



Tennessee

**Voluntary Loss Cost and
Assigned Risk Rate Filing
Proposed Effective March 1, 2017**

Technical Supplement





National Council on
Compensation Insurance

Amy Quinn
State Relations Executive
Regulatory Services

August 22, 2016

Honorable Julie M. McPeak
Commissioner of Commerce and Insurance
State of Tennessee
500 James Robertson Parkway
Nashville, Tennessee 37243-0565

Re: **Supporting Information for the Tennessee Workers Compensation Voluntary Market
Loss Costs and Rating Values and Assigned Risk Rates and Rating Values Filing—
Effective March 1, 2017**

Dear Commissioner McPeak:

We are enclosing for your review, supporting actuarial and statistical data used to produce the results in the March 1, 2017 voluntary market loss cost and assigned risk rate filing.

The voluntary loss costs, which are proposed to be effective March 1, 2017, reflect a decrease of 12.8 percent from the loss costs effective August 28, 2016. The assigned risk rates, which are proposed to be effective March 1, 2017, reflect a decrease of 10.7 percent from the rates effective August 28, 2016.

If you should have any questions or need additional information, please do not hesitate to contact me (803-356-0851) or Ann Marie Smith (561-893-3781).

Respectfully submitted,

NATIONAL COUNCIL ON COMPENSATION INSURANCE, INC.

A handwritten signature in cursive script that reads "A Quinn".

Amy Quinn
State Relations Executive
Regulatory Services Division



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WORKERS COMPENSATION FILING – MARCH 1, 2017

Actuarial Certification and Disclosure Statement

Actuarial Certification

I, Ann Marie Smith, am a Director & Actuary for the National Council on Compensation Insurance, Inc. I am a Fellow of the Casualty Actuarial Society and a member of the American Academy of Actuaries, and I meet the Qualification Standards of the American Academy of Actuaries to provide the actuarial report contained herein.

The information contained in this report has been prepared under my direction in accordance with applicable Actuarial Standards of Practice as promulgated by the Actuarial Standards Board. The Actuarial Standards Board is vested by the U.S.-based actuarial organizations with the responsibility for promulgating Actuarial Standards of Practice for actuaries providing professional services in the United States. Each of these organizations requires its members, through its Code of Professional Conduct, to observe the Actuarial Standards of Practice when practicing in the United States.

A handwritten signature in cursive script that reads "Ann Marie Smith".

Ann Marie Smith, FCAS, MAAA
Director & Actuary
Actuarial and Economic Services

Documents Comprising the Report

There are two documents comprising the full actuarial report:

- The voluntary loss cost and assigned risk rate filing includes a description of the key components reviewed in determining the overall average voluntary loss cost and assigned risk rate level change, the proposed voluntary loss costs and assigned risk rates and experience rating values by class code, and updated miscellaneous values and retrospective rating values.
- The Technical Supplement shows detailed calculations supporting the information conveyed in the filing document.

Data Sources and Dates

The overall average voluntary loss cost and assigned risk rate level change is based on a review of Financial Call Data, which is aggregated workers compensation data reported to NCCI annually. In this filing, Financial Call Data submissions received after June 17, 2016 were not considered for inclusion in the analysis.



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Voluntary loss cost and assigned risk rate level changes at the classification code level are based on Unit Statistical Data, which is the audited exposure, premium and loss information reported to NCCI on a policy level. In this filing, Unit Statistical Data submissions received after June 27, 2016 were not considered for inclusion in the analysis.

In some areas, NCCI's analysis also relies on other data sources, which are reviewed for reasonableness and are referenced in the filing where applicable.

This filing was prepared as of July 18, 2016. Therefore, events that occurred after this date that may have a material impact on workers compensation costs in this jurisdiction have not been considered in the analysis.

Methodology and Assumptions

The methodology and assumptions used in this filing, detailed in the Technical Supplement, may not be applicable to or relevant for another purpose, including but not limited to NCCI filings in other jurisdictions.

Generally, the methodology used in this filing is not materially different from previous NCCI filings approved in Tennessee with the exception of the revising the expense constant, minimum premium multiplier, and maximum minimum premium.

Introduction

This filing proposes an update to the set of minimum premium program parameters in effect in this jurisdiction's assigned risk market. This change jointly revises the current combination of the following three values: minimum premium multiplier (MPM), maximum minimum premium (MMP), and the expense constant (EC).

Background

Minimum premium charges that vary by classification currently exist for risks that report minimal or no payroll. In accordance with NCCI's current minimum premium program rules, if the formulaic minimum premium dollar value for a classification code exceeds a specified maximum threshold (i.e., the MMP), the MMP serves as the minimum premium amount for that classification. Since the collective loss experience of minimum premium risks is generally worse than that for larger risks, any reduction in premium for the minimum premium risks would serve to further exacerbate this disparity.

Insurer expenses as a proportion of premium vary by size of risk. As risk size increases, marginal expenses tend to diminish. An EC helps address these expense differences by size of risk. The EC together with the expense provision included in the manual rate provide the necessary funding for insurer expenses.



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Expenses by size of risk had not been reviewed by NCCI since the 1990s. The underlying support for the current EC dates back to that analysis, although the EC was updated with inflation adjustments in many jurisdictions during the first decade after that study. As part of its review of the EC, NCCI also recently reviewed both the experience of minimum premium risks and the parameters of the current minimum premium program by state.

Methodology

The recent EC study examined the general and production (including other acquisition) costs by policy size to determine the indicated EC. Alternative EC dollar values were analyzed using the following general approach:

- For each individual company and year, a comparison of estimated and actual expenses was made
 - Across all states, distributions of premium writings by size of insured were derived from unit statistical plan data for each insurance company
 - Estimated expenses for each insurance company were then derived by applying premium discounts and the EC being analyzed to the respective distribution of premium writings. Actual expenses for each insurance company were obtained from Insurance Expense Exhibit (IEE) data
- The difference between the estimated and actual expenses was then calculated
- A determination was made as to which EC value minimized the difference between the estimated and actual expenses. The indicated EC was the value that provided the best fit to the actual data

Recent loss experience on minimum premium policies was also examined by state and evaluated against the collective loss experience of non-minimum-premium small risks. (This latter group served as a benchmark for comparison purposes.)

Impact

As mentioned above, the collective loss ratio experience for minimum premium policies is comparatively worse than that observed for risks of larger premium sizes. In order to promote more equitable loss ratio results between minimum premium risks and that for non-minimum-premium small risks, this filing proposes to revise the current set of minimum premium program parameters in effect in this jurisdiction. More specifically, the following joint set of parameters is being proposed: a minimum premium multiplier of 200, a maximum minimum premium of \$1,250, and an EC of \$160. Note that the revised EC will apply to both minimum and non-minimum premium policies.

The change to the set of minimum premium program parameters is being proposed in a premium-neutral fashion. The proposal does not impact the total statewide premium need, but rather the equitable distribution of premium and expenses across risk sizes.



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As applicable, a 0.998 offset has been applied in this filing which decreases the proposed rates by an amount that exactly offsets the estimated increase in the minimum premiums due to the changes in the MPM and/or the MMP. Further, the offset associated with the change in the EC has been included in the calculation of the filing's expense provisions.

While the overall impact of the change in minimum premium program parameters is expected to be premium neutral overall, the impact may vary by size of risk across individual insureds. While some minimum premium risks will experience an increase in premium, it is generally anticipated that small risks will experience a reduction in premium while larger risks will experience an increase in premium.

NCCI has prepared this filing in accordance with the applicable laws and regulations of this jurisdiction.

Additional Disclosure

This filing assumes that the item filing RM-01-TN-2016--Elimination of the Premium Discount and Tennessee Tabular Surcharge and Establishment of an Assigned Risk Adjustment Program (ARAP) in Tennessee will be approved with a maximum ARAP surcharge of 25%.

Risks and Uncertainty

This filing includes assumptions and projections concerning the future. As with any prospective analysis, there exists estimation uncertainty in these assumptions and projections. Areas of this analysis subject to estimation uncertainty that could have a material impact on the final results include the following:

- Projection of future loss development
- Selection of loss ratio trends
- Potential impact of changes to laws and/or regulations

In addition, any future changes to workers compensation law or regulations that apply retroactively to policies or benefit claims on policies in the proposed effective period may have a significant impact on the adequacy of the voluntary loss costs and assigned risk rates proposed in this filing.



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SUMMARY OF PROPOSED CHANGES

Proposed Effective Date

March 1, 2017

I. Industrial Classifications

Overall Proposed Change in Loss Cost Level

New and Renewal Policies -12.8%

By Component

Change in Experience, Trend and Benefits -12.9%

Offset for the Change in Minimum Premium Program Parameters -0.2%

Change in Loss-based Expenses +0.3%

Overall Loss Cost Level Change -12.8%

By Industry Group

Manufacturing -11.7%

Contracting -13.8%

Office & Clerical -13.7%

Goods & Services -12.5%

Miscellaneous -13.0%

Overall -12.8%

Overall Proposed Change in Assigned Risk Rate Level

New and Renewal Policies -10.7%

By Component

Overall Loss Cost Level Change in Voluntary Market -12.8%

Change in Assigned Risk Loss Cost Multiplier +2.4%

Overall -10.7%

II. Miscellaneous Values

	<u>Current</u>	<u>Proposed</u>
Expense Constant	\$215	\$160
Minimum Premium Multiplier	158	200
Maximum Minimum Premium	\$800	\$1,250



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EXHIBIT I

Determination of Indicated Loss Cost Level Change

Section A - Policy Year 2014 Experience

Premium:

(1) Standard Earned Premium Developed to Ultimate (Appendix A-II)	\$599,579,754
(2) Premium On-level Factor (Appendix A-I)	0.693
(3) Premium Available for Benefit Costs = (1) x (2)	\$415,508,770

Indemnity Benefit Cost:

(4) Limited Indemnity Losses Developed to Ultimate (Appendix A-II)	\$133,220,602
(5) Indemnity Loss On-level Factor (Appendix A-I)	0.971
(6) Adjusted Limited Indemnity Losses = (4) x (5)	\$129,357,205
(7) Adjusted Limited Indemnity Cost Ratio excluding Trend and Benefits = (6) / (3)	0.311
(8) Factor to Reflect Indemnity Trend (Appendix A-III)	0.848
(9) Projected Limited Indemnity Cost Ratio = (7) x (8)	0.264
(10) Factor to Adjust Indemnity Cost Ratio to an Unlimited Basis (Appendix A-II)	1.012
(11) Projected Indemnity Cost Ratio = (9) x (10)	0.267
(12) Factor to Reflect Proposed Changes in Indemnity Benefits (Appendix C)	1.010
(13) Projected Indemnity Cost Ratio including Benefit Changes = (11) x (12)	0.270

Medical Benefit Cost:

(14) Limited Medical Losses Developed to Ultimate (Appendix A-II)	\$267,587,781
(15) Medical Loss On-level Factor (Appendix A-I)	0.965
(16) Adjusted Limited Medical Losses = (14) x (15)	\$258,222,209
(17) Adjusted Limited Medical Cost Ratio excluding Trend and Benefits = (16) / (3)	0.621
(18) Factor to Reflect Medical Trend (Appendix A-III)	0.952
(19) Projected Limited Medical Cost Ratio = (17) x (18)	0.591
(20) Factor to Adjust Medical Cost Ratio to an Unlimited Basis (Appendix A-II)	1.012
(21) Projected Medical Cost Ratio = (19) x (20)	0.598
(22) Factor to Reflect Proposed Changes in Medical Benefits (Appendix C)	1.001
(23) Projected Medical Cost Ratio including Benefit Changes = (21) x (22)	0.599

Total Benefit Cost:

(24) Indicated Change Based on Experience, Trend and Benefits = (13) + (23)	0.869
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EXHIBIT I

Determination of Indicated Loss Cost Level Change

Section B - Policy Year 2013 Experience

Premium:

(1) Standard Earned Premium Developed to Ultimate (Appendix A-II)	\$616,235,670
(2) Premium On-level Factor (Appendix A-I)	0.623
(3) Premium Available for Benefit Costs = (1) x (2)	\$383,914,822

Indemnity Benefit Cost:

(4) Limited Indemnity Losses Developed to Ultimate (Appendix A-II)	\$139,157,602
(5) Indemnity Loss On-level Factor (Appendix A-I)	0.855
(6) Adjusted Limited Indemnity Losses = (4) x (5)	\$118,979,750
(7) Adjusted Limited Indemnity Cost Ratio excluding Trend and Benefits = (6) / (3)	0.310
(8) Factor to Reflect Indemnity Trend (Appendix A-III)	0.805
(9) Projected Limited Indemnity Cost Ratio = (7) x (8)	0.250
(10) Factor to Adjust Indemnity Cost Ratio to an Unlimited Basis (Appendix A-II)	1.012
(11) Projected Indemnity Cost Ratio = (9) x (10)	0.253
(12) Factor to Reflect Proposed Changes in Indemnity Benefits (Appendix C)	1.010
(13) Projected Indemnity Cost Ratio including Benefit Changes = (11) x (12)	0.256

Medical Benefit Cost:

(14) Limited Medical Losses Developed to Ultimate (Appendix A-II)	\$257,708,404
(15) Medical Loss On-level Factor (Appendix A-I)	0.966
(16) Adjusted Limited Medical Losses = (14) x (15)	\$248,946,318
(17) Adjusted Limited Medical Cost Ratio excluding Trend and Benefits = (16) / (3)	0.648
(18) Factor to Reflect Medical Trend (Appendix A-III)	0.938
(19) Projected Limited Medical Cost Ratio = (17) x (18)	0.608
(20) Factor to Adjust Medical Cost Ratio to an Unlimited Basis (Appendix A-II)	1.012
(21) Projected Medical Cost Ratio = (19) x (20)	0.615
(22) Factor to Reflect Proposed Changes in Medical Benefits (Appendix C)	1.001
(23) Projected Medical Cost Ratio including Benefit Changes = (21) x (22)	0.616

Total Benefit Cost:

(24) Indicated Change Based on Experience, Trend and Benefits = (13) + (23)	0.872
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EXHIBIT I

Determination of Indicated Loss Cost Level Change

Section C - Indicated Change Based on Experience, Trend and Benefits

(1) Policy Year 2014 Indicated Change Based on Experience, Trend, and Benefits	0.869
(2) Policy Year 2013 Indicated Change Based on Experience, Trend, and Benefits	0.872
(3) Indicated Change Based on Experience, Trend and Benefits = [(1)+(2)] / 2	0.871

Section D - Application of the Offset Due to the Change in the Maximum Minimum Premium

(1) Indicated Loss Cost Level Change	0.871
(2) Effect of the Offset Due to the Change in the Maximum Minimum Premium	0.998
(3) Indicated Change Modified to Reflect the Offset Due to the Change in the Max Min Premium = (1) x (2)	0.869

Section E - Application of the Change in Loss-based Expenses

(1) Indicated Loss Cost Level Change	0.869
(2) Effect of the Change in Loss-based Expenses (Exhibit II)	1.003
(3) Indicated Change Modified to Reflect the Change in Loss-based Expenses = (1) x (2)	0.872

Section F - Distribution of Overall Loss Cost Level Change to Industry Groups

Industry Group Differentials (Appendix A-V):

Manufacturing	1.013
Contracting	0.988
Office & Clerical	0.990
Goods & Services	1.003
Miscellaneous	0.998

Applying these industry group differentials to the final overall loss cost level change produces the changes in loss cost level proposed for each group as shown:

Industry Group	(1) Final Overall Loss Cost Level Change	(2) Industry Group Differential	(3) = (1) x (2) Final Loss Cost Level Change by Industry Group	
Manufacturing	0.872	1.013	0.883	(-11.7%)
Contracting	0.872	0.988	0.862	(-13.8%)
Office & Clerical	0.872	0.990	0.863	(-13.7%)
Goods & Services	0.872	1.003	0.875	(-12.5%)
Miscellaneous	0.872	0.998	0.870	(-13.0%)
Overall	0.872	1.000	0.872	(-12.8%)



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EXHIBIT II

Workers Compensation Loss-based Expense Provision

Section A - Determination of Loss Adjustment Expense Provision

NCCI has computed the loss adjustment expense allowance on an accident year basis using data obtained from the NCCI Call for Loss Adjustment Expense. For this filing, NCCI proposes a 20.1% loss adjustment expense allowance as a percentage of incurred losses.

