospective loss cost level changes for Property, Liability Lessors/Occupants, Liability Sales, and Liability Payroll, respectively. Explanatory notes for **Exhibit B1** follow.

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 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, 2020.

Businessowners losses are adjusted separately by type of loss, descriptions of which are provided in Section C. Adjustment procedures are summarized below, and details regarding the loss adjustment procedures by type of loss group can be found in Section C.

Property losses are trended and loaded for all loss adjustment expenses. Large losses are smoothed using the method appropriate for the type of loss.

Liability losses are trended, loaded for unallocated loss adjustment expenses, and 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.

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SECTION B: CALCULATION OF CHANGES

CALCULATION OF STATEWIDE ADVISORY NON-HURRICANE  
LOSS COST LEVEL CHANGES

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 (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 **Exhibit 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

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BUSINESSOWNERS  
SECTION B: CALCULATION OF CHANGES

CALCULATION OF STATEWIDE ADVISORY NON-HURRICANE  
LOSS COST LEVEL CHANGES

Line (8) INDICATED LOSS COST LEVEL CHANGE

The indicated statewide 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 LOSS COST LEVEL CHANGE

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

## MICHIGAN

### BUSINESSOWNERS

#### SECTION B: CALCULATION OF CHANGES

#### OVERVIEW OF ACTUARIAL PROCEDURES

##### STEP 2 - 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 3/31/2019. 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	<p>The rating variables used in the relative change analysis are as follows:</p> <p>Property - territory and coverage Liability - territory and lessors/occupant</p>
ITERATIVE PROCEDURE	<p>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:</p>

For Property:

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

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



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SECTION B: CALCULATION OF CHANGES

OVERVIEW OF ACTUARIAL PROCEDURES

STEP 2 - RELATIVE CHANGE ANALYSIS (cont'd)

ITERATIVE  
PROCEDURE (Cont'd)

Where:

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

$TERR_i$  = the relative change for the  $i^{th}$  territory,

$COV_j$  = the relative change for the  $j^{th}$  coverage,  
where  $j=1$  is buildings and  $j=2$  is contents.

$W_{ij}$  = the aggregate loss cost at current level (ALCCL),

$R_{ij}$  = the loss ratio relativities for the  $i^{th}$  territory and  
 $j^{th}$  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:

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

$TERR_i$  = the relative change for the  $i^{th}$  territory,

$EIND_j$  = the relative change for the  $j^{th}$  exposure indicator,  
where  $j=1$  is lessors and  $j=2$  is occupant.

$W_{ij}$  = the aggregate loss cost at current level (ALCCL),

$R_{ij}$  = the loss ratio relativities for the  $i^{th}$  territory and  $j^{th}$   
exposure indicator,

$m$  = the number of territories in the analysis.

## MICHIGAN

### BUSINESSOWNERS

#### SECTION B: CALCULATION OF CHANGES

##### OVERVIEW OF ACTUARIAL PROCEDURES

##### STEP 2 - 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.

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SECTION B: CALCULATION OF CHANGES

RELATIVE CHANGE ANALYSIS (cont'd)

Exhibit B2

Calculation of Relative Changes

Please refer to **Exhibits B2-1** and **B2-2** for the calculations of the relative changes for Property and Liability, respectively. Explanatory notes for **Exhibit B2** follow below.

COLUMN (1)

AGGREGATE LOSS COSTS AT CURRENT LEVEL

Aggregate loss costs at current level are calculated in the same way as described in the explanatory notes to **Exhibit B1**.

COLUMN (2)

INCURRED LOSSES AND LOSS ADJUSTMENT EXPENSES

The incurred losses and loss adjustment expenses are the same as those described in the explanatory notes to **Exhibit B1**.

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, 2019.

COLUMNS (7)

CREDIBILITY

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

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SECTION B: CALCULATION OF CHANGES

RELATIVE CHANGE ANALYSIS (cont'd)

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.

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SECTION C: SUPPORTING MATERIAL

CALCULATION OF ADJUSTED PROPERTY LOSSES

DEFINITIONS OF TYPE  
OF LOSS GROUPS

Each Businessowners property loss is assigned to one of the following type of loss groups: fire, extended coverage, all other property or burglary and theft.

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.

Extended coverage (EC) losses are 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.

All other property (AOP) losses are 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.

Burglary and theft losses are 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.

Businessowners property losses are adjusted separately by type of loss group.

ADJUSTMENT  
OF PROPERTY  
LOSSES

All property losses are trended, and large losses are smoothed based on the procedure appropriate for the type of loss. Trended and smoothed losses are loaded for all loss adjustment expenses.

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BUSINESSOWNERS  
CALCULATION OF ADJUSTED PROPERTY LOSSES

LOSS TREND

CALCULATION  
OF TRENDED  
PROPERTY  
INCURRED  
LOSSES

For the fire, extended coverage and all other property type of loss groups, building and contents losses are trended separately using the Current Cost Factors, Loss Projection Factors and Loss Trend Adjustments. These factors are summarized in **Exhibit C1**. Burglary and theft losses are trended using the internal annual rates of change. The calculations of all loss trend factors are detailed below.

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.

CALCULATION  
OF LOSS TREND  
FACTORS

For the fire, extended coverage and all other property type of loss groups, the loss trend factors are referred to as Current Cost Factors (CCFs) and Loss Projection Factors (LPFs). 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 **Exhibit C3** are calculated annually to correspond with other components of the external trend that are calculated annually.

The most recent CCFs and LPFs are calculated in **Exhibit C2**. Due to the historical volatility of the PPI index, the CCFs for contents were calculated as ratios of the 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.

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.

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CALCULATION OF ADJUSTED PROPERTY LOSSES

EXTERNAL LOSS TREND

CURRENT COST FACTORS AND LOSS PROJECTION FACTORS

Exhibit C2

Development of Current Cost Factors and Loss Projection Factors

Please refer to **Exhibit C2** for the development of the current cost factors and loss projection factors. Explanatory notes for **Exhibit C2** follow below.

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.

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CALCULATION OF ADJUSTED PROPERTY LOSSES

EXTERNAL LOSS TREND

CURRENT COST FACTORS AND LOSS PROJECTION FACTORS (cont'd)

PART C: COMPUTATION OF LOSS PROJECTION FACTORS

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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CALCULATION OF ADJUSTED PROPERTY LOSSES  
EXTERNAL LOSS TREND

DEVELOPMENT OF LOSS TREND ADJUSTMENTS

Exhibit C3

Development of Loss Trend Adjustments

Please refer to **Exhibit C3** for the development of the loss trend adjustments. Explanatory notes for **Exhibit C3** follow below.

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 4/1/2017. Accordingly, there are 53 months to the assumed average accident date of 9/1/2021.

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 **Exhibits C4-1 through C4-6** for the least squares exponential fits.

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CALCULATION OF ADJUSTED PROPERTY LOSSES  
EXTERNAL LOSS TREND

DEVELOPMENT OF LOSS TREND ADJUSTMENTS (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 PROPERTY LOSSES

##### INTERNAL LOSS TREND

##### 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 **Exhibit C3** 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 **Exhibits C4-1** through **C4-7**.

The method used to determine internal trend is applied to all property losses.

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### BUSINESSOWNERS

#### CALCULATION OF ADJUSTED PROPERTY LOSSES

##### PROPERTY LARGE LOSS AND EXCESS PROCEDURES

#### LARGE LOSS SMOOTHING PROCEDURE

If left untreated, the presence or absence of large losses during the review period can produce significant fluctuations in loss cost levels. Consequently, to develop a more stable body of experience, the property loss experience has been smoothed. The smoothing procedure differs based on type of loss group.

#### FIRE LARGE LOSS PROCEDURE

For the fire type of loss group, 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.

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

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CALCULATION OF ADJUSTED PROPERTY LOSSES

PROPERTY LARGE LOSS AND EXCESS PROCEDURES (cont'd)

FIRE LARGE LOSS  
PROCEDURE (cont'd)

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 1.431.

BURGLARY AND THEFT  
LARGE LOSS  
PROCEDURE

To stabilize the burglary and theft 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.

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BUSINESSOWNERS

CALCULATION OF ADJUSTED PROPERTY LOSSES

PROPERTY LARGE LOSS AND EXCESS PROCEDURES (cont'd)

EC EXCESS  
LOSS  
PROCEDURE

The EC data has been adjusted for abnormal frequencies and severities so that it reflects long term excess potential exhibited on a state and regional basis. Normal losses by state and year are defined to be equal to the total Businessowners EC 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 EC excess multiplier is shown in **Exhibit C5**.

ALL OTHER PROPERTY  
LARGE LOSS  
PROCEDURE

The AOP data has been adjusted 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 **Exhibit C6**.

Explanatory notes For **Exhibits C5** and **C6** follow below.

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BUSINESSOWNERS  
CALCULATION OF ADJUSTED PROPERTY LOSSES  
PROPERTY LARGE LOSS AND EXCESS PROCEDURES

DEVELOPMENT OF EXTENDED COVERAGE EXCESS MULTIPLIER

Exhibit C5

Development of the Extended Coverage Excess Multiplier

Please refer to **Exhibit C5** for the development of the excess multiplier for the Extended Coverage type of loss group.

OBJECTIVE

Due to the absence or presence of catastrophic wind losses, 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 (1990-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 LOSSES

The unadjusted incurred losses are shown for each year.

COLUMN (3)

NORMAL INCURRED LOSSES

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

Note: 2.5 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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BUSINESSOWNERS

CALCULATION OF ADJUSTED PROPERTY LOSSES  
PROPERTY LARGE LOSS AND EXCESS PROCEDURES

DEVELOPMENT OF EXTENDED COVERAGE EXCESS MULTIPLIER (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

$$\text{Excess Loss Ratio} = \frac{20(\text{LR}-2.5)}{(\text{LR}-2.5)+20} \quad (\text{if LR} > 2.5), \text{ and}$$

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:

Regional Excess Loss Ratio = ULR-SELR-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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CALCULATION OF ADJUSTED PROPERTY LOSSES  
PROPERTY LARGE LOSS AND EXCESS PROCEDURES

DEVELOPMENT OF EXTENDED COVERAGE EXCESS MULTIPLIER (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.