Accident Year	Accident Year Developed LAE Ratio	Accident Year Developed DCCE Ratio	Accident Year Developed AOE Ratio
2011	18.8%	12.2%	6.6%
2012	19.9%	13.0%	6.9%
2013	20.4%	13.0%	7.4%
2014	21.0%	13.5%	7.5%
2015	20.4%	13.2%	7.2%
Countrywide selected:	20.6%	13.2%	7.4%
Tennessee selected: (12.7% = 13.2% x 0.960)	20.1%	12.7%	7.4%

Section B - Determination of Tennessee DCCE Relativity

(1a) Tennessee paid losses (in '000s)	1,250,245
(1b) Tennessee paid DCCE (in '000s)	149,121
(1c) Ratio (1b)/(1a)	11.9%
(2a) Countrywide paid losses (in '000s)	70,961,833
(2b) Countrywide paid DCCE (in '000s)	8,767,925
(2c) Ratio (2b)/(2a)	12.4%
(3) Tennessee DCCE relativity (1c)/(2c)	0.960

Section C - Proposed Change in Tennessee Loss Adjustment Expense Provision

(1) Current Tennessee LAE Provision	19.8%
(2) Proposed Tennessee LAE Provision	20.1%
(3) Proposed Change in LAE Provision	1.003
= [1.0 + (2)] / [1.0 + (1)] - 1	0.3%

Notes

NAIC Annual Statement data is used in the above calculations. The countrywide figures exclude state funds.



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APPENDIX A-I

Determination of Policy Year On-level Factors

Section A - Factor Adjusting 2014 Policy Year Assigned Risk Premium to Present Assigned Risk Level

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Rate Level Change	Cumulative Index	Weight	Product (2)x(3)	Adj. Factor Present Index/ Sum Column (4)	Adj. For Expense Constant Removal @	Adj. For Expense Removal	UPP Adj. to Gross Premium Factor	Premium Adjustment Factor (5)x(6)x(7)x(8)
Date									
NR 03/01/13	Base	1.000	0.105	0.105	0.923	0.967	0.623	0.969	0.539
NR 03/01/14	0.955	0.955	0.068	0.065					
BOTH 07/01/14	0.941	0.941	0.115	0.108					
BOTH 07/01/14	0.941	0.899	0.712	0.640					
NR 03/01/15	0.930	0.836							
NR 03/01/16	1.042	0.871							
NR 08/28/16	0.973	0.847							
				0.918					

Section B - Factor Adjusting 2014 Policy Year Voluntary Premium to Present Voluntary Level

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Loss Cost Level Change	Cumulative Index	Weight	Product (2)x(3)	Adj. Factor Present Index/ Sum Column (4)	Adj. For Expense Constant Removal @	Adj. For Expense Removal	UPP Adj. to Gross Premium Factor	Premium Adjustment Factor (5)x(6)x(7)x(8)
Date									
NR 03/01/13	Base	1.000	0.105	0.105	0.861	1.000	0.835	1.000	0.719
NR 03/01/14	0.931	0.931	0.068	0.063					
BOTH 07/01/14	0.941	0.941	0.115	0.108					
BOTH 07/01/14	0.941	0.876	0.712	0.624					
NR 03/01/15	0.918	0.804							
NR 03/01/16	0.991	0.797							
NR 08/28/16	0.973	0.775							
				0.900					

Section C - Factor Adjusting 2014 Policy Year Assigned Risk Premium and Voluntary Premium to Present Statewide Level

(1) Assigned Risk Market Share PY 2014	0.121
(2) Voluntary Market Share PY 2014	0.879
(3) Assigned Risk Standard Premium Adjustment Factor (See Sec. A)	0.539
(4) Voluntary Standard Premium Adjustment Factor (See Sec. B)	0.719
(5) Premium Adjustment Factor = [(1)x(3)]/1.277+(2)x(4) #	0.683
(6) Experience Rating Off-balance Adjustment Factor*	1.014
(7) Final Premium Adjustment Factor = (5)x(6)	0.693

NR New and renewal business.

@ Eliminates premium derived from expense constants.

Current premium index (assigned risk-to-voluntary) = 1.277

* = 1.014 = 0.956 / 0.943 = (Targeted Off-balance) / (Off-balance for Policy Year 2014)



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APPENDIX A-I

Determination of Policy Year On-level Factors

Section D - Factor Adjusting 2014 Policy Year Indemnity Losses to Present Benefit Level

	(1)	(2)	(3)	(4)	(5)
Date	Benefit Level Change	Cumulative Index	Weight	Product (2)x(3)	Adj. Factor Present Index/ Sum Column (4)
01/01/14	Base	1.000	0.173	0.173	0.971
07/01/14	0.837	0.837	0.409	0.342	
01/01/15	1.000	0.837	0.327	0.274	
07/01/15	1.003	0.840	0.091	0.076	
08/28/16	1.000	0.840			
				0.865	

Section E - Factor Adjusting 2014 Policy Year Medical Losses to Present Benefit Level

	(1)	(2)	(3)	(4)	(5)
Date	Benefit Level Change	Cumulative Index	Weight	Product (2)x(3)	Adj. Factor Present Index/ Sum Column (4)
01/01/14	Base	1.000	0.173	0.173	0.965
07/01/14	1.000	1.000	0.409	0.409	
01/01/15	1.005	1.005	0.327	0.329	
07/01/15	1.000	1.005	0.091	0.091	
08/28/16	0.962	0.967			
				1.002	



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APPENDIX A-I

Determination of Policy Year On-level Factors

Section F - Factor Adjusting 2013 Policy Year Assigned Risk Premium to Present Assigned Risk Level

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Rate Level Change	Cumulative Index	Weight	Product (2)x(3)	Adj. Factor Present Index/ Sum Column (4)	Adj. For Expense Constant Removal @	Adj. For Expense Removal	UPP Adj. to Gross Premium Factor	Premium Adjustment Factor (5)x(6)x(7)x(8)
Date									
NR 01/01/13	Base	1.000	0.220	0.220	0.838	0.968	0.623	0.969	0.489
NR 03/01/13	0.931	0.931	0.689	0.641					
NR 03/01/14	0.955	0.889							
BOTH 07/01/14	0.941	0.876	0.091	0.080					
BOTH 07/01/14	0.941	0.837							
NR 03/01/15	0.930	0.778							
NR 03/01/16	1.042	0.811							
NR 08/28/16	0.973	0.789							
				0.941					

Section G - Factor Adjusting 2013 Policy Year Voluntary Premium to Present Voluntary Level

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Loss Cost Level Change	Cumulative Index	Weight	Product (2)x(3)	Adj. Factor Present Index/ Sum Column (4)	Adj. For Expense Constant Removal @	Adj. For Expense Removal	UPP Adj. to Gross Premium Factor	Premium Adjustment Factor (5)x(6)x(7)x(8)
Date									
NR 01/01/13	Base	1.000	0.220	0.220	0.784	1.000	0.835	1.000	0.655
NR 03/01/13	1.023	1.023	0.689	0.705					
NR 03/01/14	0.931	0.952							
BOTH 07/01/14	0.941	0.963	0.091	0.088					
BOTH 07/01/14	0.941	0.896							
NR 03/01/15	0.918	0.823							
NR 03/01/16	0.991	0.816							
NR 08/28/16	0.973	0.794							
				1.013					

Section H - Factor Adjusting 2013 Policy Year Assigned Risk Premium and Voluntary Premium to Present Statewide Level

(1) Assigned Risk Market Share PY 2013	0.103
(2) Voluntary Market Share PY 2013	0.897
(3) Assigned Risk Standard Premium Adjustment Factor (See Sec. F)	0.489
(4) Voluntary Standard Premium Adjustment Factor (See Sec. G)	0.655
(5) Premium Adjustment Factor = [(1)x(3)]/1.277+(2)x(4) #	0.627
(6) Experience Rating Off-balance Adjustment Factor*	0.993
(7) Final Premium Adjustment Factor = (5)x(6)	0.623

NR New and renewal business.

@ Eliminates premium derived from expense constants.

Current premium index (assigned risk-to-voluntary) = 1.277

* = 0.993 = 0.956 / 0.963 = (Targeted Off-balance) / (Off-balance for Policy Year 2013)



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APPENDIX A-I

Determination of Policy Year On-level Factors

Section I - Factor Adjusting 2013 Policy Year Indemnity Losses to Present Benefit Level

Date	(1) Benefit Level Change	(2) Cumulative Index	(3) Weight	(4) Product (2)x(3)	(5) Adj. Factor Present Index/ Sum Column (4)
01/01/13	Base	1.000	0.173	0.173	0.855
07/01/13	1.010	1.010	0.409	0.413	
01/01/14	1.000	1.010	0.327	0.330	
07/01/14	0.837	0.846	0.091	0.077	
01/01/15	1.000	0.846			
07/01/15	1.003	0.849			
08/28/16	1.000	0.849			
				0.993	

Section J - Factor Adjusting 2013 Policy Year Medical Losses to Present Benefit Level

Date	(1) Benefit Level Change	(2) Cumulative Index	(3) Weight	(4) Product (2)x(3)	(5) Adj. Factor Present Index/ Sum Column (4)
01/01/13	Base	1.000	0.173	0.173	0.966
07/01/13	1.000	1.000	0.409	0.409	
01/01/14	0.999	0.999	0.327	0.327	
07/01/14	1.000	0.999	0.091	0.091	
01/01/15	1.005	1.004			
07/01/15	1.000	1.004			
08/28/16	0.962	0.966			
				1.000	



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Determination of Premium and Losses Developed to an Ultimate Report

Section A - Premium and Loss Summary Valued as of 12/31/2015

Policy Year 2014

(1) Standard Earned Premium	\$594,821,185
(2) Factor to Develop Premium to Ultimate	1,008
(3) Standard Earned Premium Developed to Ultimate = (1)x(2)	\$599,579,754
(4) Limited Indemnity Paid Losses	\$53,210,829
(5) Limited Indemnity Paid Development Factor to Ultimate	2,540
(6) Limited Indemnity Paid Losses Developed to Ultimate = (4)x(5)	\$135,155,506
(7) Limited Indemnity Paid+Case Losses	\$100,911,374
(8) Limited Indemnity Paid+Case Development Factor to Ultimate	1,301
(9) Limited Indemnity Paid+Case Losses Developed to Ultimate = (7)x(8)	\$131,285,698
(10) Policy Year 2014 Limited Indemnity Losses Developed to Ultimate = [(6)+(9)]/2	\$133,220,602
(11) Limited Medical Paid Losses	\$118,933,038
(12) Limited Medical Paid Development Factor to Ultimate	2,236
(13) Limited Medical Paid Losses Developed to Ultimate = (11)x(12)	\$265,934,273
(14) Limited Medical Paid+Case Losses	\$189,073,939
(15) Limited Medical Paid+Case Development Factor to Ultimate	1,424
(16) Limited Medical Paid+Case Losses Developed to Ultimate = (14)x(15)	\$269,241,289
(17) Policy Year 2014 Limited Medical Losses Developed to Ultimate = [(13)+(16)]/2	\$267,587,781

Policy Year 2013

(1) Standard Earned Premium	\$616,235,670
(2) Factor to Develop Premium to Ultimate	1,000
(3) Standard Earned Premium Developed to Ultimate = (1)x(2)	\$616,235,670
(4) Limited Indemnity Paid Losses	\$92,312,683
(5) Limited Indemnity Paid Development Factor to Ultimate	1,504
(6) Limited Indemnity Paid Losses Developed to Ultimate = (4)x(5)	\$138,838,275
(7) Limited Indemnity Paid+Case Losses	\$123,979,492
(8) Limited Indemnity Paid+Case Development Factor to Ultimate	1,125
(9) Limited Indemnity Paid+Case Losses Developed to Ultimate = (7)x(8)	\$139,476,929
(10) Policy Year 2013 Limited Indemnity Losses Developed to Ultimate = [(6)+(9)]/2	\$139,157,602
(11) Limited Medical Paid Losses	\$145,830,551
(12) Limited Medical Paid Development Factor to Ultimate	1,821
(13) Limited Medical Paid Losses Developed to Ultimate = (11)x(12)	\$265,557,433
(14) Limited Medical Paid+Case Losses	\$182,645,742
(15) Limited Medical Paid+Case Development Factor to Ultimate	1,368
(16) Limited Medical Paid+Case Losses Developed to Ultimate = (14)x(15)	\$249,859,375
(17) Policy Year 2013 Limited Medical Losses Developed to Ultimate = [(13)+(16)]/2	\$257,708,404



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Determination of Premium and Losses Developed to an Ultimate Report

Section B - Premium Development Factors

<u>Policy Year</u>	<u>1st/2nd</u>	<u>Policy Year</u>	<u>2nd/3rd</u>	<u>Policy Year</u>	<u>3rd/4th</u>	<u>Policy Year</u>
2011	1.014	2010	1.000	2009	1.000	2008
2012	1.006	2011	1.000	2010	1.000	2009
2013	1.005	2012	0.999	2011	1.000	2010
Average	1.008	Average	1.000	Average	1.000	Average

Summary of Premium Development Factors

<u>1st/5th</u>	<u>2nd/5th</u>	<u>3rd/5th</u>	<u>4th/5th</u>
1.008	1.000	1.000	1.000



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APPENDIX A-II

Determination of Premium and Losses Developed to an Ultimate Report

Section C - Limited Indemnity Paid Loss Development Factors

Policy Year	<u>1st/2nd</u>	Policy Year	<u>2nd/3rd</u>	Policy Year	<u>3rd/4th</u>	Policy Year	<u>4th/5th</u>
2012	1.742	2011	1.219	2010	1.081	2009	1.048
2013	1.636	2012	1.215	2011	1.107	2010	1.038
Average	1.689	Average	1.217	Average	1.094	Average	1.043
Policy Year	<u>5th/6th</u>	Policy Year	<u>6th/7th</u>	Policy Year	<u>7th/8th</u>	Policy Year	<u>8th/9th</u>
2008	1.026	2007	1.014	2006	1.008	2005	1.008
2009	1.025	2008	1.013	2007	1.011	2006	1.004
Average	1.026	Average	1.014	Average	1.010	Average	1.006
Policy Year	<u>9th/10th</u>	Policy Year	<u>10th/11th</u>	Policy Year	<u>11th/12th</u>	Policy Year	<u>12th/13th</u>
2004	1.005	2003	1.001	2002	1.000	2001	1.001
2005	1.004	2004	1.003	2003	1.001	2002	1.003
Average	1.005	Average	1.002	Average	1.001	Average	1.002
Policy Year	<u>13th/14th</u>	Policy Year	<u>14th/15th</u>	Policy Year	<u>15th/16th</u>	Policy Year	<u>16th/17th</u>
2000	1.000	1999	1.001	1998	1.001	1997	1.001
2001	1.001	2000	1.001	1999	1.001	1998	1.000
Average	1.001	Average	1.001	Average	1.001	Average	1.001
Policy Year	<u>17th/18th</u>	Policy Year	<u>18th/19th</u>				
1996	1.001	1995	1.001				
1997	1.001	1996	1.001				
Average	1.001	Average	1.001				



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Determination of Premium and Losses Developed to an Ultimate Report

Section D - Limited Medical Paid Loss Development Factors

Policy Year	<u>1st/2nd</u>	Policy Year	<u>2nd/3rd</u>	Policy Year	<u>3rd/4th</u>	Policy Year	<u>4th/5th</u>
2012	1.235	2011	1.065	2010	1.052	2009	1.039
2013	1.221	2012	1.070	2011	1.047	2010	1.036
Average	1.228	Average	1.068	Average	1.050	Average	1.038
Policy Year	<u>5th/6th</u>	Policy Year	<u>6th/7th</u>	Policy Year	<u>7th/8th</u>	Policy Year	<u>8th/9th</u>
2008	1.032	2007	1.046	2006	1.032	2005	1.033
2009	1.037	2008	1.044	2007	1.040	2006	1.033
Average	1.035	Average	1.045	Average	1.036	Average	1.033
Policy Year	<u>9th/10th</u>	Policy Year	<u>10th/11th</u>	Policy Year	<u>11th/12th</u>	Policy Year	<u>12th/13th</u>
2004	1.018	2003	1.020	2002	1.019	2001	1.016
2005	1.023	2004	1.021	2003	1.014	2002	1.021
Average	1.021	Average	1.021	Average	1.017	Average	1.019
Policy Year	<u>13th/14th</u>	Policy Year	<u>14th/15th</u>	Policy Year	<u>15th/16th</u>	Policy Year	<u>16th/17th</u>
2000	1.020	1999	1.012	1998	1.012	1997	1.015
2001	1.010	2000	1.011	1999	1.009	1998	1.013
Average	1.015	Average	1.012	Average	1.011	Average	1.014
Policy Year	<u>17th/18th</u>	Policy Year	<u>18th/19th</u>				
1996	1.007	1995	1.012				
1997	1.010	1996	1.018				
Average	1.009	Average	1.015				



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Determination of Premium and Losses Developed to an Ultimate Report

Section E - Limited Indemnity Paid + Case Loss Development Factors

Policy Year	<u>1st/2nd</u>	Policy Year	<u>2nd/3rd</u>	Policy Year	<u>3rd/4th</u>	Policy Year	<u>4th/5th</u>
2009	1.164	2008	1.047	2007	1.020	2006	1.017
2010	1.202	2009	1.059	2008	1.036	2007	1.018
2011	1.158	2010	1.083	2009	1.027	2008	1.014
2012	1.152	2011	1.049	2010	1.025	2009	1.013
2013	1.102	2012	1.069	2011	1.028	2010	1.012
Average	1.156	Average	1.061	Average	1.027	Average	1.015

Policy Year	<u>5th/6th</u>	Policy Year	<u>6th/7th</u>	Policy Year	<u>7th/8th</u>	Policy Year	<u>8th/9th</u>
2005	0.999	2004	1.000	2003	1.003	2002	1.002
2006	1.003	2005	1.005	2004	1.002	2003	1.001
2007	0.999	2006	1.006	2005	1.005	2004	1.009
2008	1.004	2007	1.009	2006	1.001	2005	1.005
2009	1.010	2008	1.005	2007	1.005	2006	1.000
Average	1.003	Average	1.005	Average	1.003	Average	1.003

Policy Year	<u>9th/10th</u>	Policy Year	<u>10th/11th</u>	Policy Year	<u>11th/12th</u>	Policy Year	<u>12th/13th</u>
2001	1.000	2000	0.999	1999	1.001	1998	1.001
2002	0.999	2001	0.999	2000	0.997	1999	1.001
2003	0.999	2002	0.999	2001	0.999	2000	0.999
2004	1.002	2003	1.000	2002	1.000	2001	1.001
2005	1.001	2004	1.000	2003	1.001	2002	0.999
Average	1.000	Average	0.999	Average	1.000	Average	1.000

Policy Year	<u>13th/14th</u>	Policy Year	<u>14th/15th</u>	Policy Year	<u>15th/16th</u>	Policy Year	<u>16th/17th</u>
1997	1.001	1996	1.000	1995	0.999	1994	1.000
1998	1.001	1997	1.001	1996	1.000	1995	1.002
1999	1.001	1998	0.999	1997	1.001	1996	0.997
2000	1.001	1999	1.000	1998	0.998	1997	1.003
2001	1.000	2000	1.002	1999	1.000	1998	0.999
Average	1.001	Average	1.000	Average	1.000	Average	1.000

Policy Year	<u>17th/18th</u>	Policy Year	<u>18th/19th</u>
1993	1.000	1992	0.999
1994	1.000	1993	1.000
1995	1.001	1994	1.000
1996	1.000	1995	1.003
1997	0.999	1996	0.999
Average	1.000	Average	1.000



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Determination of Premium and Losses Developed to an Ultimate Report

Section F - Limited Medical Paid + Case Loss Development Factors

Policy Year	1st/2nd	Policy Year	2nd/3rd	Policy Year	3rd/4th	Policy Year	4th/5th
2009	1.082	2008	1.021	2007	1.049	2006	1.056
2010	1.058	2009	1.014	2008	1.045	2007	1.058
2011	1.037	2010	1.076	2009	1.041	2008	1.041
2012	1.029	2011	1.043	2010	1.059	2009	1.031
2013	0.955	2012	1.028	2011	1.037	2010	1.023
Average*	1.041	Average	1.036	Average	1.046	Average	1.042
* Excludes the years with the lowest and highest factors.							
Policy Year	5th/6th	Policy Year	6th/7th	Policy Year	7th/8th	Policy Year	8th/9th
2005	1.035	2004	1.021	2003	1.009	2002	1.014
2006	1.055	2005	1.033	2004	1.006	2003	1.021
2007	1.038	2006	1.028	2005	1.017	2004	1.015
2008	1.055	2007	1.040	2006	1.034	2005	1.034
2009	1.013	2008	1.029	2007	1.024	2006	1.000
Average	1.039	Average	1.030	Average	1.018	Average	1.017
Policy Year	9th/10th	Policy Year	10th/11th	Policy Year	11th/12th	Policy Year	12th/13th
2001	0.995	2000	1.039	1999	0.999	1998	1.009
2002	1.015	2001	1.000	2000	1.005	1999	1.007
2003	0.994	2002	0.989	2001	0.994	2000	1.011
2004	1.017	2003	1.011	2002	0.995	2001	1.017
2005	1.022	2004	1.008	2003	1.023	2002	1.006
Average	1.009	Average	1.009	Average	1.003	Average	1.010
Policy Year	13th/14th	Policy Year	14th/15th	Policy Year	15th/16th	Policy Year	16th/17th
1997	1.022	1996	1.014	1995	0.999	1994	1.005
1998	1.018	1997	1.006	1996	0.990	1995	1.018
1999	1.000	1998	1.009	1997	1.006	1996	1.000
2000	1.015	1999	1.007	1998	1.001	1997	1.000
2001	1.017	2000	1.000	1999	1.003	1998	1.006
Average	1.014	Average	1.007	Average	1.000	Average	1.006
Policy Year	17th/18th	Policy Year	18th/19th				
1993	1.001	1992	1.007				
1994	1.007	1993	0.967				
1995	1.002	1994	1.013				
1996	0.995	1995	1.006				
1997	0.990	1996	0.992				
Average	0.999	Average	0.997				



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APPENDIX A-II

Determination of Premium and Losses Developed to an Ultimate Report

Section G - Determination of Policy Year Loss Development Factors (19th-to-Ultimate Report)

Indemnity Paid+Case Data for Matching Companies

(1) Policy Year	(2) Losses for Policy Year 19th Report	(3) Losses for Policy Year 20th Report	(4) Losses for All Prior Policy Years Previous	(5) Losses for All Prior Policy Years Current	(6) Factor to Adjust Losses for Prior Policy Years	(7) Indicated 19th-to-Ult Development for Policy Year
1986	138,621,717	139,225,482	898,029,203	898,751,309	0.497	1.015
1987	168,528,560	168,659,604	1,038,268,681	1,039,114,928	0.460	1.012
1988	199,316,668	199,528,480	1,161,239,240	1,162,372,220	0.434	1.014
1989	213,445,957	213,457,838	1,397,647,429	1,397,200,057	0.463	0.996
1990	225,878,047	225,912,249	1,555,373,043	1,555,226,004	0.495	0.999
1991	216,974,067	217,008,426	1,768,789,305	1,769,290,269	0.591	1.004
1992	187,255,580	187,154,996	1,986,228,385	1,985,318,508	0.770	0.993
1993	158,868,560	158,863,379	2,172,422,665	2,173,340,574	0.990	1.006
1994	144,789,155	144,813,818	2,329,135,898	2,329,320,549	1.146	1.001
1995	125,356,885	125,212,112	2,465,580,785	2,465,779,493	1.373	1.000
Selected Indemnity 19th-to-Ultimate Loss Development Factor						1.004

Medical Paid+Case Data for Matching Companies

(8) Policy Year	(9) Losses for Policy Year 19th Report	(10) Losses for Policy Year 20th Report	(11) Losses for All Prior Policy Years Previous	(12) Losses for All Prior Policy Years Current	(13) Factor to Adjust Losses for Prior Policy Years	(14) Indicated 19th-to-Ult Development for Policy Year
1986	125,672,256	126,697,060	734,316,648	738,792,067	0.544	1.074
1987	164,467,365	162,461,704	865,678,819	878,116,997	0.459	1.153
1988	182,921,698	183,545,609	997,250,592	995,239,904	0.462	0.980
1989	225,291,337	226,021,148	1,211,362,184	1,214,244,464	0.424	1.033
1990	218,194,938	220,935,501	1,392,845,639	1,390,129,098	0.511	0.988
1991	217,678,034	218,635,401	1,600,049,877	1,608,536,398	0.589	1.071
1992	199,036,290	201,623,540	1,827,092,946	1,834,383,363	0.724	1.064
1993	179,589,256	179,545,203	2,034,898,318	2,041,220,272	0.881	1.040
1994	179,469,467	179,674,777	2,217,977,836	2,224,231,071	0.935	1.038
1995	166,317,874	166,771,898	2,394,450,521	2,398,988,620	1.066	1.028
Selected Medical 19th-to-Ultimate Loss Development Factor						1.047

(7) = 1 + [(3)-(2) + ((5)-(4)) / (6)] / (2)

(14) = 1 + [(10)-(9) + ((12)-(11)) / (13)] / (9)

Columns (4) and (11) are valued as of the date at which the given policy year is at a 19th report.

Columns (5) and (12) are valued as of the date at which the given policy year is at a 20th report.



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Determination of Premium and Losses Developed to an Ultimate Report

Section H - Derivation of Policy Year Limited 19th-to-Ultimate Loss Development Factors

Policy Year	Indemnity Paid-to-Paid + Case Ratio 19th Report	Medical Paid-to-Paid + Case Ratio 19th Report
1992	0.995	0.923
1993	0.998	0.963
1994	0.997	0.899
1995	0.984	0.877
1996	0.997	0.899
Average*	0.994	0.892

*Note: A 5 year average was selected for indemnity & a 3 year average was selected for medical

	Indemnity	Medical
(1) Paid+Case 19th-to-Ultimate Loss Development Factor (Section G)	1.004	1.047
(2) Factor to Adjust 19th-to-Ultimate Development Factor to a Limited Basis	0.743	0.743
(3) Limited Paid+Case 19th-to-Ultimate Loss Development Factor = [(1)-1]x(2)+1	1.003	1.035
(4) Limited Paid-to-Paid+Case Ratio (Section H)	0.994	0.892
(5) Limited Paid 19th-to-Ultimate Loss Development Factor = (3) / (4)	1.009	1.160

Section I - Summary of Limited Paid Loss Development Factors

Report	(1) Indemnity Paid Loss Development		Report	(3) Medical Paid Loss Development	
	to Next Report	to Ultimate		to Next Report	to Ultimate
1st	1.689	2.540	1st	1.228	2.236
2nd	1.217	1.504	2nd	1.068	1.821
3rd	1.094	1.236	3rd	1.050	1.705
4th	1.043	1.130	4th	1.038	1.624
5th	1.026	1.083	5th	1.035	1.565
6th	1.014	1.056	6th	1.045	1.512
7th	1.010	1.041	7th	1.036	1.447
8th	1.006	1.031	8th	1.033	1.397
9th	1.005	1.025	9th	1.021	1.352
10th	1.002	1.020	10th	1.021	1.324
11th	1.001	1.018	11th	1.017	1.297
12th	1.002	1.017	12th	1.019	1.275
13th	1.001	1.015	13th	1.015	1.251
14th	1.001	1.014	14th	1.012	1.233
15th	1.001	1.013	15th	1.011	1.218
16th	1.001	1.012	16th	1.014	1.205
17th	1.001	1.011	17th	1.009	1.188
18th	1.001	1.010	18th	1.015	1.177
19th		1.009	19th		1.160

(2) = Cumulative upward product of column (1).

(4) = Cumulative upward product of column (3).



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Determination of Premium and Losses Developed to an Ultimate Report

Section J - Summary of Limited Paid+Case Loss Development Factors

Report	(1) Indemnity Paid+Case Loss Development		Report	(3) Medical Paid+Case Loss Development	
	to Next Report	to Ultimate		to Next Report	to Ultimate
1st	1.156	1.301	1st	1.041	1.424
2nd	1.061	1.125	2nd	1.036	1.368
3rd	1.027	1.060	3rd	1.046	1.320
4th	1.015	1.032	4th	1.042	1.262
5th	1.003	1.017	5th	1.039	1.211
6th	1.005	1.014	6th	1.030	1.166
7th	1.003	1.009	7th	1.018	1.132
8th	1.003	1.006	8th	1.017	1.112
9th	1.000	1.003	9th	1.009	1.093
10th	0.999	1.003	10th	1.009	1.083
11th	1.000	1.004	11th	1.003	1.073
12th	1.000	1.004	12th	1.010	1.070
13th	1.001	1.004	13th	1.014	1.059
14th	1.000	1.003	14th	1.007	1.044
15th	1.000	1.003	15th	1.000	1.037
16th	1.000	1.003	16th	1.006	1.037
17th	1.000	1.003	17th	0.999	1.031
18th	1.000	1.003	18th	0.997	1.032
19th		1.003	19th		1.035

(2) = Cumulative upward product of column (1).

(4) = Cumulative upward product of column (3).



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Determination of Premium and Losses Developed to an Ultimate Report

Section K - Factor to Adjust Limited Losses to an Unlimited Basis

(1) Threshold at the Midpoint of the Loss Cost Effective Period*	7,518,887
(2) Statewide Excess Ratio for (1)	0.012
(3) Market Share for Carriers Missing from Large Loss and Catastrophe Call	0.000
(4) Factor to Adjust Limited Losses to an Unlimited Basis = $1.0 / \{1.0 - [(2) \times (1.0 - (3))]\}$	1.012

Section L - Policy Year Large Loss Limits

<u>Experience Year</u>	<u>Policy Year Detrended Limit</u>
2014	6,614,356
2013	6,444,302
2012	6,379,225
2011	6,240,698
2010	6,069,583
2009	5,895,085
2008	5,787,532
2007	5,697,512
2006	5,513,902
2005	5,276,492
2004	5,085,022
2003	4,909,629
2002	4,741,745
2001	4,597,274
2000	4,459,044
1999	4,310,592
1998	4,156,791
1997	3,984,363
1996	3,791,573

* February 19, 2018 is the midpoint of the effective period for which the revised loss costs are being proposed.



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APPENDIX A-III

Policy Year Trend Factors

Section A - Summary of Policy Year Data

(1)	(2)	(3)	(4)	(5)	(6)
Policy Year	Lost-Time Claim Frequency*	Indemnity		Medical	
		Avg Cost Per Case [^]	Loss Ratio [^]	Avg Cost Per Case [^]	Loss Ratio [^]
2000	24.374	23,868	0.584	30,611	0.742
2001	24.937	22,996	0.583	28,589	0.722
2002	24.304	21,920	0.532	30,120	0.733
2003	24.173	22,455	0.542	32,414	0.784
2004	23.192	21,862	0.506	34,568	0.803
2005	22.353	20,904	0.466	34,598	0.772
2006	22.364	22,179	0.498	34,498	0.778
2007	22.002	21,167	0.468	36,868	0.815
2008	20.944	20,515	0.428	35,731	0.749
2009	21.852	19,701	0.431	36,726	0.802
2010	23.389	18,079	0.423	32,424	0.758
2011	21.112	17,436	0.368	31,678	0.669
2012	20.373	17,087	0.348	34,205	0.697
2013	18.917	16,377	0.310	34,262	0.648
2014	18.269	17,041	0.311	34,017	0.621

* Figures have been adjusted to the current wage level.

[^] Based on an average of paid and paid+case losses.