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CALCULATION OF ADJUSTED PROPERTY LOSSES  
PROPERTY LARGE LOSS AND EXCESS PROCEDURES

DEVELOPMENT OF ALL OTHER PROPERTY EXCESS MULTIPLIER

Exhibit C6

Development of All Other Property Excess Multiplier

Please refer to **Exhibit C6** for the development of the excess multiplier for the All Other Property type of loss group.

OBJECTIVE

Similar to Extended Coverage, the All Other Property 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 (1990 - 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)

EARNED PREMIUMS

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)

INCURRED LOSSES

These are the unadjusted incurred losses for each year.

COLUMN (3)

NORMAL INCURRED LOSSES

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)

NORMAL LOSS RATIO

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)

EXCESS LOSS RATIO

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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BUSINESSOWNERS

CALCULATION OF ADJUSTED PROPERTY LOSSES  
PROPERTY LARGE LOSS AND EXCESS PROCEDURES

DEVELOPMENT OF ALL OTHER PROPERTY EXCESS MULTIPLIER (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.

## MICHIGAN

### 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 property trend is also applied to liability losses.

Loss Trend Factors for Businessowners liability lessors, liability 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, 2021 based on an assumed effective date for trending of September 1, 2020.

The historical data underlying the selected annual rates of change are shown in **Exhibits C7-1** through **C7-4** 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.

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### BUSINESSOWNERS

#### CALCULATION OF ADJUSTED LIABILITY LOSSES (cont'd)

##### LOSS DEVELOPMENT PROCEDURE

Loss development factors are applied to recognize 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, 2019.

Fiscal accident year ending March 31, 2019 includes all losses and loss adjustment expenses paid on accidents from April 1, 2018 to March 31, 2019 and all losses and loss adjustment expenses outstanding on those accidents as of June 30, 2019, 15 months after the inception of the accident year.

Similarly, fiscal accident years ending March 31, 2018, 2017, 2016, and 2015 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:

15 to 27 Months	27 to 39 Months
\$ 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.

Loss development factors and their derivation are shown on **Exhibits C8-1 through C8-4**.

MICHIGAN  
BUSINESSOWNERS  
EXPOSURE TREND

OBJECTIVE

Cost changes over time to both real and personal property result in insureds purchasing 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. The development of exposure trend factors is shown in **Exhibit C9**. 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).

Explanatory notes to **Exhibit C9** follow.

DEVELOPMENT OF  
BUILDINGS AND  
CONTENTS  
EXPOSURE TREND  
FACTORS

ANNUAL WRITTEN INCREASE (COLUMNS 1 AND 6)

The annual written increases for 2014 through 2019 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.

CALENDAR YEAR WRITTEN FACTORS (COLUMNS 2 AND 7)

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

FISCAL YEAR WRITTEN FACTORS (COLUMNS 3 AND 8)

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%

MICHIGAN  
BUSINESSOWNERS  
EXPOSURE TREND

EXPLANATORY NOTES TO EXHIBIT C9 (Cont'd)

DEVELOPMENT OF  
BUILDINGS AND  
CONTENTS  
EXPOSURE TREND  
FACTORS (cont'd)

PROJECTION FACTORS (COLUMNS 4 AND 9)

The projection factors are used to bring the fiscal year written factors at a 10/1/2018 level to the 3/1/2021 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 9/1/2020). Based on selected average annual changes of 3.1% for buildings and 2.2% for contents, the projection factors are calculated as follows:

$$\text{Buildings: } (1.031)^{29/12} = 1.077$$

$$\text{Contents: } (1.022)^{29/12} = 1.054$$

EXPOSURE TREND FACTORS (COLUMNS 5 AND 10)

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

DEVELOPMENT  
OF SALES AND  
PAYROLL EXPOSURE  
TREND FACTORS

SELECTED AVERAGE ANNUAL TREND (COLUMNS 11 AND 13)

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.

EXPOSURE TREND FACTORS (COLUMNS 12 AND 14)

The exposure trend factors were derived to project the reported sales and payroll exposures from the midpoint of each accident year to 3/1/2021, 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 9/1/2020). The trend factors for accident year ending 3/31/2019 were calculated as follows:

$$\text{Sales: } (1.017)^{29/12} = 1.042$$

$$\text{Payroll: } (1.027)^{29/12} = 1.067$$

where 29 is the number of months between the midpoint of accident year ending 3/31/2019 (10/1/2018) and the average date of writing (3/1/2021).

MICHIGAN  
BUSINESSOWNERS  
CREDIBILITY

Exhibit C10

STATEWIDE CREDIBILITY CALCULATION

Credibility, Z, is a weight given to the most recent body of data. The complement of credibility, 1-Z, is the weight assigned to the expected experience ratio. The final estimate is a weighted average obtained by using the formula  $C = Z \times R + (1-Z) \times E$ , where:

C = final estimate  
Z = credibility  
R = estimate based on the most recent data  
E = expected experience ratio

Credibility may range from 0 to 1, where Z=1 is full credibility and Z=0 is no credibility. The actual numerical value of Z is calculated by considering how the state's volume of experience compares with an established full credibility standard. See **Exhibit C10** for the derivation of credibility standards. Explanations of the calculation components shown in the table are detailed below.

LINE (1)                      FULL CREDIBILITY OCCURRENCE STANDARD FOR FREQUENCY

Based on a Poisson distribution, the expected number 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).



MICHIGAN

BUSINESSOWNERS

CREDIBILITY (cont'd)

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, 2019.

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))

MICHIGAN

BUSINESSOWNERS

LOSS ADJUSTMENT EXPENSE FACTORS

Exhibit C11

DEVELOPMENT OF THE LOSS ADJUSTMENT EXPENSE FACTORS

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 **Exhibits 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 **Exhibit 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	1.095
Extended Coverage	1.115
All Other Property	1.115
Burglary and Theft	1.210
Liability	1.085

MICHIGAN  
BUSINESSOWNERS

SECTION D: REVISED STATE LOSS COSTS

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, 2019. 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 to determine the portion of the property base loss cost that covers wind and hail. This was done on a statewide 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 on **Exhibit D1**.

The resulting percentages were applied to the proposed base building and BPP loss costs, respectively, 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.)

## MICHIGAN

## BUSINESSOWNERS

## EXHIBIT A1

## LOSS COST LEVEL CHANGE SUMMARY

	Statewide Aggregate Loss Costs <u>at Current Level</u>	<u>Loss Cost Level Change</u>	
		Ind.	Filed
<u>Property Total</u>	\$ 26,964,768	-0.6%	-0.5%
Lessors/Occupants	\$ 3,073,245	-8.5%	-9.2%
Sales	1,234,495	-17.4%	-17.4%
Payroll	414,281	+4.3%	+4.3%
<u>Liability Total</u>	\$ 4,722,021	-9.7%	-10.2%
GRAND TOTAL	\$ 31,686,789	-2.0%	-1.9%

## MICHIGAN

## BUSINESSOWNERS

## EXHIBIT A2-1

## LOSS COST LEVEL CHANGES

## PROPERTY

Buildings

<u>Territory</u>	<u>Aggregate Loss Costs at Current Level</u>	<u>Loss Cost Level Changes</u>
702	\$ 2,810,143	-1.2%
703	\$ 5,687,206	+3.6%
704	\$ 1,760,984	-2.5%
705	\$ 3,560,922	+0.9%
706	\$ 1,942,093	0.0%
Statewide Total	\$ 15,761,348	+1.0%

Business Pers. Prop.

<u>Territory</u>	<u>Aggregate Loss Costs at Current Level</u>	<u>Loss Cost Level Changes</u>
702	\$ 2,427,031	-4.6%
703	\$ 3,834,353	0.0%
704	\$ 1,344,242	-6.1%
705	\$ 2,328,486	-3.0%
706	\$ 1,269,308	-3.3%
Statewide Total	\$ 11,203,420	-2.7%

All Property

<u>Territory</u>	<u>Aggregate Loss Costs at Current Level</u>	<u>Loss Cost Level Changes</u>
702	\$ 5,237,174	-2.8%
703	\$ 9,521,559	+2.2%
704	\$ 3,105,226	-4.1%
705	\$ 5,889,408	-0.6%
706	\$ 3,211,401	-1.3%
Statewide Total	\$ 26,964,768	-0.5% #

# Due to rounding of the loss costs to three decimal places, this change varies from the overall statewide change on Exhibit B1-1.

## BUSINESSOWNERS

## EXHIBIT A2-2

## LOSS COST LEVEL CHANGES

## LIABILITY

Lessors

<u>Territory</u>	<u>Aggregate Loss Costs at Current Level</u>	<u>Loss Cost Level Changes (a)</u>
702	\$ 35,164	0.0%
703	\$ 559,701	0.0%
704	\$ 80,277	0.0%
705	\$ 214,685	+8.3%
706	\$ 72,473	0.0%
Statewide Total	\$ 962,300	+1.9%

Occupants

<u>Territory</u>	<u>Aggregate Loss Costs at Current Level</u>	<u>Loss Cost Level Changes (a)</u>
702	\$ 207,279	-15.4%
703	\$ 772,623	-18.8%
704	\$ 250,981	-12.0%
705	\$ 653,807	-7.4%
706	\$ 226,255	-20.0%
Statewide Total	\$ 2,110,945	-14.3%

Lessors/Occupants

<u>Territory</u>	<u>Aggregate Loss Costs at Current Level</u>	<u>Loss Cost Level Changes (a)</u>
702	\$ 242,443	-13.2%
703	\$ 1,332,324	-10.9%
704	\$ 331,258	-9.1%
705	\$ 868,492	-3.5%
706	\$ 298,728	-15.1%
Statewide Total	\$ 3,073,245	-9.2%

(a) The loss cost level changes reflect a 0.98 adjustment factor applied to the indicated lessors and occupants revised loss costs to account for changes associated with the COVID-19 pandemic.