Section B - Summary of Annual Trend Factors

	<u>Indemnity</u>	<u>Medical</u>
(1) Current Approved Annual Loss Ratio Trend Factor	0.960	0.995
(2) Selected Annual Loss Ratio Trend Factor	0.950	0.985
(3) Length of Trend Period from Midpoint of Policy Year to Midpoint of Effective Period:		
		<u>Years</u>
	Policy Year 2013	4.220
	Policy Year 2014	3.220
(4) Trend Factor Applied to Experience Year = (2) [^] (3)	<u>Indemnity</u>	<u>Medical</u>
	Policy Year 2013	0.805
	Policy Year 2014	0.848
		0.938
		0.952



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APPENDIX A-IV

Carriers Not Included in Policy Year Experience

NCCI maintains several data reporting initiatives and programs to assist carriers to report data and to ensure that the data that is reported to NCCI is complete, accurate, and reported in a timely fashion. Occasionally, a particular carrier's data submission is not available for use in an NCCI filing either because the data was not reported prior to the filing, had quality issues, or NCCI determined that the data that was reported should not be included in the filing based on NCCI's actuarial judgment. All carriers writing at least one-tenth of one percent of the Tennessee workers compensation written premium volume and whose data is not included in this filing are listed below. The listing is separated by year used in the filing's experience period.

Carriers not included in experience valued as of 12/31/2015

Policy Year 2014

Name of Carrier
None

% of State
Premium
N/A

Policy Year 2013

Name of Carrier
Lumbermens Underwriting Alliance

% of State
Premium
0.1%



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APPENDIX A-V

Derivation of Industry Group Differentials

Industry group differentials are used to more equitably distribute the overall loss cost level change based on the individual experience of each industry group. The payroll, losses and claim counts used in the calculations below are from NCCI's Workers Compensation Statistical Plan (WCSP) data.

I. Expected Losses

The current expected losses (columns (1) and (2)) are the payroll extended by the pure premiums underlying the latest approved loss costs. The proposed expected losses (3) are the current expected losses adjusted to the proposed level. These adjustments include the proposed experience, trend, benefit and, if applicable, loss-based expense changes as well as any miscellaneous premium adjustments.

Industry Group	(1) Latest Year Current Expected Losses Prior to Adjustment for Change in Off-Balance	(2) Five Year Current Expected Losses Prior to Adjustment for Change in Off-Balance	(3) Five Year Proposed Expected Losses Prior to Adjustment for Change in Off-Balance	(4) Current Ratio of Manual to Standard Premium	(5) Proposed Ratio of Manual to Standard Premium
Manufacturing	201,105,987	934,242,074	814,609,116	1.107	1.124
Contracting	153,679,399	712,533,608	621,318,010	1.112	1.112
Office & Clerical	94,916,928	434,583,933	378,892,792	1.081	1.091
Goods & Services	265,000,939	1,226,159,402	1,068,811,640	1.006	1.018
Miscellaneous	210,433,331	959,654,248	836,936,105	1.065	1.063
Statewide	925,136,584	4,267,173,265	3,720,567,663		

Industry Group	(6) Latest Year Current Expected Losses Adjusted for Change in Off-Balance (1)x(4)/(5)	(7) Five Year Current Expected Losses Adjusted for Change in Off-Balance (2)x(4)/(5)	(8) Five Year Proposed Expected Losses Adjusted for Change in Off-Balance (3)x(4)/(5)	(9) Current/ Proposed (7)/(8)	(10) Adjustment to Proposed for Current Relativity (9)IG/(9)SW
Manufacturing	198,064,348	920,112,078	802,288,515	1.147	1.000
Contracting	153,679,399	712,533,608	621,318,010	1.147	1.000
Office & Clerical	94,046,929	430,600,579	375,419,897	1.147	1.000
Goods & Services	261,877,156	1,211,705,656	1,056,212,681	1.147	1.000
Miscellaneous	210,829,254	961,459,806	838,510,774	1.147	1.000
Statewide	918,497,086	4,236,411,727	3,693,749,877	1.147	



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APPENDIX A-V

II. Industry Group Differentials

To calculate the converted indicated balanced losses (11) the reported losses are limited to \$500,000 for a single claim occurrence and \$1,500,000 for each multiple claim occurrence. After the application of limited development, trend and benefit factors, the limited losses are brought to an unlimited level through the application of the expected excess provision. The proposed experience change, applicable loss-based expenses and any miscellaneous premium adjustments are applied to calculate the indicated losses. These indicated losses are then balanced to the expected losses using the factors shown in Appendix B-I, Section A-3.

Industry Group	(11) Converted Indicated Balanced Losses	(12) Indicated/ Expected Ratio (11)/((8)x(10))	(13) Indicated Differential (12)IG/(12)SW	(14) Lost-Time Claim Counts
Manufacturing	812,148,391	1.012	1.013	17,058
Contracting	611,613,759	0.984	0.985	8,133
Office & Clerical	370,076,678	0.986	0.987	7,123
Goods & Services	1,058,812,021	1.002	1.003	26,067
Miscellaneous	836,314,257	0.997	0.998	15,013
Statewide	3,688,965,106	0.999		

Industry Group	(15) Full Credibility Standard for Lost-Time Claim Counts	(16) Credibility Minimum of 1.000 and ((14)/(15))^0.5	(17) Credibility Weighted Indicated/Expected Ratio [(16)IGx(12)IG] + [1-(16)IG]x(12)SW*	(18) Final Industry Group Differential (17)IG/(17)SW
Manufacturing	12,000	1.00	1.012	1.013
Contracting	12,000	0.82	0.987	0.988
Office & Clerical	12,000	0.77	0.989	0.990
Goods & Services	12,000	1.00	1.002	1.003
Miscellaneous	12,000	1.00	0.997	0.998
Statewide			0.999	1.000

*Statewide ratio (column 17) = $\sum_{IG} [(6)x(17)] + \sum_{IG} (6)$



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APPENDIX B-I

Distribution of Loss Cost Level Change to Occupational Classification

After determining the required changes in the overall loss cost level for the state and by industry group, the next step in the ratemaking procedure is to distribute these changes among the various occupational classifications. In order to do this, the pure premiums by classification must be adjusted, by policy period, industry group, or on an overall basis, to incorporate the changes proposed in the filing. There are three sets of pure premiums for each classification: indicated, present on rate level, and national pure premiums.

Section A – Calculation of Indicated Pure Premiums

The indicated pure premiums are calculated from the payroll and loss data reported, by class code and policy period, in the Workers Compensation Statistical Plan (WCSP) for the latest available five policy periods. Various adjustments are made to these pure premiums to put them at the level proposed in this filing (Sections A-1 to A-3).

Section A-1 – Calculation of Primary Conversion Factors

1. Limited Loss Development Factors

The following factors are applied to develop the losses from first through fifth report to an ultimate basis.

Policy Period	Indemnity		Medical	
	Likely-to-Develop	Not-Likely-to-Develop	Likely-to-Develop	Not-Likely-to-Develop
6/09-5/10	1.017	1.014	1.410	1.088
6/10-5/11	1.034	1.028	1.504	1.114
6/11-5/12	1.077	1.058	1.633	1.144
6/12-5/13	1.183	1.119	1.783	1.169
6/13-5/14	1.553	1.264	1.981	1.169

2. Factors to Adjust to the Proposed Trend Level

The proposed trend factors are applied to adjust the losses to the proposed level.

Policy Period	Indemnity	Medical
6/09-5/10	0.672	0.889
6/10-5/11	0.707	0.903
6/11-5/12	0.744	0.917
6/12-5/13	0.784	0.931
6/13-5/14	0.825	0.945

3. Factors to Adjust to the August 28, 2016 Benefit Level

The following factors are applied to adjust the losses to the proposed benefit level.

Policy Period	Fatal	Permanent Total (P.T.)	Permanent Partial (P.P.)	Temporary Total (T.T.)	Medical
6/09-5/10	1.241	1.043	0.795	1.035	0.933
6/10-5/11	1.227	1.039	0.792	1.031	0.901
6/11-5/12	1.200	1.030	0.785	1.025	0.925
6/12-5/13	1.175	1.023	0.779	1.019	0.967
6/13-5/14	1.106	1.015	0.852	1.013	0.967



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APPENDIX B-I

4. Primary Conversion Factors: Indicated Pure Premiums

The factors above, contained within Section A-1, are combined multiplicatively, resulting in the following factors for the Likely-to-Develop (L) and Not-Likely-to-Develop (NL) groupings.

Policy Period	Fatal (L)	Fatal (NL)	P.T.*	P.P. (L)	P.P. (NL)	T.T. (L)	T.T. (NL)	Medical (L)	Medical (NL)
6/09-5/10	0.848	0.846	0.713	0.543	0.542	0.707	0.705	1.170	0.902
6/10-5/11	0.897	0.892	0.760	0.579	0.576	0.754	0.749	1.224	0.906
6/11-5/12	0.962	0.945	0.825	0.629	0.618	0.821	0.807	1.385	0.970
6/12-5/13	1.090	1.031	0.949	0.723	0.683	0.945	0.894	1.605	1.052
6/13-5/14	1.417	1.153	1.300	1.092	0.888	1.298	1.056	1.810	1.068

* Permanent total losses are always assigned to the Likely-to-Develop grouping.

Section A-2 – Expected Excess Provision and Redistribution

After the application of the primary conversion factors, the limited losses are brought to an expected unlimited level through the application of excess loss factors by hazard group. These factors are shown below.

Hazard Group	A	B	C	D	E	F	G
(1) Excess Ratios	0.076	0.107	0.128	0.153	0.192	0.218	0.273
(2) Excess Factors 1/(1-(1))	1.082	1.120	1.147	1.181	1.238	1.279	1.376

As the excess loss factors are on a combined (indemnity and medical) basis, a portion (40%) of the indemnity expected excess losses are redistributed to medical in order to more accurately allocate expected excess losses. Since a portion of the expected excess losses are redistributed in an additive manner, the expected excess factors shown above cannot be combined multiplicatively with either the primary or secondary loss conversion factors.



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APPENDIX B-I

Section A-3 – Calculation of Secondary Conversion Factors

1. Factors to Adjust for Proposed Industry Group Differentials

The following factors are applied to adjust the indicated industry group differentials for the effects of credibility weighting the industry group differentials and weighting the differentials by the latest year expected losses.

	Manufacturing	Contracting	Office and Clerical	Goods and Services	Miscellaneous
(1) Indicated Differentials*	1.013	0.985	0.987	1.003	0.998
(2) Final Differentials**	1.013	0.988	0.990	1.003	0.998
(3) Adjustment (2)/(1)	1.000	1.003	1.003	1.000	1.000

*See Appendix A-V, column (13).

**See Appendix A-V, column (18).

2. Factors to Balance Indicated to Expected Losses

The expected losses are calculated as the pure premium underlying the current loss costs, adjusted to the proposed level and adjusted for the Experience Rating Plan off-balance. The indicated losses are balanced to the expected losses by applying the following factors.

Policy Period	(1) Adjustment of Indicated Losses to Pure Premium at Proposed Level	(2) Current Ratio of Manual to Standard Premium	(3) Proposed Ratio of Manual to Standard Premium	(4) Off-balance Adjustment (2)/(3)	(5) Balancing Indicated to Expected Losses (1)x(4)
6/09-5/10	1.019	1.067	1.060	1.007	1.026
6/10-5/11	1.044	1.067	1.056	1.010	1.054
6/11-5/12	1.070	1.067	1.065	1.002	1.072
6/12-5/13	1.072	1.067	1.088	0.981	1.052
6/13-5/14	1.082	1.067	1.108	0.963	1.042

3. Adjustment for Experience Change

A factor of 0.902 is applied to adjust for the experience change in the proposed loss cost level.

4. Factor to Adjust for Change in Minimum Premium Program

A factor of 0.998 is applied to offset the change in the minimum premium program.

5. Factor to Reflect the Proposed Loss-Based Expense Provisions

A factor of 1.201 is applied to include the proposed loss-based expense provisions.



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APPENDIX B-I

6. Secondary Conversion Factors: Indicated Pure Premiums

The factors above, contained within section A-3, are combined multiplicatively, resulting in the following factors:

Policy Period	Manufacturing	Contracting	Office and Clerical	Goods and Services	Miscellaneous
6/09-5/10	1.109	1.113	1.113	1.109	1.109
6/10-5/11	1.140	1.143	1.143	1.140	1.140
6/11-5/12	1.159	1.162	1.162	1.159	1.159
6/12-5/13	1.137	1.141	1.141	1.137	1.137
6/13-5/14	1.127	1.130	1.130	1.127	1.127



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APPENDIX B-I

Section B – Calculation of Present on Rate Level Pure Premiums

The present on rate level pure premiums are the pure premiums underlying the current loss costs, adjusted to the proposed level. The data sources for the above-captioned pure premiums are the partial pure premiums underlying the current loss costs.

1. Adjustment for Experience Change

A factor of 0.902 is applied to adjust for the experience change in the proposed loss cost level.

2. Factors to Adjust to the Proposed Trend Level

The pure premiums underlying the current loss costs contain the current trend. The change in trend factors, 0.961 and 0.963, for indemnity and medical, respectively, are applied to adjust to the proposed trend level.

3. Factors to Adjust to the August 28, 2016 Benefit Level

The pure premiums underlying the current loss costs are at the current August 28, 2016 level. The following factors are applied to adjust to the proposed benefit level.

Effective Date	Indemnity	Medical
January 1, 2016	1.000	1.001
July 1, 2016	1.010	1.000
Combined Benefit Adjustment	1.010	1.001

4. Factors to Include the Proposed Loss-Based Expense Provisions

The pure premiums underlying the current loss costs include the current loss-based expense provisions and must be adjusted to the proposed level.

	(a) Current		(b) Proposed	
	Indemnity	Medical	Indemnity	Medical
(1) Loss Adjustment Expense	1.198	1.198	1.201	1.201
(2) Loss-based Assessment	1.000	1.000	1.000	1.000
(3) = (1) + (2) – 1.000	1.198	1.198	1.201	1.201
(4) Overall Change (3b)/(3a)			1.003	1.003

5. Adjustment to Obtain Expected Losses

The pure premiums underlying the current loss costs reflect the current Experience Rating Plan off-balance. The change in off-balance must be applied.

Industry Group	(1) Current Ratio of Manual to Standard Premium	(2) Proposed Ratio of Manual to Standard Premium	(3) Off-balance Adjustment (1)/(2)
Manufacturing	1.107	1.124	0.985
Contracting	1.112	1.112	1.000
Office & Clerical	1.081	1.091	0.991
Goods & Services	1.006	1.018	0.988
Miscellaneous	1.065	1.063	1.002



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APPENDIX B-I

6. Factors to Adjust for Proposed Industry Group Differentials

The pure premiums underlying the current loss costs are adjusted by the proposed industry group differentials.

Industry Group	(1) Final Differential*	(2) Adjustment to Proposed for Current Relativities**	(3) Adjusted Differential (1)x(2)
Manufacturing	1.013	1.000	1.013
Contracting	0.988	1.000	0.988
Office & Clerical	0.990	1.000	0.990
Goods & Services	1.003	1.000	1.003
Miscellaneous	0.998	1.000	1.000***

*See Appendix A-V, column (18).

**See Appendix A-V, column (10).

***Set equal to 1.000 per the directive of the Tennessee Department of Commerce and Insurance.

7. Factor to Adjust for Change in Minimum Premium Program

A factor of 0.998 is applied to offset the change in the minimum premium program.

8. Combined Conversion Factors

The factors above, contained within Section B, are combined multiplicatively, resulting in the following factors.

Industry Group	Indemnity	Medical
Manufacturing	0.874	0.868
Contracting	0.865	0.860
Office & Clerical	0.859	0.854
Goods & Services	0.868	0.862
Miscellaneous	0.878	0.872



TENNESSEE

APPENDIX B-I

Section C – Calculation of National Pure Premiums

Finally, there are the national pure premiums, which reflect the countrywide experience for each classification adjusted to state conditions. These pure premiums reflect the countrywide experience for each classification as indicated by the latest available individual classification experience for all states for which the National Council on Compensation Insurance compiles workers compensation data.