MICHIGAN

BUSINESSOWNERS

EXHIBIT 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	\$ 1,234,495	-17.4%

LIABILITY-PAYROLL

	Statewide Aggregate Loss Costs <u>at Current Level</u>	Loss Cost <u>Level Changes</u>
Statewide Total	\$ 414,281	+4.3%

## MICHIGAN

## BUSINESSOWNERS

## EXHIBIT A3

## PRESENT AND REVISED LOSS COSTS

<u>PRESENT LOSS COSTS</u>			<u>INDICATED REVISED LOSS COSTS</u>			<u>SELECTED REVISED LOSS COSTS (a)</u>		
PROPERTY			PROPERTY			PROPERTY		
		Business Personal			Business Personal			Business Personal
<u>Territory</u>	<u>Buildings</u>	<u>Property</u>	<u>Territory</u>	<u>Buildings</u>	<u>Property</u>	<u>Territory</u>	<u>Buildings</u>	<u>Property</u>
702	0.921	1.509	702	0.910	1.440	702	0.910	1.440
703	0.194	0.357	703	0.201	0.357	703	0.201	0.357
704	0.201	0.309	704	0.196	0.290	704	0.196	0.290
705	0.111	0.234	705	0.112	0.227	705	0.112	0.227
706	0.278	0.484	706	0.278	0.468	706	0.278	0.468

  

LIABILITY			LIABILITY			LIABILITY		
<u>Territory</u>	<u>Lessors</u>	<u>Occupants</u>	<u>Territory</u>	<u>Lessors</u>	<u>Occupants</u>	<u>Territory</u>	<u>Lessors</u>	<u>Occupants</u>
702	0.016	0.052	702	0.016	0.045	702	0.016	0.044
703	0.014	0.032	703	0.014	0.027	703	0.014	0.026
704	0.009	0.025	704	0.009	0.022	704	0.009	0.022
705	0.012	0.027	705	0.013	0.025	705	0.013	0.025
706	0.011	0.035	706	0.011	0.029	706	0.011	0.028

  

<u>Territory</u>	<u>Sales</u>	<u>Payroll</u>	<u>Territory</u>	<u>Sales</u>	<u>Payroll</u>	<u>Territory</u>	<u>Sales</u>	<u>Payroll</u>
702	2.357	5.980	702	1.947	6.237	702	1.947	6.237
703	1.850	6.001	703	1.528	6.259	703	1.528	6.259
704	1.626	5.857	704	1.343	6.109	704	1.343	6.109
705	1.614	5.892	705	1.333	6.145	705	1.333	6.145
706	2.099	5.915	706	1.734	6.169	706	1.734	6.169

(a) Includes a 0.98 adjustment factor applied to the indicated lessors and occupants revised loss costs to reflect changes associated with the COVID-19 pandemic.



## MICHIGAN

## BUSINESSOWNERS - PROPERTY

## EXHIBIT B1-1

## CALCULATION OF STATEWIDE ADVISORY LOSS COST LEVEL CHANGE

	(1)	(2)	(3)	(3a)	(3b)	(3c)	(3d)
Fiscal Year	Aggregate	Incurred					
<u>Ending</u>	Loss Costs at	Losses and	Experience	<u>Partial Experience Ratios</u>			
	<u>Current Level (a)</u>	<u>Loss Adjustment</u>	<u>Ratio</u>	<u>Fire</u>	<u>EC</u>	<u>Burg</u>	<u>AOP</u>
3/31/2015	\$ 24,584,835	\$ 28,914,008	1.176	0.332	0.187	0.070	0.586
3/31/2016	23,823,825	24,736,806	1.038	0.414	0.141	0.054	0.430
3/31/2017	25,270,012	20,645,315	0.817	0.354	0.123	0.056	0.285
3/31/2018	26,786,316	25,142,652	0.939	0.416	0.068	0.045	0.409
3/31/2019	26,964,768	28,694,881	1.064	0.281	0.136	0.049	0.598
(4) Weighted Experience Ratio			=	0.991			
(5) Credibility			=	0.765			
(6) Expected Experience Ratio			=	1.002			
(7) Credibility-Wtd. Experience Ratio			=	0.994			
(8) Indicated Loss Cost Level Change			=	0.994	or	-0.6%	
(9) Selected Loss Cost Level Change			=	-0.6%			

NOTE: The assumed effective date for trending is 9/1/2020.

## MICHIGAN

## BUSINESSOWNERS - LIABILITY LESSORS &amp; OCCUPANTS

## EXHIBIT B1-2

## CALCULATION OF STATEWIDE ADVISORY LOSS COST LEVEL CHANGE

	(1)	(2)	(3)
Fiscal Year <u>Ending</u>	Aggregate Loss Costs at <u>Current Level</u>	Incurred Losses and Loss Adjustment <u>Expenses</u>	Experience <u>Ratio</u>
3/31/2015	\$ 3,000,753	\$ 2,770,697	0.923
3/31/2016	3,107,119	1,902,651	0.612
3/31/2017	3,066,255	1,932,589	0.630
3/31/2018	3,081,777	3,624,426	1.176
3/31/2019	3,073,245	2,507,038	0.816
(4) Weighted Experience Ratio		= 0.849	
(5) Credibility		= 0.504	
(6) Expected Experience Ratio		= 0.982	
(7) Credibility-Wtd. Experience Ratio		= 0.915	
(8) Indicated Loss Cost Level Change		= 0.915	or -8.5%
(9) Selected Loss Cost Level Change		= -8.5%	

NOTE: The assumed effective date for trending is 9/1/2020.

## MICHIGAN

## BUSINESSOWNERS - LIABILITY SALES

## EXHIBIT B1-3

## CALCULATION OF STATEWIDE ADVISORY LOSS COST LEVEL CHANGE

	(1)	(2)	(3)
Fiscal Year <u>Ending</u>	Multistate Aggregate Loss Costs at <u>Current Level</u>	Multistate Incurred Losses and Loss Adjustment <u>Expenses</u>	Experience <u>Ratio</u>
3/31/2015	\$ 88,046,241	\$ 69,815,806	0.793
3/31/2016	103,422,864	73,328,385	0.709
3/31/2017	111,040,250	80,380,455	0.724
3/31/2018	106,207,732	96,549,968	0.909
3/31/2019	93,972,794	84,014,006	0.894
(4) Weighted Experience Ratio		= 0.826	
(5) Credibility		= 1.000	
(6) Expected Experience Ratio		= 1.024	
(7) Credibility-Wtd. Experience Ratio		= 0.826	
(8) Indicated Loss Cost Level Change		= 0.826	or -17.4%
(9) Selected Loss Cost Level Change		= -17.4%	

NOTE: The assumed effective date for trending is 9/1/2020.

## MICHIGAN

## BUSINESSOWNERS - LIABILITY PAYROLL

## EXHIBIT B1-4

## CALCULATION OF STATEWIDE ADVISORY LOSS COST LEVEL CHANGE

	(1)	(2)	(3)
Fiscal Year <u>Ending</u>	Multistate Aggregate Loss Costs at <u>Current Level</u>	Multistate Incurred Losses and Loss Adjustment <u>Expenses</u>	Experience <u>Ratio</u>
3/31/2015	\$ 53,605,267	\$ 62,887,661	1.173
3/31/2016	56,930,070	59,783,434	1.050
3/31/2017	58,664,765	59,962,062	1.022
3/31/2018	55,291,953	57,293,711	1.036
3/31/2019	51,346,258	52,132,528	1.015
(4) Weighted Experience Ratio		= 1.043	
(5) Credibility		= 1.000	
(6) Expected Experience Ratio		= 1.007	
(7) Credibility-Wtd. Experience Ratio		= 1.043	
(8) Indicated Loss Cost Level Change		= 1.043	or +4.3%
(9) Selected Loss Cost Level Change		= +4.3%	

NOTE: The assumed effective date for trending is 9/1/2020.

## MICHIGAN

## BUSINESSOWNERS - PROPERTY

## EXHIBIT B2-1

## 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
702	\$23,342,307	\$21,482,698	0.920	0.915	0.918	8,095	0.161	0.986	0.980	0.980
703	\$43,431,734	\$47,086,788	1.084	1.078	1.078	60,911	0.442	1.034	1.028	1.028
704	\$15,700,880	\$14,251,917	0.908	0.903	0.904	26,701	0.293	0.971	0.965	0.965
705	\$30,248,528	\$30,624,342	1.012	1.006	1.006	70,449	0.475	1.003	0.997	0.997
706	\$14,706,309	\$14,687,916	0.999	0.993	0.993	16,337	0.229	0.998	0.992	0.992
TOTAL	127,429,758	128,133,662	1.006	1.000		182,492			1.000	1.000
Buildings	\$73,867,411	\$76,342,844	1.034	1.028	1.027	59,896	0.438	1.012	1.015	1.015
Bus. Pers. Prop.	53,562,346	51,790,818	0.967	0.961	0.963	122,596	0.627	0.977	0.980	0.980
TOTAL	127,429,758	128,133,662	1.006	1.000		182,492			1.000	1.000

## MICHIGAN

## BUSINESSOWNERS - LIABILITY

## EXHIBIT 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
702	\$1,145,479	\$830,741	0.725	0.872	0.953	4,897	0.105	0.995	0.995	0.995
703	\$6,208,783	\$4,863,412	0.783	0.942	0.887	40,971	0.303	0.964	0.964	0.964
704	\$1,799,607	\$1,536,448	0.854	1.028	1.065	16,848	0.194	1.012	1.012	1.012
705	\$4,551,291	\$4,460,292	0.980	1.179	1.212	39,632	0.298	1.059	1.059	1.059
706	\$1,510,856	\$952,643	0.631	0.759	0.785	10,436	0.153	0.964	0.964	0.964
TOTAL	15,216,016	12,643,536	0.831	1.000		112,785			1.000	1.000
Lessors	\$4,460,334	\$5,095,572	1.142	1.374	1.402	21,136	0.217	1.076	1.113	1.113
Occupants	10,755,682	7,547,963	0.702	0.845	0.833	91,649	0.452	0.921	0.953	0.953
TOTAL	15,216,016	12,643,536	0.831	1.000		112,785			1.000	1.000

## BUSINESSOWNERS

## EXHIBIT B3

## CALCULATION OF EXPECTED EXPERIENCE RATIOS

LOSS TREND

PROPERTY	Buildings <u>Adjusted Losses</u>	Trend <u>Factor</u>	Business Pers. Prop. <u>Adjusted Losses</u>	Trend <u>Factor</u>	
Fire	31,095,166	0.999	14,606,979	0.990	
EC	12,467,945	1.067	4,105,987	1.029	
AOP	32,357,986	1.051	26,554,450	1.049	All Property
Burglary			6,945,147	1.030	<u>Trend Factor</u>
	75,921,097	1.032	52,212,563	1.028	1.03

## LIABILITY

	<u>Adjusted Losses</u>	Trend <u>Factor</u>
Lessors	5,095,571	1.013
Occupants	7,547,965	0.991

	Trend <u>Factor</u>
AOI Lessors & Occupants	1.000
Sales	1.046
Payroll	1.036

PREMIUM TREND

PROPERTY	Buildings <u>Adjusted Losses</u>	Trend <u>Factor</u>	Business Pers. Prop. <u>Adjusted Losses</u>	Trend <u>Factor</u>	All Property <u>Trend Factor</u>
	75,921,097	1.031	52,212,563	1.022	1.027

## LIABILITY

	Trend <u>Factor</u>
AOI Lessors & Occupants	1.022
Sales	1.017
Payroll	1.027

ANNUAL NET TRENDS (LOSS TREND/PREMIUM TREND)

	Annual Net <u>Trend Factor</u>	Expected Experience <u>Ratio (a)</u>
ALL PROPERTY	1.003	1.002
LIABILITY - AOI LESSORS AND OCCUPANTS	0.978	0.982
LIABILITY - SALES	1.029	1.024
LIABILITY - PAYROLL	1.009	1.007

(a) The projection period is from the date of the last approval, 11/1/2019, to the assumed effective trend date of 9/1/2020. For ALL PROPERTY,  $1.002 = 1.003^{(10/12)}$ .

## BUSINESSOWNERS

## EXHIBIT C1

SUMMARY OF LOSS TREND FACTORS  
FIRE, EXTENDED COVERAGE, AND ALL OTHER PROPERTY

<u>Year</u>	<u>Current Cost Factors *</u>	
	<u>Buildings</u>	<u>Contents</u>
3/31/2015	1.161	1.073
3/31/2016	1.120	1.064
3/31/2017	1.101	1.058
3/31/2018	1.066	1.038
3/31/2019	1.037	1.019

  

<u>Loss Projection Factor**</u>		
	<u>Buildings</u>	<u>Contents</u>
	1.056	1.034

  

	<u>Annual Loss Trend Adjustments</u>	
	<u>Buildings</u>	<u>Contents</u>
Fire	-3.1%	-2.7%
Extended Coverage	+3.5%	+1.2%
All Other Property	+1.9%	+3.1%

\* 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.



## BUSINESSOWNERS

## EXHIBIT C2

DEVELOPMENT OF CURRENT COST FACTORS AND LOSS PROJECTION FACTORS

Period Ending December 31, 2019

**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)

<u>Quarter Ending</u>	<u>XCI</u>	<u>PPI</u>
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
3/31/2019	123.5	122.2
6/30/2019	124.8	122.6
9/30/2019	125.7	122.6
12/31/2019	126.8	123.5

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

<u>Fiscal Year Ending</u>	<u>Year Ending Averages</u>		<u>Current Cost Factors to Period Ending December 31, 2019</u>	
	<u>XCI</u>	<u>PPI</u>	<u>Buildings*</u>	<u>Contents*</u>
3/31/2015	109.2	114.8	126.8/109.2= 1.161	123.2/114.8= 1.073
3/31/2016	113.2	115.8	126.8/113.2= 1.120	123.2/115.8= 1.064
3/31/2017	115.2	116.5	126.8/115.2= 1.101	123.2/116.5= 1.058
3/31/2018	118.9	118.7	126.8/118.9= 1.066	123.2/118.7= 1.038
3/31/2019	122.3	120.9	126.8/122.3= 1.037	123.2/120.9= 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	+3.08%	+1.90%
Loss Projection Factor**	1.056	1.034

\*\*To project losses from the midpoint of the latest quarter, 11/15/2019, to the average accident date of 9/1/2021. (21.5/12)

## BUSINESSOWNERS

## EXHIBIT C3

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

**I. EXTERNAL RATE OF CHANGE**

		BUILDINGS	CONTENTS
Year	(1) Fire, EC and AOP Weights	(2a) Current Cost Factors	(2b) Current Cost Factors
2015	0.10	1.161	1.073
2016	0.15	1.120	1.064
2017	0.20	1.101	1.058
2018	0.25	1.066	1.038
2019	0.30	1.037	1.019
(3)	Average CCF for Fire, EC and AOP	1.082	1.044
(4a)	Annual Rate of Change	0.0308	0.019
(4b)	Projection Period (a)	21.50	21.50
(4c)	Loss Projection Factor (LPF) $(1 + (4a)) ^ ((4b) / 12)$	1.056	1.034
(5a)	Total Trend (3) x (4c)	1.143	1.079
(5b)	Projection Period (b)	53.00	53.00
(5c)	Annualized Total Trend for Fire, EC and AOP $(5a) ^ (12 / (5b))$	1.031	1.017

**II. INTERNAL ANNUAL RATE OF CHANGE**

		(6) Selected BOP	
		BUILDINGS	CONTENTS
	Fire	1.070	1.080
	EC	1.085	1.035
	AOP	1.060	1.065

- (a) The number of months from the midpoint of the latest quarter of external trend used, 11/15/2019, to the assumed average accident date of 9/1/2021.
- (b) The number of months from the weighted midpoint of the experience period, 4/1/2017, to the assumed average accident date of 9/1/2021.

BUSINESSOWNERS

EXHIBIT C3 (Cont'd)

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

III. LTA CALCULATION

	(7)	(8)	(9)	(10)	(11)	(12)
			Indicated Severity LTA	Formula Severity LTA (c)	Frequency Effect	Final LTA (10) x (11)
	<u>Annual External</u>	<u>Annual Internal</u>	<u>(8) / (7)</u>			
BUILDINGS						
Fire	1.031	1.070	1.038	1.025	0.945	0.969
EC	1.031	1.085	1.052	1.035	1.000	1.035
AOP	1.031	1.060	1.028	1.019	1.000	1.019
CONTENTS						
Fire	1.017	1.080	1.062	1.041	0.935	0.973
EC	1.017	1.035	1.018	1.012	1.000	1.012
AOP	1.017	1.065	1.047	1.031	1.000	1.031

(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.

## BUSINESSOWNERS

## EXHIBIT C4-1

## 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>	Occurrence Cost <u>(Total)</u>	Occurrence Cost <u>(Normal)</u>	Occurrence <u>Frequency*</u>
2010	7,295,733,048	241,412,286	195,583,138	3,428	70,424	57,055	0.0470
2011	7,358,747,202	215,874,239	182,399,883	3,555	60,724	51,308	0.0483
2012	7,273,082,549	252,806,595	209,351,698	3,504	72,148	59,746	0.0482
2013	6,974,356,057	260,322,522	206,936,741	3,098	84,029	66,797	0.0444
2014	6,782,136,118	251,797,071	200,414,136	2,593	97,106	77,290	0.0382
2015	6,507,533,379	226,434,429	178,155,220	2,404	94,191	74,108	0.0369
2016	6,429,516,533	245,654,728	187,593,985	2,302	106,714	81,492	0.0358
2017	6,921,852,147	281,626,536	206,344,563	2,464	114,296	83,744	0.0356
2018	7,287,292,679	290,075,276	197,639,284	2,218	130,782	89,107	0.0304
2019	7,400,011,497	291,149,222	217,857,044	2,204	132,100	98,846	0.0298

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) =	8.9%	-5.6%	0.936	0.933
Observed annual rate of change (8 years) =	8.8%	-6.3%	0.957	0.939
Observed annual rate of change (6 years) =	7.7%	-5.1%	0.920	0.880

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) =	6.9%	-5.6%	0.928	0.933
Observed annual rate of change (8 years) =	6.5%	-6.3%	0.936	0.939
Observed annual rate of change (6 years) =	5.3%	-5.1%	0.876	0.880
Selected annual rate of change =	7.0%	-5.5%		

\* in 100,000's

## MICHIGAN

## BUSINESSOWNERS

## EXHIBIT C4-2

## FIRE - CONTENTS

## MULTISTATE SEVERITY AND FREQUENCY TREND

Accident Year	Trended Exposures	Total Losses	Normal Losses	Incurred Occurrences	Occurrence Cost (Total)	Occurrence Cost (Normal)	Occurrence Frequency*
2010	1,191,056,774	89,817,738	76,593,052	2,683	33,477	28,548	0.2253
2011	1,174,054,663	88,820,116	75,701,539	2,841	31,264	26,646	0.2420
2012	1,147,370,386	88,829,210	77,243,590	2,853	31,135	27,075	0.2487
2013	1,087,659,912	79,829,761	68,726,217	2,321	34,395	29,611	0.2134
2014	1,088,743,599	82,079,294	73,167,618	2,206	37,207	33,168	0.2026
2015	1,101,663,498	83,744,602	74,449,282	2,049	40,871	36,334	0.1860
2016	1,109,053,782	76,072,186	66,233,081	1,946	39,092	34,035	0.1755
2017	1,193,720,789	88,849,622	78,227,663	1,937	45,870	40,386	0.1623
2018	1,311,962,803	107,461,624	79,332,812	1,843	58,308	43,045	0.1405
2019	1,311,067,461	113,980,070	91,226,096	1,812	62,903	50,346	0.1382