Countrywide data is adjusted to Tennessee conditions in four steps. First, statewide indicated pure premiums are determined for Tennessee. Second, using Tennessee payrolls as weights, corresponding statewide-average pure premiums are computed for each remaining state. Third, the ratios of Tennessee statewide pure premiums to those for other states are used as adjustment factors to convert losses for other states to a basis that is consistent with the Tennessee indicated pure premiums. The quotient of the countrywide total of such adjusted losses divided by the total countrywide payroll for the classification is the initial pure premium indicated by national relativity. Finally, national pure premiums are balanced to the level of the state indicated pure premiums to ensure unbiased derived by formula pure premiums. Indemnity and medical pure premiums are computed separately.

Section D – Calculation of Derived by Formula Pure Premiums

The indicated, present on rate level and national pure premiums are credibility weighted, and the resulting derived by formula pure premiums are used to determine the final class loss costs.

As for the preceding pure premiums, separate computations are performed for each partial pure premium: indemnity and medical. Each partial formula pure premium is derived by the weighting of the indicated, present on rate level and national partial pure premiums. The weight assigned to the policy year indicated pure premium varies in one-percent intervals from zero percent to one hundred percent, depending upon the volume of expected losses (i.e. the product of the underlying pure premiums and the payroll in hundreds). To achieve full state credibility, a classification must have expected losses of at least: \$13,586,624 for indemnity and \$13,876,305 for medical.

The partial credibilities formula is:

$$z = [(\text{expected losses}) / (\text{full credibility standard})]^{0.4}$$

For the national pure premiums, credibility is determined from the number of lost-time claims. Full credibility standards are: 1,150 lost-time claims for indemnity and 1,000 lost-time claims for medical.

Partial credibilities are assigned using a credibility formula similar to that used for indicated pure premiums but based on the number of national cases. In no case is the national credibility permitted to exceed 50% of the complement of the state credibility.

National Credibility equals the smaller of:

$$[(\text{national cases}) / (\text{full credibility standard})]^{0.4} \text{ and } [(1 - \text{state credibility}) / 2]$$

The residual credibility (100% minus the sum of the state and national credibilities) is assigned to the present on rate level pure premium.

For example, if the state credibility is 40%, the national pure premium is assigned a maximum credibility of 30% $((100-40) / 2)$. The remainder is assigned to the present on rate level pure premium.

The total pure premium shown on the attached Appendix B-III is obtained by adding the indemnity and medical partial pure premiums obtained above and rounding the sum to two decimal places.



TENNESSEE

APPENDIX B-II

Adjustments to Obtain Loss Costs

The following items are combined with the derived by formula pure premium to obtain the proposed loss cost:

1. Test Correction Factor

The payrolls are now extended by the loss costs presently in effect and by the indicated loss costs to determine if the required change in manual premium level as calculated in Exhibit I has been achieved. Since at first this calculation may not yield the required results, an iterative process is initiated which continuously tests the proposed loss costs including tentative test correction factors until the required change in manual premium level is obtained. The test correction factor is applied to the derived by formula pure premiums.

The factors referred to above are set out as follows:

	Test Correction Factor
Manufacturing	1.0052
Contracting	0.9939
Office & Clerical	0.9843
Goods & Services	0.9987
Miscellaneous	1.0054

2. Ratios of Manual to Standard Premiums

The ratios of manual to standard premiums by industry group have also been excluded from the classification experience, and it is necessary to apply these factors to the derived by formula pure premiums.

	Ratio of Manual to Standard Premiums
Manufacturing	1.124
Contracting	1.112
Office & Clerical	1.091
Goods & Services	1.018
Miscellaneous	1.063

3. Disease Loadings

The proposed manual loss costs shown in this filing include specific disease loadings for those classifications where they apply. The proposed specific disease loadings are shown on the footnotes page.



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APPENDIX B-II

4. Swing Limits

As a further step, a test is made to make certain that the proposed loss costs fall within the following departures from the present loss costs:

Manufacturing	from 13% above to 37% below
Contracting	from 11% above to 39% below
Office & Clerical	from 11% above to 39% below
Goods & Services	from 13% above to 37% below
Miscellaneous	from 12% above to 38% below

These limits have been calculated in accordance with the following formula:

Max. Deviation = Effect of the final change in loss cost level by industry group plus or minus 25% rounded to the nearest 1%.

The product of the swing limits and the present loss cost sets bounds for the proposed loss cost. If the calculated loss cost falls outside of the bounds, the closest bound is chosen as the proposed loss cost. When a code is limited, the underlying pure premiums are adjusted to reflect the limited loss cost. The classifications which have been so limited are shown below. Note that classifications that are subject to special handling may fall outside of the swing limits.

An illustrative example showing the calculation of a proposed manual class loss cost is attached as Appendix B-III. This example demonstrates the manner in which the partial pure premiums are combined to produce a total pure premium, and shows the steps in the calculation at which the rounding takes place. The loss costs for other classifications are calculated in the same manner.

List of Classifications Limited by the Upper Swing

1165	1322	2002	2016	2114	3220	3307	4902
4923	5020	5705	7711	8856			

List of Classifications Limited by the Lower Swing

4024	7710
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TENNESSEE

APPENDIX B-III

Derivation of Proposed Loss Cost - Code 8810

As previously explained in Appendix B-I, the indicated pure premiums are developed by adjusting the limited losses by a set of conversion factors. The converted losses are then summarized into indemnity and medical and then divided by payroll (in hundreds). The derivation of the indicated pure premium for the above-captioned classification follows:

LIMITED LOSSES (Workers Compensation Statistical Plan)

Policy Period	Fatal Likely	Fatal Not-Likely	Permanent Total	Permanent Partial Likely	Permanent Partial Not-Likely	Temporary Total Likely	Temporary Total Not-Likely	Medical Likely	Medical Not-Likely
06/01/09 - 05/31/10	0	0	0	3,297,166	3,574,229	937,796	2,260,811	3,362,847	9,080,762
06/01/10 - 05/31/11	0	660,807	0	1,452,799	3,352,313	1,066,424	1,516,977	2,888,651	8,139,320
06/01/11 - 05/31/12	0	452,866	17,771	1,751,477	2,726,318	782,244	1,658,796	2,192,805	8,262,558
06/01/12 - 05/31/13	0	124,152	39,336	1,151,702	2,819,020	735,449	1,455,195	2,501,254	7,596,557
06/01/13 - 05/31/14	0	334,000	0	609,287	1,988,080	828,210	1,901,595	2,033,389	8,615,316

PRIMARY PARTIAL CONVERSION FACTORS (Appendix B-I, Section A-1)

Policy Period	Fatal Likely	Fatal Not-Likely	Permanent Total	Permanent Partial Likely	Permanent Partial Not-Likely	Temporary Total Likely	Temporary Total Not-Likely	Medical Likely	Medical Not-Likely
06/01/09 - 05/31/10	0.848	0.846	0.713	0.543	0.542	0.707	0.705	1.170	0.902
06/01/10 - 05/31/11	0.897	0.892	0.760	0.579	0.576	0.754	0.749	1.224	0.906
06/01/11 - 05/31/12	0.962	0.945	0.825	0.629	0.618	0.821	0.807	1.385	0.970
06/01/12 - 05/31/13	1.090	1.031	0.949	0.723	0.683	0.945	0.894	1.605	1.052
06/01/13 - 05/31/14	1.417	1.153	1.300	1.092	0.888	1.298	1.056	1.810	1.068

EXPECTED EXCESS PROVISION AND REDISTRIBUTION (Appendix B-I, Section A-2)

After the application of the primary conversion factors, the limited losses are brought to an expected unlimited level through the application of a hazard group-specific excess loss factor. The factor is shown below:

Excess Factor	HAZARD GROUP: C
	1.147

As the excess loss factor is on a combined (indemnity and medical) basis, the following portion of the indemnity expected excess losses are redistributed to medical in order to more accurately allocate expected excess losses:

Redistribution %	40%
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APPENDIX B-III

Derivation of Proposed Loss Cost - Code 8810

EXPECTED UNLIMITED LOSSES (Limited Losses x Primary Conversion Factors, then adjusted for the Excess Provision and Redistribution)

Policy Period	Fatal Likely	Fatal Not-Likely	Permanent Total	Permanent Partial Likely	Permanent Partial Not-Likely	Temporary Total Likely	Temporary Total Not-Likely	Medical Likely	Medical Not-Likely
06/01/09 - 05/31/10	0	0	0	1,948,044	2,107,850	721,416	1,734,250	4,656,129	9,600,504
06/01/10 - 05/31/11	0	641,354	0	915,256	2,100,996	874,903	1,236,286	4,151,314	8,671,378
06/01/11 - 05/31/12	0	465,650	15,952	1,198,707	1,833,257	698,785	1,456,547	3,586,093	9,393,804
06/01/12 - 05/31/13	0	139,274	40,618	906,018	2,094,967	756,210	1,415,522	4,695,689	9,361,606
06/01/13 - 05/31/14	0	419,019	0	723,940	1,920,901	1,169,698	2,184,943	4,322,867	10,795,961

SECONDARY CONVERSION FACTORS (Appendix B-I, Section A-3)

Policy Period	INDUSTRY GROUP: Office and Clerical
06/01/09 - 05/31/10	1.113
06/01/10 - 05/31/11	1.143
06/01/11 - 05/31/12	1.162
06/01/12 - 05/31/13	1.141
06/01/13 - 05/31/14	1.130

PAYROLL, FINAL CONVERTED LOSSES (Expected Unlimited Losses x Secondary Conversion Factors)

Policy Period	Payroll	Indemnity Likely	Indemnity Not-Likely	Medical Likely	Medical Not-Likely	Total Indemnity	Total Medical	Total
06/01/09 - 05/31/10	20,633,227,896	2,971,109	4,276,257	5,182,272	10,685,361	7,247,366	15,867,633	23,114,999
06/01/10 - 05/31/11	21,454,608,591	2,046,152	4,547,581	4,744,952	9,911,385	6,593,733	14,656,337	21,250,070
06/01/11 - 05/31/12	22,599,533,888	2,223,422	4,363,838	4,167,040	10,915,600	6,587,260	15,082,640	21,669,900
06/01/12 - 05/31/13	20,782,996,023	1,942,947	4,164,380	5,357,781	10,681,592	6,107,327	16,039,373	22,146,700
06/01/13 - 05/31/14	21,087,644,939	2,139,811	5,113,095	4,884,840	12,199,436	7,252,906	17,084,276	24,337,182
Total	106,558,011,337	11,323,441	22,465,151	24,336,885	54,393,374	33,788,592	78,730,259	112,518,851
INDICATED PURE PREMIUM						0.032	0.074	0.11

The present on rate level pure premiums are developed by adjusting the pure premiums underlying the current loss cost by the conversion factors calculated in Appendix B-I. The derivation of the present on rate level pure premiums for the above-captioned classification follows:

	Indemnity	Medical	Total
Pure Premiums Underlying Current Loss Cost	0.041	0.089	0.13
Conversion Factors (App. B-I, Section B)	0.859	0.854	xxx
PURE PREMIUMS PRESENT ON RATE LEVEL (Underlying Pure Premiums) x (Conversion Factor)	0.035	0.076	0.11



TENNESSEE

APPENDIX B-III

Derivation of Proposed Loss Cost - Code 8810
 Industry Group - Office and Clerical, Hazard Group - C

The loss cost for the above-captioned classification is derived as follows:

	<u>Indemnity</u>	<u>Medical</u>	<u>Total</u>
1. Indicated Pure Premium	0.032	0.074	0.11
2. Pure Premium Indicated by National Relativity	0.028	0.072	0.10
3. Pure Premium Present on Rate Level	0.035	0.076	0.11
4. State Credibilities	100%	100%	xxx
5. National Credibilities	0%	0%	xxx
6. Residual Credibilities = 100% - (4) - (5)	0%	0%	xxx
7. Derived by Formula Pure Premiums = (1) x (4) + (2) x (5) + (3) x (6)	0.032	0.074	0.11
8. Test Correction Factor	0.9843	0.9843	xxx
9. Underlying Pure Premiums = (7) x (8) *	0.027	0.073	0.10
10. Ratio of Manual to Standard Premium			1.091
11. Loss Cost = (9) x (10)			0.11
12. Loss Cost Within Swing Limits			0.11
Current Loss Cost x Swing Limits			
a) Lower bound = 0.14 x 0.610 = 0.09			
b) Upper bound = 0.14 x 1.110 = 0.15			
13. Pure Premiums Underlying Proposed Loss Cost* = ((13TOT) / (9TOT)) x (9) , (13TOT) = (12) / (10)	0.027	0.073	0.10
14. Disease, Catastrophe and/or Miscellaneous Loadings			0.00
15. Final Loaded Loss Cost			0.11

* Indemnity pure premium is adjusted for the rounded total pure premium:
 Indemnity Pure Premium = Total Pure Premium - Medical Pure Premium



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APPENDIX B-IV

I. Determination and Distribution of Premium Level Change to “F” Classifications

The Workers Compensation Statistical Plan (WCSP) data is used to determine the overall “F” classifications (F-class) premium level change as well as the individual change by the various classifications. There are three sets of pure premiums for each classification: indicated, present on rate level, and national pure premiums. All sets of pure premiums are adjusted to the common proposed level that is explained further in this exhibit. These three sets of pure premiums are credibility weighted and the results, the derived by formula pure premiums, are adjusted for additional proposed components (Section II) to determine the indicated loss costs. The payrolls are extended by the loss costs presently in effect and by the indicated loss costs. The loss costs are limited to 25% above and 25% below the current loss costs. This results in the indicated loss cost level change of -22.7%.

Section A – Calculation of F-Class Indicated Pure Premiums

The payroll and loss data reported are from the WCSP data by class code for the latest available five policy periods.

Section A-1 – Calculation of Primary Conversion Factors

1. Factors to Adjust to the Proposed Benefit Levels

The state losses are adjusted to the August 28, 2016 state law level. The federal losses are adjusted to the October 1, 2015 federal law level.

STATE ACT

Policy Period	Fatal	Permanent Total (P.T.)	Permanent Partial (P.P.)	Temporary Total (T.T.)	Medical
1/09 - 12/09	1.248	1.043	0.795	1.034	0.951
1/10 - 12/10	1.237	1.042	0.794	1.034	0.915
1/11 - 12/11	1.211	1.033	0.787	1.028	0.904
1/12 - 12/12	1.189	1.028	0.783	1.022	0.954
1/13 - 12/13	1.147	1.019	0.793	1.015	0.967

FEDERAL ACT

Policy Period	Fatal	Permanent Total (P.T.)	Permanent Partial (P.P.)	Temporary Total (T.T.)	Medical
1/09 - 12/09	1.028	1.023	1.008	1.023	1.000
1/10 - 12/10	1.024	1.020	1.008	1.020	1.000
1/11 - 12/11	1.019	1.016	1.007	1.016	1.000
1/12 - 12/12	1.013	1.011	1.005	1.011	1.000
1/13 - 12/13	1.009	1.008	1.003	1.008	1.000

2. Factors to Adjust to the Proposed Trend Level

The following factors are applied to trend the losses in each policy year to the proposed rating year. The selected annual trends utilized were 0.950 and 0.985 for indemnity and medical, respectively.

Policy Period	Indemnity	Medical
1/09 - 12/09	0.656	0.883
1/10 - 12/10	0.691	0.897
1/11 - 12/11	0.727	0.910
1/12 - 12/12	0.765	0.924
1/13 - 12/13	0.805	0.938



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APPENDIX B-IV

Section A-1 Calculation of Primary Conversion Factors (continued)

3. Limited Loss Development Factors

The following factors are applied to develop the losses from first through fifth report to an ultimate basis utilizing countrywide data.

Policy Period	Indemnity		Medical	
	Likely-to-Develop	Not-Likely-to-Develop	Likely-to-Develop	Not-Likely-to-Develop
1/09 - 12/09	1.115	1.031	1.185	1.020
1/10 - 12/10	1.184	1.053	1.217	1.030
1/11 - 12/11	1.269	1.130	1.272	1.061
1/12 - 12/12	1.533	1.252	1.366	1.062
1/13 - 12/13	2.767	1.747	1.683	1.133

4. Primary Conversion Factors = (1) x (2) x (3)

The factors above contained within Section A-1, are combined multiplicatively, resulting in the following factors for the Likely-to-Develop (L) and Not-Likely-to-Develop (NL) groupings.