Total Losses

	<u>Severity</u>	<u>Frequency</u>	<u>R-Squared Severity</u>	<u>Frequency</u>
Observed annual rate of change (10 years) =	7.8%	-6.5%	0.855	0.915
Observed annual rate of change (8 years) =	10.2%	-7.9%	0.924	0.981
Observed annual rate of change (6 years) =	11.6%	-7.8%	0.886	0.974

Normal Losses

	<u>Severity</u>	<u>Frequency</u>	<u>R-Squared Severity</u>	<u>Frequency</u>
Observed annual rate of change (10 years) =	6.9%	-6.5%	0.901	0.915
Observed annual rate of change (8 years) =	8.4%	-7.9%	0.942	0.981
Observed annual rate of change (6 years) =	8.2%	-7.8%	0.868	0.974
Selected annual rate of change =	8.0%	-6.5%		

\* in 100,000's

## MICHIGAN

## BUSINESSOWNERS

## EXHIBIT C4-3

## EXTENDED COVERAGE - BUILDINGS

## MULTISTATE SEVERITY TREND

Accident Year	Total Losses	Normal Losses	Incurred Occurrences	Occurrence Cost (Total)	Occurrence Cost (Normal)
2010	203,869,713	124,983,838	11,466	17,780	10,900
2011	291,546,215	128,733,324	11,936	24,426	10,785
2012	389,220,976	179,708,891	18,093	21,512	9,933
2013	249,294,710	130,604,110	12,141	20,533	10,757
2014	139,466,967	92,233,616	7,032	19,833	13,116
2015	188,498,673	109,646,476	7,728	24,392	14,188
2016	153,144,194	118,136,818	7,036	21,766	16,790
2017	250,263,948	151,493,973	8,191	30,554	18,495
2018	239,322,237	139,954,730	7,693	31,109	18,192
2019	216,495,057	156,451,115	6,464	33,492	24,203

Total LossesR-squared

Observed annual rate of change (10 years) =	5.9%	0.672
Observed annual rate of change (8 years) =	7.9%	0.781
Observed annual rate of change (6 years) =	11.1%	0.844

Normal LossesR-squared

Observed annual rate of change (10 years) =	9.8%	0.894
Observed annual rate of change (8 years) =	12.7%	0.966
Observed annual rate of change (6 years) =	11.8%	0.923
Selected annual rate of change =	8.5%	

## MICHIGAN

## BUSINESSOWNERS

## EXHIBIT C4-4

## EXTENDED COVERAGE - CONTENTS

## MULTISTATE SEVERITY TREND

Accident Year	Total Losses	Normal Losses	Incurred Occurrences	Occurrence Cost (Total)	Occurrence Cost (Normal)
2010	13,937,075	11,115,348	2,104	6,624	5,283
2011	15,110,568	11,771,319	1,942	7,781	6,061
2012	46,915,085	19,446,209	3,384	13,864	5,747
2013	18,130,451	10,806,832	2,506	7,235	4,312
2014	13,142,699	9,495,303	1,637	8,029	5,800
2015	15,016,569	10,771,082	1,520	9,879	7,086
2016	13,142,280	10,668,037	1,574	8,350	6,778
2017	13,639,706	9,914,752	1,715	7,953	5,781
2018	16,448,510	11,102,001	1,672	9,838	6,640
2019	14,649,995	12,055,471	1,459	10,041	8,263

Total LossesR-squared

Observed annual rate of change (10 years) =	2.0%	0.079
Observed annual rate of change (8 years) =	-1.1%	0.017
Observed annual rate of change (6 years) =	3.1%	0.256

Normal LossesR-squared

Observed annual rate of change (10 years) =	3.9%	0.419
Observed annual rate of change (8 years) =	5.7%	0.494
Observed annual rate of change (6 years) =	4.1%	0.319
Selected annual rate of change =	3.5%	

## MICHIGAN

## BUSINESSOWNERS

## EXHIBIT C4-5

## ALL OTHER PROPERTY - BUILDINGS

## MULTISTATE SEVERITY TREND

Accident Year	Total Losses	Normal Losses	Incurred Occurrences	Occurrence Cost (Total)	Occurrence Cost (Normal)
2010	198,031,748	178,997,671	16,470	12,024	10,868
2011	241,442,743	197,990,925	17,518	13,783	11,302
2012	177,350,613	162,827,343	14,547	12,192	11,193
2013	162,900,780	153,514,243	12,959	12,570	11,846
2014	232,352,469	187,790,441	15,512	14,979	12,106
2015	251,357,245	184,977,367	15,526	16,189	11,914
2016	143,526,957	136,153,625	10,068	14,256	13,523
2017	148,206,694	141,038,626	9,832	15,074	14,345
2018	205,773,680	184,596,142	11,614	17,718	15,894
2019	215,727,321	209,939,023	11,303	19,086	18,574

Total LossesR-squared

Observed annual rate of change (10 years) =	4.6%	0.768
Observed annual rate of change (8 years) =	5.8%	0.798
Observed annual rate of change (6 years) =	4.5%	0.541

Normal LossesR-squared

Observed annual rate of change (10 years) =	5.5%	0.862
Observed annual rate of change (8 years) =	7.0%	0.897
Observed annual rate of change (6 years) =	9.1%	0.934
Selected annual rate of change =	6.0%	



## MICHIGAN

## BUSINESSOWNERS

## EXHIBIT C4-6

## ALL OTHER PROPERTY - CONTENTS

## MULTISTATE SEVERITY TREND

Accident Year	Total Losses	Normal Losses	Incurred Occurrences	Occurrence Cost (Total)	Occurrence Cost (Normal)
2010	100,976,829	93,170,159	10,748	9,395	8,669
2011	110,850,290	99,821,784	10,506	10,551	9,501
2012	105,639,982	99,347,595	11,301	9,348	8,791
2013	108,255,229	102,867,380	10,198	10,615	10,087
2014	117,838,414	98,001,787	9,922	11,876	9,877
2015	104,024,406	92,356,778	8,440	12,325	10,943
2016	99,159,831	93,480,706	7,882	12,581	11,860
2017	104,276,560	101,183,525	7,750	13,455	13,056
2018	135,552,119	121,091,774	8,772	15,453	13,804
2019	132,900,535	129,763,771	8,272	16,066	15,687

Total LossesR-squared

Observed annual rate of change (10 years) =	6.2%	0.925
Observed annual rate of change (8 years) =	7.5%	0.963
Observed annual rate of change (6 years) =	6.7%	0.930

Normal LossesR-squared

Observed annual rate of change (10 years) =	6.6%	0.931
Observed annual rate of change (8 years) =	8.1%	0.974
Observed annual rate of change (6 years) =	9.3%	0.993
Selected annual rate of change =	6.5%	

## MICHIGAN

## BUSINESSOWNERS

## EXHIBIT C4-7

## BURGLARY

## MULTISTATE SEVERITY AND FREQUENCY TREND

Accident Year	Trended Exposures	Total Losses	Normal Losses	Incurred Occurrences	Occurrence Cost (Total)	Occurrence Cost (Normal)	Occurrence Frequency*
2010	8,486,789,822	18,191,475	17,831,721	3,412	5,332	5,226	0.0402
2011	8,532,801,866	17,692,444	17,330,892	3,197	5,534	5,421	0.0375
2012	8,420,452,935	18,506,870	17,534,118	3,112	5,947	5,634	0.0370
2013	8,062,015,968	16,294,175	15,786,426	2,633	6,188	5,996	0.0327
2014	7,870,879,716	18,962,726	18,243,474	2,823	6,717	6,462	0.0359
2015	7,609,196,877	20,253,854	19,198,117	2,776	7,296	6,916	0.0365
2016	7,538,570,315	19,853,094	19,230,412	2,822	7,035	6,814	0.0374
2017	8,115,572,937	23,077,397	22,094,843	3,076	7,502	7,183	0.0379
2018	8,599,255,482	25,403,415	23,241,317	3,065	8,288	7,583	0.0356
2019	8,711,078,958	21,770,040	21,244,011	2,823	7,712	7,525	0.0324

Total Losses

	<u>Severity</u>	<u>Frequency</u>	<u>R-Squared Severity</u>	<u>Frequency</u>
Observed annual rate of change (10 years) =	4.8%	-1.0%	0.932	0.234
Observed annual rate of change (8 years) =	4.3%	-0.3%	0.869	0.020
Observed annual rate of change (6 years) =	3.3%	-1.6%	0.688	0.294

Normal Losses

	<u>Severity</u>	<u>Frequency</u>	<u>R-Squared Severity</u>	<u>Frequency</u>
Observed annual rate of change (10 years) =	4.5%	-1.0%	0.964	0.234
Observed annual rate of change (8 years) =	4.3%	-0.3%	0.931	0.020
Observed annual rate of change (6 years) =	3.2%	-1.6%	0.895	0.294
Selected annual rate of change =	4.0%	-1.0%		

\* in 100,000's

MICHIGAN  
BUSINESSOWNERS  
EXHIBIT C5

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
3/31/1990	2,365,754	762,816	762,816	0.322		
3/31/1991	2,161,024	1,154,429	1,026,786	0.475	0.057	0.002
3/31/1992	1,941,730	1,111,202	1,111,201	0.572		
3/31/1993	1,798,446	511,270	511,271	0.284		
3/31/1994	1,772,011	1,150,487	793,439	0.448	0.180	0.021
3/31/1995	1,735,394	372,393	372,394	0.215		
3/31/1996	1,755,921	910,124	835,480	0.476	0.041	0.001
3/31/1997	1,730,505	1,048,820	959,418	0.554	0.050	0.002
3/31/1998	1,859,373	1,278,101	975,468	0.525	0.148	0.015
3/31/1999	2,195,295	5,068,927	2,714,467	1.236	0.886	0.187
3/31/2000	2,451,970	1,934,507	1,566,628	0.639	0.137	0.013
3/31/2001	2,689,681	1,996,138	1,976,000	0.735	0.007	0.000
3/31/2002	3,044,362	3,380,222	2,608,268	0.857	0.235	0.019
3/31/2003	3,565,593	591,313	591,312	0.166		
3/31/2004	4,322,724	2,246,772	2,246,775	0.520		
3/31/2005	4,784,205	1,491,822	1,491,822	0.312		
3/31/2006	4,873,957	1,110,125	1,110,135	0.228		
3/31/2007	4,704,964	999,229	999,230	0.212		
3/31/2008	4,366,043	2,922,729	2,667,315	0.611	0.057	0.002
3/31/2009	4,001,633	3,845,154	3,121,877	0.780	0.170	0.011
3/31/2010	3,971,179	1,519,266	1,519,266	0.383		
3/31/2011	4,117,180	7,166,208	4,739,927	1.151	0.481	0.109
3/31/2012	4,175,679	4,697,694	4,336,833	1.039	0.082	0.004
3/31/2013	3,869,762	2,390,907	2,390,908	0.618		
3/31/2014	3,576,753	1,437,373	1,437,376	0.402		
3/31/2015	3,524,956	2,143,233	2,142,551	0.608	0.000	
3/31/2016	3,542,221	2,179,275	1,594,908	0.450	0.150	0.015
3/31/2017	3,738,793	3,862,246	1,519,617	0.406	0.454	0.172
3/31/2018	3,835,695	967,886	967,886	0.252		
3/31/2019	3,864,769	1,504,432	1,504,430	0.389		
TOTALS				15.865	3.136	0.572
(7) STATE EXCESS COMPONENT = ( TOTAL (5) / TOTAL (4) )					0.198	
(8) REGIONAL EXCESS COMPONENT					0.118	
(9) STATE EXCESS MULTIPLIER = ( 1 + (7) ) x ( 1 + (8) )					1.340	

MICHIGAN  
BUSINESSOWNERS  
EXHIBIT C6

DEVELOPMENT OF ALL OTHER PROPERTY EXCESS MULTIPLIER

YEAR ENDING	(1)  EARNED PREMIUMS	(2)  INCURRED LOSSES	(3)  NORMAL INCURRED LOSSES	(4)  NORMAL LOSS RATIO	(5) STATE EXCESS LOSS RATIO
3/31/1990	7,576,057	2,166,458	2,166,476	0.286	
3/31/1991	6,920,431	1,436,194	1,436,188	0.208	
3/31/1992	6,218,167	1,436,691	1,436,684	0.231	
3/31/1993	5,759,317	1,770,211	1,770,209	0.307	
3/31/1994	5,674,662	3,985,823	3,125,384	0.551	0.152
3/31/1995	5,557,401	3,312,619	3,312,620	0.596	
3/31/1996	5,623,134	2,463,340	2,463,339	0.438	
3/31/1997	5,541,745	2,548,511	2,548,519	0.460	
3/31/1998	5,954,430	2,505,284	2,505,286	0.421	
3/31/1999	7,030,182	12,664,572	5,668,399	0.806	0.995
3/31/2000	7,852,153	7,373,666	7,373,668	0.939	
3/31/2001	8,613,394	15,451,445	10,378,791	1.205	0.589
3/31/2002	9,749,221	6,525,812	6,525,809	0.669	
3/31/2003	11,418,402	5,326,528	5,326,536	0.466	
3/31/2004	13,843,027	6,719,774	6,719,786	0.485	
3/31/2005	15,320,867	6,777,968	6,777,994	0.442	
3/31/2006	15,608,288	4,972,909	4,972,927	0.319	
3/31/2007	15,067,108	7,477,649	7,477,648	0.496	
3/31/2008	13,981,753	7,318,740	7,318,724	0.523	
3/31/2009	12,814,769	10,487,076	9,902,483	0.773	0.046
3/31/2010	12,717,245	8,844,024	8,844,013	0.695	
3/31/2011	13,184,796	13,190,368	12,065,369	0.915	0.085
3/31/2012	13,372,134	11,225,194	11,225,193	0.839	
3/31/2013	12,392,468	7,732,540	7,530,276	0.608	0.016
3/31/2014	11,454,140	11,095,478	9,361,417	0.817	0.151
3/31/2015	11,288,266	9,030,157	8,181,737	0.725	0.075
3/31/2016	11,343,556	6,078,797	6,078,806	0.536	
3/31/2017	11,973,055	4,478,039	4,478,060	0.374	
3/31/2018	12,283,372	6,772,190	6,772,191	0.551	
3/31/2019	12,376,478	6,595,567	6,595,561	0.533	
TOTALS				17.216	2.110
(6) STATE EXCESS COMPONENT = ( TOTAL (5) / TOTAL (4) )					0.123
(7) STATE EXCESS MULTIPLIER = ( 1 + (6) )					1.123

MICHIGAN  
BUSINESSOWNERS

EXHIBIT C7-1

LIABILITY - LESSORS  
MULTISTATE SEVERITY AND FREQUENCY TREND

Accident Year	Trended Exposures	Paid Total Losses	Paid Normal Losses*	Paid Occurrences**	Occurrence Cost (Total)	Occurrence Cost (Normal)	Occurrence Frequency***
2010	3,999,103,715	104,394,099	50,914,628	4,315	24,193	11,799	0.1079
2011	4,095,273,940	124,770,578	57,972,341	5,098	24,474	11,371	0.1245
2012	4,507,111,164	105,118,564	45,963,313	3,833	27,423	11,991	0.0850
2013	4,429,885,211	115,094,519	51,899,400	3,756	30,642	13,817	0.0848
2014	4,385,983,793	187,821,009	83,746,223	5,420	34,654	15,451	0.1236
2015	4,093,647,146	175,725,421	74,240,696	4,636	37,905	16,014	0.1132
2016	3,987,343,397	141,575,586	64,460,598	3,776	37,492	17,070	0.0947
2017	4,392,636,681	130,527,458	71,520,386	3,802	34,328	18,810	0.0866
2018	4,534,409,383	109,994,188	78,837,497	3,832	28,707	20,576	0.0845
2019	4,510,674,770	98,663,150	81,697,323	2,951	33,433	27,684	0.0654

Total Losses

				<u>R-Squared</u>	
			<u>Severity</u>	<u>Frequency</u>	
Observed annual rate of change (10 years)	=		3.6%	-4.1%	0.425
Observed annual rate of change (8 years)	=		1.2%	-3.6%	0.063
Observed annual rate of change (6 years)	=		-3.1%	-11.2%	0.344

Normal Losses

				<u>R-Squared</u>	
			<u>Severity</u>	<u>Frequency</u>	
Observed annual rate of change (10 years)	=		9.3%	-4.1%	0.930
Observed annual rate of change (8 years)	=		10.7%	-3.6%	0.933
Observed annual rate of change (6 years)	=		11.4%	-11.2%	0.875
Selected annual rate of change	=		5.5%	-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

MICHIGAN  
BUSINESSOWNERS

EXHIBIT C7-2

LIABILITY - OCCUPANTS  
MULTISTATE SEVERITY AND FREQUENCY TREND

Accident Year	Trended Exposures	Paid Total Losses	Paid Normal Losses*	Paid Occurrences**	Occurrence Cost (Total)	Occurrence Cost (Normal)	Occurrence Frequency***
2010	825,718,373	173,560,675	84,282,344	10,880	15,952	7,747	1.3176
2011	809,343,912	181,320,075	83,541,397	10,538	17,206	7,928	1.3020
2012	771,862,395	144,372,606	60,543,943	7,688	18,780	7,876	0.9960
2013	748,749,283	121,014,602	55,722,235	5,675	21,322	9,818	0.7580
2014	985,513,289	166,498,216	73,466,988	7,142	23,314	10,287	0.7247
2015	1,114,322,905	164,508,142	71,238,219	6,438	25,553	11,066	0.5777
2016	1,009,142,171	145,758,887	66,225,481	5,485	26,572	12,073	0.5436
2017	1,052,868,879	146,031,505	76,150,281	5,000	29,205	15,229	0.4749
2018	1,237,206,568	180,790,413	102,222,545	4,912	36,805	20,810	0.3970
2019	1,206,012,504	187,972,522	136,115,515	4,887	38,467	27,855	0.4052

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)	=	10.3%	-13.5%	0.983	0.967
Observed annual rate of change (8 years)	=	10.6%	-12.1%	0.971	0.961
Observed annual rate of change (6 years)	=	11.1%	-11.2%	0.944	0.941

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)	=	14.4%	-13.5%	0.894	0.967
Observed annual rate of change (8 years)	=	17.9%	-12.1%	0.922	0.961
Observed annual rate of change (6 years)	=	22.5%	-11.2%	0.935	0.941
Selected annual rate of change	=	12.0%	-11.5%		

\* 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

MICHIGAN  
BUSINESSOWNERS

EXHIBIT C7-3

LIABILITY - SALES  
MULTISTATE SEVERITY AND FREQUENCY TREND

Accident Year	Trended Exposures	Paid Total Losses	Paid Normal Losses*	Paid Occurrences**	Occurrence Cost (Total)	Occurrence Cost (Normal)	Occurrence Frequency***
2010	16,779,036	20,069,605	12,678,029	2,754	7,287	4,603	0.0164
2011	16,024,372	20,602,293	11,075,969	2,597	7,933	4,265	0.0162
2012	16,296,236	26,003,513	12,296,806	2,397	10,848	5,130	0.0147
2013	18,252,023	31,537,661	15,051,246	2,394	13,174	6,287	0.0131
2014	26,327,582	40,200,158	20,707,618	3,163	12,710	6,547	0.0120
2015	32,392,926	53,034,231	26,321,694	3,982	13,319	6,610	0.0123
2016	36,812,787	63,289,840	31,868,376	4,095	15,454	7,782	0.0111
2017	39,554,948	63,905,902	39,768,683	3,750	17,040	10,604	0.0095
2018	37,910,934	81,226,247	53,857,679	3,432	23,666	15,692	0.0091
2019	33,326,381	82,260,324	58,489,274	2,639	31,166	22,160	0.0079

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)	=			15.3%	-7.7%	0.934	0.973
Observed annual rate of change (8 years)	=			14.5%	-8.0%	0.873	0.960
Observed annual rate of change (6 years)	=			19.7%	-8.6%	0.925	0.935