STATE ACT

Policy Period	Fatal (L)	Fatal (NL)	P.T.*	P.P. (L)	P.P. (NL)	T.T. (L)	T.T. (NL)	Medical (L)	Medical (NL)
1/09 - 12/09	0.913	0.844	0.763	0.581	0.538	0.756	0.699	0.995	0.857
1/10 - 12/10	1.012	0.900	0.853	0.650	0.578	0.846	0.752	0.999	0.845
1/11 - 12/11	1.117	0.995	0.953	0.726	0.647	0.948	0.845	1.046	0.873
1/12 - 12/12	1.394	1.139	1.206	0.918	0.750	1.199	0.979	1.204	0.936
1/13 - 12/13	2.555	1.613	2.270	1.766	1.115	2.261	1.427	1.527	1.028

FEDERAL ACT

Policy Period	Fatal (L)	Fatal (NL)	P.T.*	P.P. (L)	P.P. (NL)	T.T. (L)	T.T. (NL)	Medical (L)	Medical (NL)
1/09 - 12/09	0.752	0.695	0.748	0.737	0.682	0.748	0.692	1.046	0.901
1/10 - 12/10	0.838	0.745	0.835	0.825	0.733	0.835	0.742	1.092	0.924
1/11 - 12/11	0.940	0.837	0.937	0.929	0.827	0.937	0.835	1.158	0.966
1/12 - 12/12	1.188	0.970	1.186	1.179	0.963	1.186	0.968	1.262	0.981
1/13 - 12/13	2.247	1.419	2.245	2.234	1.411	2.245	1.418	1.579	1.063

* Permanent Total losses are always assigned to the Likely-to-Develop grouping.



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APPENDIX B-IV

Section A-2 – Expected Excess Provision and Redistribution

To reduce distortions in individual class loss cost indications, individual claim amounts are subject to a maximum limit of \$500,000. Multiple claim accidents are limited to three times the individual claim loss limitation. After the application of the primary conversion factors, the limited losses are brought to an expected unlimited level through the application of excess loss factors by hazard group. These factors are shown below.

Hazard Group	A	B	C	D	E	F	G
(1) Excess Ratios	0.076	0.107	0.128	0.153	0.192	0.218	0.273
(2) Excess Factors 1/(1-(1))	1.082	1.120	1.147	1.181	1.238	1.279	1.376

As the excess loss factors are on a combined (indemnity and medical) basis, a portion (40%) of the indemnity expected excess losses are redistributed to medical in order to more accurately allocate expected excess losses. Since a portion of the expected excess losses are redistributed in an additive manner, the expected excess factors shown above cannot be combined multiplicatively with either the primary or secondary loss conversion factors.

Section A-3 – Calculation of Secondary Conversion Factors

The following factors are applied to include the proposed loss-based expenses. The state losses are adjusted to reflect the proposed loss-based expenses. The federal losses are adjusted to reflect the proposed USL&HW Special Fund Assessment and loss adjustment expense. The combined** factors are based on a combined indemnity and medical loss-weighted average of the above loss-based expenses by policy period.

Policy Period	State Act	Federal Act
1/09 - 12/09	1.201	1.219
1/10 - 12/10	1.201	1.224
1/11 - 12/11	1.201	1.217
1/12 - 12/12	1.201	1.246
1/13 - 12/13	1.201	1.268

** See Section B.3 for the indemnity and medical breakdown of the proposed loss-based expenses.



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APPENDIX B-IV

Section B – Present on Rate Level

1. Benefits

The current underlying pure premiums are at the current August 28, 2016 state and October 1, 2014 federal law levels. These pure premiums are adjusted to reflect the weighted effect of state and federal laws which bring losses to the proposed August 28, 2016 state and October 1, 2015 federal law levels. The distribution of state and federal losses in regard to total losses was used to determine the weighted effects.

State Weight (St%)	0.171
Federal Weight (Fed%)	0.829

	Indemnity	Medical	Total
(a) State Laws	1.010	1.001	1.004
(b) Federal Laws	1.002	1.000	1.001
(c) Weighted Laws = [(a)xSt%] + [(b)xFed%]	1.003	1.000	1.002

2. Trend

Since the trend in the current underlying pure premiums is adequate for the current rating year, additional trend is applied to bring the underlyings to the proposed rating year.

Indemnity	Medical
0.950	0.985



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APPENDIX B-IV

Section B – Present on Rate Level (continued)

3. Loss-Based Expenses

The current underlying pure premiums are adjusted to reflect the change in the weighted effect of the loss-based expense provisions.

Proposed:

STATE ACT			
	Indemnity	Medical	Total
(a) Loss Adjustment Expense	1.201	1.201	1.201
(b) Loss-Based Assessment	1.000	1.000	1.000
(c) Total = (a) + (b) - 1	1.201	1.201	1.201

FEDERAL ACT			
	Indemnity	Medical	Total
(d) Loss Adjustment Expense	1.201	1.201	1.201
(e) Loss-Based Assessment	1.116	1.000	1.064
(f) Total = (d) + (e) - 1	1.317	1.201	1.265

	Indemnity	Medical	Total
(g) Weighted Proposed Expenses = [(c) x St%] + [(f) x Fed%]	1.297	1.201	1.254

Current:

STATE ACT			
	Indemnity	Medical	Total
(h) Loss Adjustment Expense	1.198	1.198	1.198
(i) Loss-Based Assessment	1.000	1.000	1.000
(j) Total = (h) + (i) - 1	1.198	1.198	1.198

FEDERAL ACT			
	Indemnity	Medical	Total
(k) Loss Adjustment Expense	1.198	1.198	1.198
(l) Loss-Based Assessment	1.110	1.000	1.062
(m) Total = (k) + (l) - 1	1.308	1.198	1.260

	Indemnity	Medical	Total
(n) Weighted Current Expenses = [(j) x St%] + [(m) x Fed%]	1.289	1.198	1.249

Change:

	Indemnity	Medical	Total
Weighted Expense Change in Loss-Based Expenses = [(g) / (n)]	1.006	1.003	1.004

4. Conversion Factors = (1) x (2) x (3)

The factors have been applied multiplicatively resulting in the following factors.

Indemnity	Medical
0.959	0.988



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APPENDIX B-IV

Section C – National Pure Premiums

The latest three years of state and federal losses for states in which NCCI compiles workers compensation data are separately adjusted to the same level as the indicated and present on rate level pure premiums.

Class Code 9077

For Code 9077, the indicated, national and present on rate level pure premiums were calculated as described previously in Sections A, B and C but using the non-appropriated benefit changes and the federal loss-based expenses.

Section D – Derived by Formula Pure Premiums

The derived by formula pure premiums are calculated by a process similar to that of the industrial codes, which is described in Appendix B-I, Section D. To achieve full state credibility, a classification must have expected losses of at least: \$44,071,650 for indemnity and \$22,243,600 for medical.

II. Calculation of Proposed Loss Costs

The following items are combined with the derived by formula pure premiums to obtain the proposed loss cost:

A. Composite Factor (1) x (2)	0.9980
1. Offset for Change in Minimum Premium Program	0.998
2. Test Correction Factor	1.0000

B. Ratio of Manual Premium to Earned Premium (determined on a countrywide basis)	1.083
--	--------------

C. Swing Limits

The classifications which were adjusted by swing limits are as follows:

List of Classifications Limited by the Upper Swing:
None

List of Classifications Limited by the Lower Swing:
6843 7309



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APPENDIX B-IV

Derivation of Proposed Loss Cost - Code 7317

The indicated pure premiums are developed by adjusting the limited losses by a set of conversion factors. The converted losses are then summarized into indemnity and medical and then divided by payroll (in hundreds). The derivation of the indicated pure premium for the above-captioned classification follows:

STATE ACT - LIMITED LOSSES (Workers Compensation Statistical Plan)

Policy Period	Fatal Likely	Fatal Not-Likely	Permanent Total	Permanent Partial Likely	Permanent Partial Not-Likely	Temporary Total Likely	Temporary Total Not-Likely	Medical Likely	Medical Not-Likely
01/01/09 - 12/31/09	0	0	0	0	0	0	0	0	349
01/01/10 - 12/31/10	0	0	0	0	26,621	0	0	0	24,766
01/01/11 - 12/31/11	0	0	0	0	0	0	0	0	0
01/01/12 - 12/31/12	0	0	0	0	0	0	0	0	0
01/01/13 - 12/31/13	0	0	0	0	0	0	0	0	0

FEDERAL ACT - LIMITED LOSSES (Workers Compensation Statistical Plan)

Policy Period	Fatal Likely	Fatal Not-Likely	Permanent Total	Permanent Partial Likely	Permanent Partial Not-Likely	Temporary Total Likely	Temporary Total Not-Likely	Medical Likely	Medical Not-Likely
01/01/09 - 12/31/09	0	0	0	0	0	0	0	0	0
01/01/10 - 12/31/10	0	0	0	0	0	0	0	0	0
01/01/11 - 12/31/11	0	0	0	659	0	0	0	21,197	0
01/01/12 - 12/31/12	0	0	0	0	27,973	0	0	0	27,794
01/01/13 - 12/31/13	0	0	0	0	0	0	0	0	0

STATE ACT - PRIMARY PARTIAL CONVERSION FACTORS (Appendix B-IV, Section A-1)

Policy Period	Fatal Likely	Fatal Not-Likely	Permanent Total	Permanent Partial Likely	Permanent Partial Not-Likely	Temporary Total Likely	Temporary Total Not-Likely	Medical Likely	Medical Not-Likely
01/01/09 - 12/31/09	0.913	0.844	0.763	0.581	0.538	0.756	0.699	0.995	0.857
01/01/10 - 12/31/10	1.012	0.900	0.853	0.650	0.578	0.846	0.752	0.999	0.845
01/01/11 - 12/31/11	1.117	0.995	0.953	0.726	0.647	0.948	0.845	1.046	0.873
01/01/12 - 12/31/12	1.394	1.139	1.206	0.918	0.750	1.199	0.979	1.204	0.936
01/01/13 - 12/31/13	2.555	1.613	2.270	1.766	1.115	2.261	1.427	1.527	1.028

FEDERAL ACT - PRIMARY PARTIAL CONVERSION FACTORS (Appendix B-IV, Section A-1)

Policy Period	Fatal Likely	Fatal Not-Likely	Permanent Total	Permanent Partial Likely	Permanent Partial Not-Likely	Temporary Total Likely	Temporary Total Not-Likely	Medical Likely	Medical Not-Likely
01/01/09 - 12/31/09	0.752	0.695	0.748	0.737	0.682	0.748	0.692	1.046	0.901
01/01/10 - 12/31/10	0.838	0.745	0.835	0.825	0.733	0.835	0.742	1.092	0.924
01/01/11 - 12/31/11	0.940	0.837	0.937	0.929	0.827	0.937	0.835	1.158	0.966
01/01/12 - 12/31/12	1.188	0.970	1.186	1.179	0.963	1.186	0.968	1.262	0.981
01/01/13 - 12/31/13	2.247	1.419	2.245	2.234	1.411	2.245	1.418	1.579	1.063



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APPENDIX B-IV

Derivation of Proposed Loss Cost - Code 7317

EXPECTED EXCESS PROVISION AND REDISTRIBUTION (Appendix B-IV, Section A-2)

After the application of the primary conversion factors, the limited losses are brought to an expected unlimited level through the application of a hazard group-specific excess loss factor. The factor is shown below:

	HAZARD GROUP: G
Excess Factor	1.376

As the excess loss factor is on a combined (indemnity and medical) basis, the following portion of the indemnity expected excess losses are redistributed to medical in order to more accurately allocate expected excess losses:

Redistribution %	40%
------------------	-----

STATE ACT - EXPECTED UNLIM LOSSES (Lim Losses x Primary Conv Factors, then adjusted for the Excess Provision and Redistribution)

Policy Period	Fatal Likely	Fatal Not-Likely	Permanent Total	Permanent Partial Likely	Permanent Partial Not-Likely	Temporary Total Likely	Temporary Total Not-Likely	Medical Likely	Medical Not-Likely
01/01/09 - 12/31/09	0	0	0	0	0	0	0	0	411
01/01/10 - 12/31/10	0	0	0	0	18,854	0	0	0	31,096
01/01/11 - 12/31/11	0	0	0	0	0	0	0	0	0
01/01/12 - 12/31/12	0	0	0	0	0	0	0	0	0
01/01/13 - 12/31/13	0	0	0	0	0	0	0	0	0

FEDERAL ACT - EXPECTED UNLIM LOSSES (Lim Losses x Primary Conv Factors, then adjusted for the Excess Provision and Redistribution)

Policy Period	Fatal Likely	Fatal Not-Likely	Permanent Total	Permanent Partial Likely	Permanent Partial Not-Likely	Temporary Total Likely	Temporary Total Not-Likely	Medical Likely	Medical Not-Likely
01/01/09 - 12/31/09	0	0	0	0	0	0	0	0	0
01/01/10 - 12/31/10	0	0	0	0	0	0	0	0	0
01/01/11 - 12/31/11	0	0	0	750	0	0	0	33,855	0
01/01/12 - 12/31/12	0	0	0	0	33,008	0	0	0	41,551
01/01/13 - 12/31/13	0	0	0	0	0	0	0	0	0

STATE ACT - SECONDARY CONVERSION FACTORS (Appendix B-IV, Section A-3)

	INDUSTRY GROUP: F-Class
01/01/09 - 12/31/09	1.201
01/01/10 - 12/31/10	1.201
01/01/11 - 12/31/11	1.201
01/01/12 - 12/31/12	1.201
01/01/13 - 12/31/13	1.201

FEDERAL ACT - SECONDARY CONVERSION FACTORS (Appendix B-IV, Section A-3)

	INDUSTRY GROUP: F-Class
01/01/09 - 12/31/09	1.219
01/01/10 - 12/31/10	1.224
01/01/11 - 12/31/11	1.217
01/01/12 - 12/31/12	1.246
01/01/13 - 12/31/13	1.268



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APPENDIX B-IV

Derivation of Proposed Loss Cost - Code 7317

TOTAL - PAYROLL, FINAL CONVERTED LOSSES

Policy Period	Payroll	Indemnity Likely	Indemnity Not-Likely	Medical Likely	Medical Not-Likely	Total Indemnity	Total Medical	Total
01/01/09 - 12/31/09	2,766,269	0	0	0	494	0	494	494
01/01/10 - 12/31/10	1,692,041	0	22,644	0	37,346	22,644	37,346	59,990
01/01/11 - 12/31/11	1,459,482	913	0	41,202	0	913	41,202	42,115
01/01/12 - 12/31/12	1,377,193	0	41,128	0	51,773	41,128	51,773	92,901
01/01/13 - 12/31/13	1,361,708	0	0	0	0	0	0	0
Total	8,656,693	913	63,772	41,202	89,613	64,685	130,815	195,500
INDICATED PURE PREMIUM						0.747	1.511	2.26

The present on rate level pure premiums are developed by adjusting the pure premiums underlying the current loss cost by the conversion factors. The derivation of the present on rate level pure premiums for the above-captioned classification follows:

	Indemnity	Medical	Total
Pure Premiums Underlying Current Loss Cost	3.162	3.418	6.58
Conversion Factors (Section B)	0.959	0.988	xxx
PURE PREMIUMS PRESENT ON RATE LEVEL (Underlying Pure Premiums) x (Conversion Factor)	3.032	3.377	6.41



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APPENDIX B-IV

Derivation of Proposed Loss Cost - Code 7317
Industry Group - F-Class, Hazard Group - G

The loss cost for the above-captioned classification is derived as follows:

	<u>Indemnity</u>	<u>Medical</u>	<u>Total</u>
1. Indicated Pure Premium	0.747	1.511	2.26
2. Pure Premium Indicated by National Relativity	4.860	3.541	8.40
3. Pure Premium Present on Rate Level	3.032	3.377	6.41
4. State Credibilities	13%	18%	xxx
5. National Credibilities	39%	41%	xxx
6. Residual Credibilities = 100% - (4) - (5)	48%	41%	xxx
7. Derived by Formula Pure Premiums = (1) x (4) + (2) x (5) + (3) x (6)	3.448	3.108	6.56
8. Composite Factor	0.9980	0.9980	xxx
9. Underlying Pure Premiums = (7) x (8) *	3.438	3.102	6.54
10. Ratio of Manual to Standard Premium			1.083
11. Loss Cost = (9) x (10)			7.08
12. Loss Cost Within Swing Limits			7.08
Current Loss Cost x Swing Limits			
a) Lower bound = 7.09 x 0.750 = 5.32			
b) Upper bound = 7.09 x 1.250 = 8.86			
13. Pure Premiums Underlying Proposed Loss Cost* = ((13TOT) / (9TOT)) x (9) , (13TOT) = (12) / (10)	3.438	3.102	6.54
14. Disease, Catastrophe and/or Miscellaneous Loadings			0.00
15. Final Loaded Loss Cost			7.08

* Indemnity pure premium is adjusted for the rounded total pure premium:
Indemnity Pure Premium = Total Pure Premium - Medical Pure Premium



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APPENDIX B-V

Derivation of Proposed Traumatic Loss Cost - Code 1016

As previously explained in Appendix B-I, the indicated pure premiums are developed by adjusting the limited losses by a set of conversion factors. The converted losses are then summarized into indemnity and medical and then divided by payroll (in hundreds). The derivation of the indicated pure premium for classification 1016 follows:

LIMITED LOSSES (Workers Compensation Statistical Plan)

Policy Period	Fatal Likely	Fatal Not-Likely	Permanent Total	Permanent Partial Likely	Permanent Partial Not-Likely	Temporary Total Likely	Temporary Total Not-Likely	Medical Likely	Medical Not-Likely
06/01/09 - 05/31/10	0	0	0	138,000	1,352,831	0	36,046	11,869	1,046,685
06/01/10 - 05/31/11	0	0	0	158,486	120,828	91,765	254	92,867	41,917
06/01/11 - 05/31/12	0	329,905	0	144,312	237,088	0	15,225	3,000	113,535
06/01/12 - 05/31/13	0	0	0	128,913	162,998	0	9,077	50,103	107,032
06/01/13 - 05/31/14	0	0	0	37,500	76,148	10,000	5,430	95,000	60,479

PRIMARY PARTIAL CONVERSION FACTORS (Appendix B-I, Section A-1)

Policy Period	Fatal Likely	Fatal Not-Likely	Permanent Total	Permanent Partial Likely	Permanent Partial Not-Likely	Temporary Total Likely	Temporary Total Not-Likely	Medical Likely	Medical Not-Likely
06/01/09 - 05/31/10	0.848	0.846	0.713	0.543	0.542	0.707	0.705	1.170	0.902
06/01/10 - 05/31/11	0.897	0.892	0.760	0.579	0.576	0.754	0.749	1.224	0.906
06/01/11 - 05/31/12	0.962	0.945	0.825	0.629	0.618	0.821	0.807	1.385	0.970
06/01/12 - 05/31/13	1.090	1.031	0.949	0.723	0.683	0.945	0.894	1.605	1.052
06/01/13 - 05/31/14	1.417	1.153	1.300	1.092	0.888	1.298	1.056	1.810	1.068

EXPECTED EXCESS PROVISION AND REDISTRIBUTION (Appendix B-I, Section A-2)

After the application of the primary conversion factors, the limited losses are brought to an expected unlimited level through the application of a hazard group-specific excess loss factor. The factor is shown below:

HAZARD GROUP: G	
Excess Factor	1.376

As the excess loss factor is on a combined (indemnity and medical) basis, the following portion of the indemnity expected excess losses are redistributed to medical in order to more accurately allocate expected excess losses:

Redistribution %	40%
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TENNESSEE

APPENDIX B-V

Derivation of Proposed Traumatic Loss Cost - Code 1016

EXPECTED UNLIMITED LOSSES (Limited Losses x Primary Conversion Factors, then adjusted for the Excess Provision and Redistribution)

Policy Period	Fatal Likely	Fatal Not-Likely	Permanent Total	Permanent Partial Likely	Permanent Partial Not-Likely	Temporary Total Likely	Temporary Total Not-Likely	Medical Likely	Medical Not-Likely
06/01/09 - 05/31/10	0	0	0	91,817	898,439	0	31,138	30,358	1,412,592
06/01/10 - 05/31/11	0	0	0	112,438	85,278	84,780	233	180,530	62,720
06/01/11 - 05/31/12	0	382,003	0	111,224	179,533	0	15,055	19,349	222,166
06/01/12 - 05/31/13	0	0	0	114,204	136,411	0	9,943	124,612	172,821
06/01/13 - 05/31/14	0	0	0	50,176	82,854	15,904	7,026	244,620	99,865

SECONDARY PARTIAL CONVERSION FACTOR (Loss-based expense, if applicable)

	Indemnity	Medical
Loss Based Expense	1.201	1.201

PAYROLL, FINAL CONVERTED LOSSES (Expected Unlimited Losses x Loss-Based Expenses, if applicable)

Policy Period	Payroll	Indemnity Likely	Indemnity Not-Likely	Medical Likely	Medical Not-Likely	Total Indemnity	Total Medical	Total
06/01/09 - 05/31/10	6,258,807	110,272	1,116,422	36,460	1,696,523	1,226,694	1,732,983	2,959,677
06/01/10 - 05/31/11	6,703,550	236,859	102,699	216,817	75,327	339,558	292,143	631,701
06/01/11 - 05/31/12	7,880,820	133,580	692,486	23,238	266,821	826,066	290,060	1,116,125
06/01/12 - 05/31/13	8,082,988	137,159	175,771	149,659	207,558	312,930	357,217	670,147
06/01/13 - 05/31/14	7,004,952	79,362	107,946	293,789	119,938	187,308	413,726	601,034
Total	35,931,117	697,232	2,195,324	719,962	2,366,167	2,892,556	3,086,129	5,978,685
INDICATED PURE PREMIUM						8.050	8.589	16.64

The present on rate level pure premiums are developed by adjusting the pure premiums underlying the current loss cost by the conversion factors calculated in Appendix B-I. The derivation of the present on rate level pure premiums for the above-captioned classification follows:

	Indemnity	Medical	Total
Pure Premiums Underlying Current Loss Cost	6.493	8.017	14.51
Conversion Factors *	0.974	0.967	xxx
PURE PREMIUMS PRESENT ON RATE LEVEL (Underlying Pure Premiums) x (Conversion Factor)	6.324	7.752	14.08

* Conversion factors only adjust for changes in trend, benefit, and if applicable, loss-based expense provision.



TENNESSEE

APPENDIX B-V

Derivation of Proposed Traumatic Loss Cost - Code 1016
COAL MINING—NOC, Hazard Group - G

The traumatic loss cost for classification 1016 is derived as follows:

	<u>Indemnity</u>	<u>Medical</u>	<u>Total</u>
1. Indicated Pure Premium	8.050	8.589	16.64
2. Pure Premium Indicated by National Relativity	2.617	3.620	6.24
3. Pure Premium Present on Rate Level	6.324	7.752	14.08
4. State Credibilities†	36%	47%	xxx
5. National Credibilities	32%	26%	xxx
6. Residual Credibilities = 100% - (4) - (5)	32%	27%	xxx
7. Derived by Formula Pure Premiums = (1) x (4) + (2) x (5) + (3) x (6)	5.759	7.071	12.83
8. Offset for Change in Minimum Premium Program	0.998	0.998	xxx
9. Underlying Pure Premiums = (7) x (8) *	5.743	7.057	12.80
10. Ratio of Manual to Standard Premium			1.063
11. Loss Cost = (9) x (10)			13.61
12. Loss Cost Within Swing Limits			13.61
Current Loss Cost x Swing Limits			
a) Lower bound = 15.45 x 0.75 =			11.59
b) Upper bound = 15.45 x 1.25 =			19.31
13. Pure Premiums Underlying Proposed Loss Cost* = ((13TOT) / (9TOT)) x (9) , (13TOT) = (12) / (10)	5.743	7.057	12.80
14. Proposed Traumatic Loss Cost			13.61

† To achieve full state credibility, the classification must have expected losses of at least: \$28,942,921 for indemnity, and \$18,720,259 for medical.

* Indemnity pure premium is adjusted for the rounded total pure premium:

Indemnity Pure Premium = Total Pure Premium - Medical Pure Premium



TENNESSEE

APPENDIX C-I

ANALYSIS OF TENNESSEE MEDICAL FEE SCHEDULE UPDATE EFFECTIVE JANUARY 1, 2016

NCCI estimates that the changes to the Tennessee Medical Fee Schedule, that became effective January 1, 2016, will result in a +0.1% impact on Tennessee workers compensation system costs.

Summary of Changes

Changes to the Tennessee Medical Fee Schedule (MFS) (Chapters 0800-2-17, 0800-2-18, 0800-2-19) that became effective January 1, 2016 are described below:

- Updated the physician fee schedule to be based on the 2016 Medicare Resource-Based Relative Value Scale (RBRVS) and Tennessee-specific conversion factors (CF) by physician service category. The previous physician fee schedule was based on the 2015 RBRVS and Tennessee-specific CFs.
- Updated the Hospital Outpatient and Ambulatory Surgical Center (ASC) fee schedule
 - Updated Ambulatory Payment Classification (APC) payment rates to be based on 2016 Medicare Addendum B. Previous reimbursement rates were based on 2015 Medicare Addendum B.
- Updated the Ambulance Services fee schedule
 - Updated the maximum reimbursements for ambulance services to be capped at the lesser of the submitted charges or 150% of the 2016 Medicare rate. The previous maximum reimbursements were capped at the lesser of the submitted charges or 150% of the 2015 Medicare rate.
- Updated the Durable Medical Equipment (DME) fee schedule
 - Updated the DME maximum allowable reimbursements (MAR) to be based on 2016 Medicare rates. Previous DME MARs were based on 2015 Medicare rates.

Actuarial Analysis

NCCI's methodology to evaluate the impact of medical fee schedule changes includes three major steps:

1. Calculate the percentage change in maximum reimbursements.
 - a. Compare the prior and revised maximum reimbursements by procedure code and determine the percentage change by procedure code.
 - b. Calculate the weighted-average percentage change in maximum reimbursements for the fee schedule using observed payments by procedure code as weights.
2. Estimate the price level change as a result of the revised fee schedule
 - a. NCCI research by Frank Schmid and Nathan Lord (2013), "The Impact of Physician Fee Schedule Changes in Workers Compensation: Evidence from 31



TENNESSEE

APPENDIX C-I

ANALYSIS OF TENNESSEE MEDICAL FEE SCHEDULE UPDATE EFFECTIVE JANUARY 1, 2016

States”, suggests that a portion of a change in maximum reimbursements is realized on payments impacted by the change.

- i. In response to a fee schedule decrease, NCCI research indicates that payments decline by approximately 50% of the fee schedule change.
- ii. In response to a fee schedule increase, NCCI research indicates that payments increase by approximately 80% of the fee schedule change and the magnitude of the response depends on the relative difference between actual payments and fee schedule maximums (i.e. the price departure).

The formula used to determine the percent realized for fee schedule increases is $80\% \times (1.10 + 1.20 \times (\text{price departure}))$.

3. Determine the share of costs that are subject to the fee schedule
 - a. The share is based on a combination of fields, such as procedure code, provider type, and place of service, as reported on the NCCI Medical Data Call, to categorize payments that are subject to the fee schedule.

In this analysis, NCCI relies primarily on two data sources:

- Detailed medical data underlying the calculations in this analysis are based on NCCI’s Medical Data Call for Tennessee for Service Year 2014.
- The share of benefit costs attributed to medical benefits is based on NCCI’s Financial Call data for Tennessee from the latest two policy years projected to the effective date of the benefit changes.

Physician Fee Schedule

In Tennessee, payments for physician services represent 41.6% of total medical costs. To calculate the percentage change in maximums for physician services, we calculate the percentage change in maximum for each procedure code. The overall change in maximums for physician services is a weighted average of the percentage change in MAR (revised MAR / prior MAR) by procedure code weighted by the observed payments by procedure code as reported on NCCI’s Medical Data Call, for Tennessee for Service Year 2014. The overall weighted-average percentage change in MAR is negligible¹.

The impact by category is shown in the table below.

¹ Negligible is defined in this document to be an impact on system costs of less than 0.1%.



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APPENDIX C-I

ANALYSIS OF TENNESSEE MEDICAL FEE SCHEDULE UPDATE
EFFECTIVE JANUARY 1, 2016

Physician Practice Category	Share of Physician Costs	Percentage Change in MAR
Anesthesia	5.3%	0.0%
Surgery	22.5%	-0.1%
Radiology	9.3%	+0.8%
Pathology	2.4%	+0.1%
Evaluation & Management	22.9%	-0.1%
Medicine	23.6%	-0.2%
Other HCPCS*	0.4%	0.0%
Physician Payments with no specific MAR	13.6%	0.0%
Total Physician Costs	100.0%	0.0%

*Healthcare Common Procedure Coding System

Since the overall change in average maximum reimbursement for physician services is negligible, the impact on medical costs and overall workers compensation costs in Tennessee is negligible.

Hospital Outpatient

In Tennessee, payments for hospital outpatient services represent 9.6% of total medical costs. To calculate the percentage change in maximums for hospital outpatient services, we calculate the percentage change in maximum for each procedure code. The overall change in maximums for hospital outpatient services is a weighted average of the percentage change in MAR (revised MAR / prior MAR) by procedure code, weighted by the observed payments by procedure code as reported on NCCI’s Medical Data Call, for Tennessee for Service Year 2014. The overall weighted-average percentage change in MAR is +0.4%.

Since the overall average maximum reimbursement for hospital outpatient services increased, the percentage expected to be realized from the fee schedule increase is calculated according to the formula $80\% \times (1.10 + 1.20 \times (\text{price departure}))$. Since a reliable price departure could not be determined, we assumed a price realization factor of 80%. The impact on hospital outpatient payments due to the revised hospital outpatient fee schedule is +0.3% ($= +0.4\% \times 0.80$.)

The above impact of +0.3% is then multiplied by the Tennessee percentage of medical costs attributed to hospital outpatient payments (9.6%) to arrive at a negligible increase on medical costs and overall workers compensation costs in Tennessee.

Ambulatory Surgical Center (ASC)

In Tennessee, payments for ASC services represent 6.3% of total medical costs. To calculate the percentage change in maximums for ASC services, we calculate the percentage change in maximum for each procedure code. The overall change in maximums for ASC services is a weighted average of the percentage change in MAR (revised MAR / prior MAR) by procedure



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APPENDIX C-I

ANALYSIS OF TENNESSEE MEDICAL FEE SCHEDULE UPDATE EFFECTIVE JANUARY 1, 2016

code, weighted by the observed payments by procedure code as reported on NCCI's Medical Data Call, for Tennessee for Service Year 2014. The overall weighted-average percentage change in MAR is +1.0%.

Since the overall average maximum reimbursement for ASC services increased, the percentage expected to be realized from the fee schedule increase is calculated according to the formula $80\% \times (1.10 + 1.20 \times (\text{price departure}))$. Since a reliable price departure could not be determined, we assumed a price realization factor of 80%. The impact on ASC payments due to the revised ASC fee schedule is +0.8% ($= +1.0\% \times 0.80$).

The above impact of +0.8% is then multiplied by the Tennessee percentage of medical costs attributed to ASC payments (6.3%) to arrive at the impact on medical costs of +0.1%. This is then multiplied by the percentage of Tennessee benefit costs attributed to medical benefits (68.8%) to arrive at the impact on Tennessee overall workers compensation costs of +0.1%.

Durable Medical Equipment (DME)

In Tennessee, payments for DME services subject to the fee schedule represent 2.4% of total medical costs. To calculate the percentage change in maximums for DME services, we calculate the percentage change in maximum for each code. The overall change in maximums for DME services is a weighted average of the percentage change in MAR (revised MAR / prior MAR) by code weighted by the observed payments by code as reported on NCCI's Medical Data Call, for Tennessee for Service Year 2014. The overall weighted-average percentage change in MAR is -1.5%.