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)	=			18.2%	-7.7%	0.886	0.973
Observed annual rate of change (8 years)	=			21.6%	-8.0%	0.887	0.960
Observed annual rate of change (6 years)	=			29.3%	-8.6%	0.929	0.935
Selected annual rate of change	=			12.5%	-7.0%		

\* 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

MICHIGAN  
BUSINESSOWNERS

EXHIBIT C7-4

LIABILITY - PAYROLL  
MULTISTATE SEVERITY AND FREQUENCY TREND

Accident Year	Trended Exposures	Paid Total Losses	Paid Normal Losses*	Paid Occurrences**	Occurrence Cost (Total)	Occurrence Cost (Normal)	Occurrence Frequency***
2010	4,043,850	45,560,664	21,048,040	2,751	16,561	7,651	0.0680
2011	3,701,229	53,131,390	22,869,499	2,316	22,937	9,873	0.0626
2012	3,554,902	49,826,113	20,905,448	2,727	18,270	7,665	0.0767
2013	3,725,290	62,089,663	22,986,724	2,465	25,185	9,324	0.0662
2014	3,793,446	62,082,423	25,525,258	2,516	24,679	10,147	0.0663
2015	3,888,752	56,444,569	27,433,391	2,294	24,605	11,959	0.0590
2016	4,122,284	73,329,849	28,470,920	2,176	33,696	13,083	0.0528
2017	4,267,733	65,582,400	28,281,633	2,197	29,851	12,873	0.0515
2018	4,063,517	48,795,894	34,366,316	2,182	22,368	15,753	0.0537
2019	3,777,479	52,077,997	38,298,863	1,951	26,690	19,628	0.0517

Total Losses

				<u>R-Squared</u>	
				<u>Severity</u>	<u>Frequency</u>
Observed annual rate of change (10 years)	=			4.6%	-3.8%
Observed annual rate of change (8 years)	=			3.6%	-5.4%
Observed annual rate of change (6 years)	=			0.0%	-4.4%

Normal Losses

				<u>R-Squared</u>	
				<u>Severity</u>	<u>Frequency</u>
Observed annual rate of change (10 years)	=			9.9%	-3.8%
Observed annual rate of change (8 years)	=			12.7%	-5.4%
Observed annual rate of change (6 years)	=			12.5%	-4.4%
Selected annual rate of change	=			8.5%	-4.5%

\* 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



## MICHIGAN

## BUSINESSOWNERS

## EXHIBIT C8-1

LOSS DEVELOPMENT  
LIABILITY - LESSORS/OCCUPANTS\$ 300,000 LIMIT INCURRED LOSSES AS OF:

<u>YEAR</u>	<u>LINK RATIOS</u>				
	<u>15 MONTHS</u>	<u>27 MONTHS</u>	<u>39 MONTHS</u>	<u>27:15</u>	<u>39:27</u>
2005	3,972,801	4,939,032	5,635,466	1.243	1.141
2006	2,400,409	3,244,604	3,693,921	1.352	1.138
2007	2,607,789	3,419,339	3,585,988	1.311	1.049
2008	2,949,298	4,065,696	4,755,616	1.379	1.170
2009	2,677,894	3,272,438	3,978,538	1.222	1.216
2010	2,840,470	4,126,526	4,718,725	1.453	1.144
2011	6,764,355	9,160,058	8,902,819	1.354	0.972
2012	3,514,960	4,634,011	4,866,887	1.318	1.050
2013	2,476,198	3,338,542	3,168,662	1.348	0.949
2014	1,747,369	1,905,079	2,270,249	1.090	1.192
2015	2,601,372	2,785,346	3,396,981	1.071	1.220
2016	1,479,498	1,531,876	2,250,296	1.035	1.469
2017	2,809,267	2,306,926	2,775,841	0.821	1.203
2018	1,954,631	3,160,387		1.617	
2019	1,614,705				

(1) Average Best 3 of 5	(A) Statewide	1.065	1.205
	(B) Multistate	1.555	1.289
(2) Credibility		0.555	0.092
(3) Credibility Weighted Average		1.283	1.281

Summary of Factors

	<u>Factor</u>
63 to Ultimate**	1.015
51 to Ultimate**	1.042
39 to Ultimate**	1.139
27 to Ultimate	1.459
15 to Ultimate	1.872

\*\*Multistate

BUSINESSOWNERS  
EXHIBIT 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>
2005	170,634,925	233,689,471	282,153,094	301,341,956	308,793,408	309,328,408	308,572,925	310,093,333	312,699,033	314,943,597
2006	169,327,967	238,098,004	290,922,508	307,695,811	306,032,498	306,250,848	307,887,217	309,393,502	310,315,060	312,971,119
2007	168,162,762	247,641,498	300,390,516	314,356,278	317,783,030	317,829,339	320,494,187	323,971,431	324,390,662	322,435,926
2008	194,094,930	272,581,991	325,590,747	348,859,331	352,438,900	349,475,681	350,752,720	350,932,035	351,014,945	351,407,181
2009	191,406,727	277,036,813	343,116,478	358,655,490	365,545,596	367,566,990	362,336,086	363,593,255	363,990,785	363,695,064
2010	198,777,549	274,704,784	333,719,920	356,769,101	362,591,386	360,133,293	361,155,504	361,298,695	361,741,894	362,830,826
2011	196,252,293	283,489,452	351,338,775	381,405,814	389,280,940	391,849,911	395,109,034	400,161,583	402,025,192	
2012	173,411,421	247,913,271	300,404,715	322,786,557	328,085,659	329,227,960	330,843,652	331,733,200		
2013	154,075,066	226,772,122	271,320,440	291,122,866	301,760,069	303,779,614	305,491,611			
2014	164,002,987	248,539,203	328,298,631	369,647,441	380,236,169	386,342,961				
2015	155,627,208	247,593,161	330,903,439	367,693,130	379,500,247					
2016	154,550,630	241,000,347	308,162,061	336,385,329						
2017	166,943,560	246,349,360	311,990,295							
2018	164,198,863	262,662,079								
2019	163,945,624									

LINKRATIOS

<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>
2005	1.370	1.207	1.068	1.025	1.002	0.998	1.005	1.008	1.007
2006	1.406	1.222	1.058	0.995	1.001	1.005	1.005	1.003	1.009
2007	1.473	1.213	1.046	1.011	1.000	1.008	1.011	1.001	0.994
2008	1.404	1.194	1.071	1.010	0.992	1.004	1.001	1.000	1.001
2009	1.447	1.239	1.045	1.019	1.006	0.986	1.003	1.001	0.999
2010	1.382	1.215	1.069	1.016	0.993	1.003	1.000	1.001	1.003
2011	1.445	1.239	1.086	1.021	1.007	1.008	1.013	1.005	
2012	1.430	1.212	1.075	1.016	1.003	1.005	1.003		
2013	1.472	1.196	1.073	1.037	1.007	1.006			
2014	1.515	1.321	1.126	1.029	1.016				
2015	1.591	1.336	1.111	1.032					
2016	1.559	1.279	1.092						
2017	1.476	1.266							
2018	1.600								
BEST 3 OF 5	1.555	1.289	1.093	1.027	1.006	1.005	1.002	1.001	1.001
FACTORS	<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>
	2.283	1.468	1.139	1.042	1.015	1.009	1.004	1.002	1.001

BUSINESSOWNERS  
EXHIBIT 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>
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	28,620,972
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	25,788,800	
2012	22,781,000	27,438,764	32,905,182	36,397,604	37,046,240	36,306,016	36,026,495	36,247,445		
2013	27,937,480	37,726,118	42,709,702	45,254,163	46,980,802	46,359,840	45,970,073			
2014	43,251,701	58,921,610	70,429,519	77,578,405	77,828,045	78,332,846				
2015	61,211,972	81,203,459	96,828,228	104,186,885	107,243,614					
2016	68,640,367	90,989,655	109,937,914	116,299,077						
2017	73,087,021	91,342,714	112,538,704							
2018	71,353,110	94,553,692								
2019	65,478,791									

LINKRATIOS

<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>
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	0.997
2011	1.206	1.127	1.058	0.991	0.993	0.989	0.998	1.004	
2012	1.204	1.199	1.106	1.018	0.980	0.992	1.006		
2013	1.350	1.132	1.060	1.038	0.987	0.992			
2014	1.362	1.195	1.102	1.003	1.006				
2015	1.327	1.192	1.076	1.029					
2016	1.326	1.208	1.058						
2017	1.250	1.232							
2018	1.325								
BEST									
3 OF 5	1.326	1.198	1.079	1.017	0.995	0.994	1.000	1.002	1.001
FACTORS									
	<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>
	1.730	1.305	1.089	1.009	0.992	0.997	1.003	1.003	1.001

BUSINESSOWNERS  
EXHIBIT 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>
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	81,003,954
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	88,484,769	
2012	42,284,923	55,615,528	66,094,443	73,708,983	78,517,877	79,631,872	80,458,938	81,100,614		
2013	48,421,946	66,812,054	80,777,617	88,521,235	95,582,030	99,667,842	101,876,528			
2014	53,233,273	77,368,588	95,038,661	107,869,739	113,012,580	117,804,395				
2015	55,200,249	77,975,698	97,860,694	107,794,900	114,003,547					
2016	59,401,549	83,559,961	101,530,981	110,309,166						
2017	62,456,637	83,491,906	101,702,324							
2018	58,113,113	82,192,139								
2019	62,482,630									

LINKRATIOS

<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>
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	1.008
2011	1.314	1.175	1.096	1.029	1.020	1.000	1.029	1.007	
2012	1.315	1.188	1.115	1.065	1.014	1.010	1.008		
2013	1.380	1.209	1.096	1.080	1.043	1.022			
2014	1.453	1.228	1.135	1.048	1.042				
2015	1.413	1.255	1.102	1.058					
2016	1.407	1.215	1.086						
2017	1.337	1.218							
2018	1.414								
BEST 3 OF 5	1.411	1.220	1.104	1.057	1.025	1.006	1.020	1.016	1.007
FACTORS	<u>15 to Ult.</u> 2.159	<u>27 to Ult.</u> 1.530	<u>39 to Ult.</u> 1.254	<u>51 to Ult.</u> 1.136	<u>63 to Ult.</u> 1.075	<u>75 to Ult.</u> 1.049	<u>87 to Ult.</u> 1.043	<u>99 to Ult.</u> 1.023	<u>111 to Ult.</u> 1.007