Since the overall average maximum reimbursement for DME decreased, the price realization factor is 50%. The impact on DME payments due to the revised DME fee schedule is -0.8% ($= -1.5\% \times 0.50$).

The above impact of -0.8% is then multiplied by the Tennessee percentage of medical costs attributed to DME payments subject to the fee schedule (2.4%) to arrive at a negligible decrease on medical costs and on overall workers compensation costs in Tennessee.

Ambulance Services

In Tennessee, payments for ambulance services represent 1.2% of total medical costs. To calculate the percentage change in maximums for ambulance services, we calculate the percentage change in maximum for each procedure code. The overall change in maximums for ambulance services is a weighted average of the percentage change in MAR (revised MAR / prior MAR) by code weighted by the observed payments by code as reported on NCCI's Medical Data Call, for Tennessee for Service Year 2014. The overall weighted-average percentage change in MAR is -0.4%.



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APPENDIX C-I

**ANALYSIS OF TENNESSEE MEDICAL FEE SCHEDULE UPDATE
EFFECTIVE JANUARY 1, 2016**

Since the overall average maximum reimbursement for ambulance services decreased, the price realization factor is 50%. The impact on ambulance services payments due to the revised ambulance fee schedule is therefore -0.2% (= -0.4% x 0.50).

The above impact of -0.2% is then multiplied by the Tennessee percentage of medical costs attributed to ambulance payments (1.2%) to arrive at a negligible decrease on medical costs and on overall workers compensation costs in Tennessee.

Summary of Impacts

The impacts from the changes to the Tennessee MFS are summarized below:

	(A) Impact on Type of Service	(B) Share of Medical Costs	(C) Impact On Medical Costs (A) x (B)
Physician	0.0%	41.6%	negligible
Hospital Outpatient	+0.3%	9.6%	negligible
ASC	+0.8%	6.3%	+0.1%
DME	-0.8%	2.4%	negligible
Ambulance	-0.2%	1.2%	negligible
(1) Total Impact on Tennessee Medical Costs			+0.1%
(2) Medical Costs as a Percentage of Overall Workers Compensation Benefit Costs in Tennessee			68.8%
(3) Total Impact on Overall Workers Compensation System Costs in Tennessee = (1) x (2)			+0.1%



TENNESSEE

APPENDIX C-II

Change in the Minimum and Maximum Weekly Benefits, Effective July 1, 2016

In Tennessee, maximum and, for certain benefit types, minimum workers compensation indemnity benefit provisions are dependent upon the state average weekly wage (SAWW). The impacts summarized in the table below result from anticipated changes in workers compensation costs due to the change in the SAWW from \$858.00 ("current") to \$888.00 ("revised"), and apply to injuries occurring on or after July 1, 2016.

The approach used in calculating the effects of a change in the SAWW is as follows:

1. Obtain the latest available SAWW from the Tennessee Department of Labor and Workforce Development.
2. Calculate the minimum and maximum benefits by benefit payment type that are dependent upon and expressed as a percentage of the current and revised SAWW.
3. Using a countrywide distribution of workers and their wages¹, indexed to the Tennessee average weekly wage², determine expected current and revised average weekly benefits by benefit payment type (and dependency type, as appropriate)³.
4. Use the above-calculated average weekly benefits to determine the indemnity benefit costs for each injury type (Fatal, Permanent Total, Permanent Partial, and Temporary Total)⁴ prior to and subsequent to the change in the SAWW. Calculate the ratio of the revised indemnity benefit costs to current indemnity benefit costs for each injury type to determine the impact by injury type from the change in the SAWW.
5. Determine the indemnity cost distribution by injury type⁵.
6. Using the indemnity cost distribution (Step 5) and the effects by injury type (Step 4), calculate the effect of the change in SAWW on total indemnity benefit costs.
7. Multiply the impact on total indemnity benefit costs (Step 6) by the percentage of losses attributed to indemnity benefits⁶ to determine the impact of the change in the SAWW on overall benefit costs.

Type of Injury	Percentage of Losses	Effect (%)
Fatal	1.4%	+ 2.9
Permanent Total	0.5%	+ 1.0
Permanent Partial	17.4%	+ 0.9
Temporary Total	11.5%	+ 0.8
Total Indemnity	30.8%	+ 1.0
Medical	69.2%	0.0
Total	100.0%	+ 0.3

¹ Based on NCCI Detailed Claim Information data.

² Forecasted using the Bureau of Labor Statistics Quarterly Census of Employment and Wages, for all private sector employment.

³ For states where the rate of compensation is based on spendable wages, state and federal tax withholding tables are used in conjunction with pertinent assumptions (e.g., number of dependents).

⁴ Various distributions based on internal and external data are employed in determining the impact by type of injury. For example, for Fatal injuries, a countrywide distribution of average ages and dependents by type (e.g., spouse, spouse with one child, parent, etc.) is used in calculating mortality-adjusted annuity values under both the current and revised weekly maximum benefits, with the likelihood of remarriage incorporated as applicable.

⁵ NCCI Unit Statistical Plan data for the 24-month policy period ending 05/31/2013 on the 08/28/2016 law level and developed to an ultimate basis by type of injury.

⁶ NCCI Financial Call data for Tennessee for Policy Years 2013 and 2014 projected to 07/01/2016.



TENNESSEE

APPENDIX C-III

Longshore and Harbor Workers' Compensation Act

Change in the Minimum and Maximum Weekly Benefits, Effective October 1, 2015

In the Longshore And Harbor Workers' Compensation Act , maximum and, for certain benefit types, minimum workers compensation indemnity benefit provisions are dependent upon the national average weekly wage (NAWW). The impacts summarized in the table below result from anticipated changes in workers compensation costs due to the change in the NAWW from \$688.51 ("current") to \$703.00 ("revised"), and apply to injuries occurring on or after October 1, 2015.

The approach used in calculating the effects of a change in the NAWW is as follows:

1. Obtain the latest available NAWW from the United States Department of Labor, Division of Longshore and Harbor Workers' Compensation (DLHWC).
2. Calculate the minimum and maximum benefits by benefit payment type that are dependent upon and expressed as a percentage of the current and revised NAWW.
3. Using a countrywide distribution of workers and their wages¹, indexed to the Longshore And Harbor Workers' Compensation Act average weekly wage², determine expected current and revised average weekly benefits by benefit payment type (and dependency type, as appropriate)³.
4. Use the above-calculated average weekly benefits to determine the indemnity benefit costs for each injury type (Fatal, Permanent Total, Permanent Partial, and Temporary Total)⁴ prior to and subsequent to the change in the NAWW. Calculate the ratio of the revised indemnity benefit costs to current indemnity benefit costs for each injury type to determine the impact by injury type from the change in the NAWW.
5. Determine the indemnity cost distribution by injury type⁵.
6. Using the indemnity cost distribution (Step 5) and the effects by injury type (Step 4), calculate the effect of the change in NAWW on total indemnity benefit costs.
7. Multiply the impact on total indemnity benefit costs (Step 6) by the percentage of losses attributed to indemnity benefits to determine the impact of the change in the NAWW on overall benefit costs.

Type of Injury	Percentage of Losses	Effect (%)
Fatal	3.8%	+ 0.4
Permanent Total	0.9%	+ 0.3
Permanent Partial	41.1%	+ 0.1
Temporary Total	9.2%	+ 0.3
Total Indemnity	55.0%	+ 0.2
Medical	45.0%	0.0
Total	100.0%	+ 0.1

¹ Based on NCCI Detailed Claim Information data.

² Bureau of Labor Statistics Quarterly Census of Employment and Wages, for all private sector employment.

³ For states where the rate of compensation is based on spendable wages, state and federal tax withholding tables are used in conjunction with pertinent assumptions (e.g., number of dependents).

⁴ Various distributions based on internal and external data are employed in determining the impact by type of injury. For example, for Fatal injuries, a countrywide distribution of average ages and dependents by type (e.g., spouse, spouse with one child, parent, etc.) is used in calculating mortality-adjusted annuity values under both the current and revised weekly maximum benefits, with the likelihood of remarriage incorporated as applicable.

⁵ NCCI Unit Statistical Plan data for the 36-month policy period ending 12/31/2012 on the 10/01/2014 law level and developed to an ultimate basis by type of injury.



TENNESSEE

APPENDIX C-IV

U.S. Longshore and Harbor Workers' Compensation Act Assessment

The F-class and Program II, Option II maritime class voluntary loss costs and assigned risk rates include the following provision for the federal assessment:

1.) Estimated Total Expense Needed for 2016 *	110,000,000
2.) Compensation Payments Reported (on indemnity only) in 2015 *	951,583,132
3.) Assessment Rate on Indemnity Losses (1) / (2)	11.6%

Breakdown of Losses Under the Longshore and Harbor Workers Act

4.) Indemnity Losses (Combination of 1st through 3rd reports) #	40,877,657
5.) Medical Losses (Combination of 1st through 3rd reports) #	33,494,612
6.) Total Losses (4) + (5)	74,372,269
7.) Assessment Rate on Total Losses { (3) x (4) } / (6)	6.4%

* Source: U.S. Department of Labor

Source: On-leveled and developed USL&HW losses - statistical plan data



TENNESSEE

APPENDIX D

Determination of Assigned Risk Rate Level Change

Section A - Derivation of the Assigned Risk Loss Cost Multiplier

This filing proposes a -10.7% overall average change to the current assigned risk rate level. For all classifications, an assigned risk multiplier is applied to the voluntary loss costs proposed effective March 1, 2017 in order to convert to assigned risk rates.

(1) Current Assigned Risk Loss Cost Multiplier	1.660
(2) Proposed Assigned Risk Loss Cost Differential (Section B)	1.250
(3) Proposed Voluntary Loss-based Expense Provision (Exhibit II)	20.1%
(4) Indicated Assigned Risk Permissible Loss Ratio (Section C)	63.2%
(5) Proposed Uncollectible Premium Provision	1.032
(6) Indicated Assigned Risk Loss Cost Multiplier = $\{[(2) / [1.0 + (3)]] / (4)\} * (5)$	1.700
(7) Indicated Change in the Assigned Risk Loss Cost Multiplier = $[(6) / (1)] - 1.0$	2.4%
(8) Proposed Voluntary Loss Cost Level Change (Exhibit I)	-12.8%
(9) Indicated Assigned Risk Rate Level Change = $\{[1.0 + (7)] \times [1.0 + (8)]\} - 1.0$	-10.7%



TENNESSEE

APPENDIX D

Determination of Assigned Risk Rates

Section B - Derivation of Assigned Risk Differential

Policy Year	(1) Standard Pure Premiums	(2) Unlimited Undeveloped Paid+Case Losses	(3) Ratio of Losses to Premiums (2)/(1)	(4) Indicated Assigned Risk Pure Prem Diff (Std Basis)
I. Assigned Risk Experience Valued as of 12/31/2015				
2005	28,330,725	47,024,216	1.660	
2006	22,818,261	44,809,931	1.964	
2007	16,917,663	36,846,487	2.178	
2008	12,336,863	26,310,422	2.133	
2009	11,340,557	23,597,450	2.081	
2010	11,965,080	29,350,192	2.453	
2011	14,941,483	24,515,007	1.641	
2012	17,883,557	20,911,099	1.169	
2013	23,575,852	24,744,571	1.050	
2014	29,274,746	35,516,882	1.213	
II. Statewide Experience Valued as of 12/31/2015				
2005	322,676,186	374,869,796	1.162	1.429
2006	347,326,290	417,022,085	1.201	1.635
2007	361,481,114	435,472,145	1.205	1.807
2008	351,693,299	374,834,823	1.066	2.001
2009	335,038,344	357,644,239	1.067	1.950
2010	354,230,346	358,528,874	1.012	2.424
2011	371,045,812	312,944,921	0.843	1.947
2012	373,800,794	309,085,313	0.827	1.414
2013	385,445,012	282,438,253	0.733	1.432
2014	408,544,545	280,441,295	0.686	1.768
(a) Indicated Standard Premium Program Impact Based on Experience				1.781
(b) Proposed Impact of Net Premium Programs				1.069
(c) Indicated Standard Premium Program Impact After Accounting for Net Premium Programs =(a)/(b)				1.666
(d) Proposed ARAP Impact				1.103
(e) Proposed Assigned Risk Differential				1.250
(f) Proposed Standard Premium Program Impact =(d) x (e)				1.379



TENNESSEE

APPENDIX D

Determination of Assigned Risk Rates

Section C - Expense Components of Assigned Risk Rate

The assigned risk expense provision including loss-based expenses is derived directly from the servicing carrier allowance, since this is the market-based cost to the assigned risk plan to have the plan serviced. The average commission rate, the profit and contingency provision, a provision for administrative expenses, and all taxes and assessments not included in the servicing carrier allowance must be added to the allowance to derive an average expense provision as a percentage of standard premium excluding the expense constants.

	<u>Expense Provisions</u> <u>Underlying Proposed Rates</u>
(1) Expense Constant	\$160
(2) Weighted-Average of Servicing Carrier Allowance Bids	20.2%
(3) Premium Tax	4.0%
(4) Assigned Risk Administration Expense (Selected Based on a Review of Approved Provisions in Other States)	4.0%
(5) Premium Discount as a Percentage of Standard Premium Excluding the Expense Constant (See Section D)	6.9%
(6) Expense Constant Premium as a Percentage of Standard Premium Excluding the Expense Constant (See Section D)	2.7%
(7) Servicing Carrier Allowance, Taxes and Administrative Expense Converted to a Standard Premium Excluding Expense Constant Basis = [(2) + (3) + (4)] x [1 - (5) + (6)] + (5) - (6)	31.2%
(8) Average Commission (See Section D)	5.6%
(9) Profit and Contingency Provision	0.0%
(10) Total Expense Provision in Rate = (7) + (8) + (9)	36.8%
(11) Permissible Loss Ratio in Rate = 100% - (10)	63.2%
(12) Current Permissible Loss Ratio in Rate	62.3%
(13) Impact on Rate due to Change in Expenses = [(12) / (11)] - 1	-1.4%
(14) Impact on Premium Due to Change in Expense Constant	-0.9%
(15) Impact on Premium Due to Change in Expenses	-2.4%



TENNESSEE

APPENDIX D

Determination of Assigned Risk Rates

Section D - Derivation of Premium Discount, Expense Constant and Commission as a Percentage of Premium

Premium Distribution by Layer for Assigned Risk Policies for Policy Years 2014 & 2015

	(1)	(2)	(3) ¹
Portion of Total Standard Premium	Standard Premium Excl Exp Cnst	Standard Premium Excl Exp Cnst Distribution	Premium Discounts
First \$1,000	16,347,930	14.2%	--
Next \$4,000	27,062,709	23.6%	--
Next \$95,000	61,897,214	54.0%	10.9%
Next \$400,000	9,331,360	8.1%	12.6%
Over \$500,000	135,196	0.1%	14.4%
Total	114,774,409	100.0%	6.9%

	(4)	(5)	(6) ²
Portion of Total Standard Premium	Standard Premium Incl Exp Cnst	Standard Premium Incl Exp Cnst Distribution	Commission Scale ³
First \$1,000	17,679,149	15.0%	8.0%
Next \$4,000	28,169,631	23.9%	6.0%
Next \$95,000	62,573,276	53.1%	5.0%
Next \$400,000	9,354,436	7.9%	3.0%
Over \$500,000	135,516	0.1%	3.0%
Total	117,912,008	100.0%	5.5%

(7) Expense Constant Premium as % of Standard Premium Excluding Expense Constant ⁴ = 2.7%

(8) Average Commission as % of Standard Premium Excluding Expense Constant ⁵ = 5.6%

¹ Totals represent weighted averages based on column (2).

² Totals represent weighted averages based on column (5).

³ Commissions paid in Tennessee are based on standard premium excluding expense constant premium. Source of the commission scale is NCCI's Basic Manual, Rule 4-H-6.

⁴ Based on assigned risk policy and premium totals for policy years 2014 and 2015 using the dominant state method for the classification of multistate policies.

⁵ (8) = (6)total * [1 + (7)]