## MICHIGAN

## BUSINESSOWNERS

## EXHIBIT C9

DEVELOPMENT OF EXPOSURE TREND FACTORSBuildings

<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>
2014	2.5%	1.129			
2015	2.3%	1.104	1.123	1.077	1.209
2016	2.1%	1.081	1.098	1.077	1.183
2017	2.1%	1.059	1.076	1.077	1.159
2018	2.7%	1.031	1.052	1.077	1.133
2019	3.1%	1.000	1.023	1.077	1.102

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>
2014	2.1%	1.100			
2015	1.9%	1.079	1.095	1.054	1.154
2016	1.8%	1.060	1.074	1.054	1.132
2017	1.8%	1.041	1.055	1.054	1.112
2018	1.9%	1.022	1.036	1.054	1.092
2019	2.2%	1.000	1.017	1.054	1.072

SalesPayroll

<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>
2015	1.7%	1.114	2015	2.7%	1.186
2016	1.7%	1.096	2016	2.7%	1.155
2017	1.7%	1.077	2017	2.7%	1.125
2018	1.7%	1.059	2018	2.7%	1.095
2019	1.7%	1.042	2019	2.7%	1.067

(a) Fiscal Year Ending June 30.

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

## MICHIGAN

## BUSINESSOWNERS

## EXHIBIT C10

## STATEWIDE CREDIBILITY CALCULATION

	Statewide	Statewide	Multistate	Multistate
	<u>Property</u>	<u>Liability</u> <u>L/O</u>	<u>Sales</u>	<u>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	182,492	113,814	254,624	425,329
(8) Statewide credibility $[(7)/(6)]^{1/2}$	0.765	0.504	1.000	1.000

## MICHIGAN

## BUSINESSOWNERS

## EXHIBIT C11-1

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

		<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	
(1) Fire							
(a) Direct Losses Incurred	Agency	4,093,317	4,153,346	4,573,544	6,293,463	6,898,018	
	Direct	1,357,529	1,154,431	1,071,288	1,446,423	1,645,182	
	Combined	5,450,846	5,307,777	5,644,832	7,739,886	8,543,200	
(b) Direct Loss Adjustment Expenses Incurred	Agency	432,514	440,395	473,520	587,458	596,236	
	Direct	107,653	80,385	68,944	103,388	69,279	
	Combined	540,167	520,780	542,464	690,846	665,515	
(2) Allied Lines**							
(a) Direct Losses Incurred	Agency	3,323,630	3,550,455	4,997,338	14,607,279	8,283,491	
	Direct	1,186,261	1,223,580	1,408,219	3,267,292	1,949,280	
	Combined	4,509,891	4,774,035	6,405,557	17,874,571	10,232,771	
(b) Direct Loss Adjustment Expenses Incurred	Agency	497,244	529,129	575,794	890,092	852,842	
	Direct	137,607	144,974	161,355	260,860	140,421	
	Combined	634,851	674,103	737,149	1,150,952	993,263	
Incurred Percentages**							
		<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>Selected Factor</u>
(3) Loss Adjustment Expense as Ratio to Losses Incurred							
(a) Fire (1b)/(1a)	Combined	9.9%	9.8%	9.6%	8.9%	7.8%	9.5%
(b) Allied Lines (2b)/(2a)	Combined	14.1%	14.1%	11.5%	6.4%	9.7%	11.5%

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.

## MICHIGAN

## BUSINESSOWNERS

## EXHIBIT C11-2

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

	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>
(1) Direct Losses Incurred	21,019	38,218	40,299	45,959	22,864
(2) Direct Loss Adjustment Expense Incurred	8,202	9,327	4,868	8,626	6,263
	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>
(1) Direct Losses Incurred	29,227	59,412	50,793	30,545	89,709
(2) Direct Loss Adjustment Expense Incurred	8,758	7,364	7,482	12,322	16,931

## Incurred Percentages\*\*

	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>
(3) Loss Adj. Expenses Incurred as a ratio to Losses Incurred [(2)/(1)]	39.0%	24.4%	12.1%	18.8%	27.4%

	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>Selected Factor</u>
(3) Loss Adj. Expenses Incurred as a ratio to Losses Incurred [(2)/(1)]	30.0%	12.4%	14.7%	40.3%	18.9%	21.0%

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.



## MICHIGAN

## BUSINESSOWNERS

## EXHIBIT C11-3

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

	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>
(1) Direct Losses Incurred	16,060,877	20,637,310	21,683,391	18,292,641	21,647,905
Allocated Loss					
(2) Adjustment Expenses					
Incurred	3,236,544	4,042,978	2,920,642	3,994,655	3,849,776
Unallocated Loss					
(3) Adjustment Expenses					
Incurred	1,700,919	1,878,166	1,961,025	1,758,797	1,630,803

## Incurred Percentages\*\*

	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>Selected Factor</u>
Unallocated Loss						
Adjustment Expenses as						
Ratio to Losses +						
(4) Allocated Loss	8.8%	7.6%	8.0%	7.9%	6.4%	8.5%
Adjustment Expense						
(3)/[(1)+(2)]						

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

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%
2018	6.4%

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.

## MICHIGAN

## BUSINESSOWNERS

## EXHIBIT D1

## WINDSTORM OR HAIL EXCLUSION CREDITS

<u>Territory</u>	<u>Coverage</u>	(1) <u>Total Losses</u>	(2) Wind and <u>Hail Losses</u>	(3) Percent <u>(2)/(1)</u>
All	Buildings	76,342,844	11,781,759	15%
	BPP	51,790,818	3,530,393	5%

**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.
702	0.910	1.440	0.044	1.947	6.237	0.016
703	0.201	0.357	0.026	1.528	6.259	0.014
704	0.196	0.290	0.022	1.343	6.109	0.009
705	0.112	0.227	0.025	1.333	6.145	0.013
706	0.278	0.468	0.028	1.734	6.169	0.011

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

**SECTION III  
RATING AND ELIGIBILITY RULES**

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**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
702-706	0.227	0.264	0.302

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

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**RULE 29.  
ENDORSEMENTS**


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

<b>Territory</b>	<b>Coverage (Code)</b>	<b>Credit</b>
702	Buildings (1) Business Personal Property (2)	0.137 0.072
703	Buildings (1) Business Personal Property (2)	0.030 0.018
704	Buildings (1) Business Personal Property (2)	0.029 0.015
705	Buildings (1) Business Personal Property (2)	0.017 0.011
706	Buildings (1) Business Personal Property (2)	0.042 0.023

**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**

<b>Number Of Employees</b>	<b>Loss Cost Per Employee</b>		
	<b>Mercantile Restaurant</b>	<b>Wholesale</b>	<b>All Other</b>
1-25	\$ 6.640	\$ 9.880	\$ 7.900
Each Additional Employee	4.650	6.910	5.530

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

# MICHIGAN

## BUSINESSOWNERS

### SUPPLEMENTARY INFORMATION

#### 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 2020 filing and prior 2019 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

#### UNALLOCATED LOSS ADJUSTMENT EXPENSE

	<u>Current</u>	<u>Prior</u>
Liability	8.5%	8.5%
Fire	9.5%	10.0%
Extended Coverage	11.5%	12.5%
All Other Property	11.5%	12.5%
Burglary/Theft	21.0%	22.0%

#### 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	1.015	1.016
51 to ultimate	1.042	1.038
39 to ultimate	1.139	1.127
27 to ultimate	1.459	1.412
15 to ultimate	1.872	1.771

# MICHIGAN

## BUSINESSOWNERS

### 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	+3.1%	+2.8%
Contents	+1.7%	+1.6%

##### 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	-3.1%	-2.7%	-2.9%	-1.7%
Extended Coverage	+3.5%	+1.2%	+2.7%	+0.9%
All Other Property	+1.9%	+3.1%	+1.4%	+2.2%
Burglary	+3.0%		+2.4%	
Liability Lessors	+1.3%		+0.9%	
Liability Occupants	-0.9%		-1.2%	

#### 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	+3.1%	+2.6%
Contents	+2.2%	+1.9%

#### 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	+0.3%	+0.0%
Liability Lessors/Occupants	-2.2%	-2.3%
Liability Sales	+2.9%	+2.9%
Liability Payroll	+0.9%	+0.8%

MICHIGAN  
BUSINESSOWNERS  
SUPPLEMENTARY INFORMATION

TYPE OF LOSS ANALYSIS	A brief description of loss patterns for the five years of the current review are shown below.	
Fire	Fire losses were consistent over the five-year experience period.	
Extended Coverage	Extended Coverage losses were consistent over the five-year experience period.	
Burglary	Burglary losses were consistent over the five-year experience period.	
All Other Property	The high All Other Property experience ratio in 2015 and 2019 was due to unfavorable experience across several companies.	
Liability	The high Liability experience ratio in 2018 was due to unfavorable experience across several companies.	
EXPLANATION OF CHANGES	The information below is provided to explain large statewide loss cost level indicated changes.	
	Property	No large indicated change.
	Liability Lessors/Occ	No large indicated change.
	Liability Sales	The -17.4% indication is due to continued favorable experience in all years of the experience period.
	Liability Payroll	No large indicated change.

MICHIGAN  
BUSINESSOWNERS  
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	95.9%	97.9%	98.1%	92.3%
Time Element	4.1%	2.1%	1.9%	7.7%

CONTENTS

	<u>Fire</u>	<u>EC</u>	<u>Burglary</u>	<u>AOP</u>
Property Damage	84.3%	85.4%	99.3%	81.8%
Time Element	15.7%	14.6%	0.7%	18.2%

\* Data from Accident Year ending 3/31/2015 through Accident Year ending 3/31/2019.