STATE FARM MUTUAL AUTOMOBILE INSURANCE COMPANY
BLOOMINGTON, ILLINOIS 61710
ACTUARIAL MEMORANDUM – RATE INCREASE

STATE FARM TAX QUALIFIED LONG TERM CARE INSURANCE POLICY FORM 97059MD
SIMPLE AUTOMATIC INCREASE BENEFIT RIDER FORMS 99589MD
COMPOUND AUTOMATIC INCREASE BENEFIT RIDER FORM 99590MD
NON-FORFEITURE RIDER FORM 99591MD

I. PURPOSE

The purpose of this memorandum is to demonstrate that the lifetime loss ratio of this product after the proposed rate increase meets the loss ratio requirements in Maryland. This memorandum is not suitable for other purposes.

II. GENERAL INFORMATION

A. Type of Policy: These are Individual Tax Qualified Long Term Care Insurance Policies.
B. Renewability: Guaranteed Renewable
C. Marketing Method: Sold through a captive agency force but are no longer marketed
D. Issue Ages: 18 through 84
E. Average Issue Age of inforce policies: 54

III. APPLICABILITY

This filing is applicable to all in-force policies and associated riders issued in Maryland on the above referenced forms. The 97059MD form was marketed in Maryland between October 1, 2004 and August 27, 2011. As of December 31, 2017, there were 571 policies in force on these forms in Maryland and 21,317 nationwide.

IV. DESCRIPTION OF POLICY DESIGN AND COVERAGE

A. Form 97059MD: This form provides comprehensive Long Term Care Insurance coverage. After meeting an elimination period, benefits are paid on an expenses incurred basis. Covered expenses include: Home and Adult Day Care, Long Term Care Facility, Alternate Care Facility, Caregiver Training, Bed Reservation, Respite Care, Home Modification, Durable Medical Equipment, and Medical Help System. Benefits may also be payable for other services, devices or types of care if they are part of an alternate plan of care which is agreed to by the insured, the insured's doctor, and State Farm. Premiums are waived while receiving care after the specified waiting period. For policies without increase benefit riders, a policyholder is also eligible to purchase additional coverage following specific birthday milestones.

B. Optional Simple Automatic Increase Benefit Rider Form 99589MD: provides inflation protection by giving a 5% simple automatic benefit increase for each policy year.

C. Optional Compound Automatic Increase Benefit Rider Form 99590MD: provides compound automatic benefit increases of 5% for each policy year.

D. Optional Shortened Benefit Period Non-forfeiture Rider Form 99591MD: provides shortened benefit period non-forfeiture benefit if policy lapses after the third policy year.

V. REASON FOR RATE INCREASE

A rate increase is necessary due to significantly higher anticipated lifetime loss ratios than expected. The higher loss ratios are primarily a result of lower voluntary lapse rates, lower mortality, and higher expected future claim costs.

The table below compares the present value of lifetime incurred losses using original morbidity assumptions and our current assumptions on a nationwide basis as outlined below in Section VI.

No claim cost margins are included in the table. Current lapse and mortality assumptions are used in the projections for both original and current morbidity assumptions.

PV Future Incurred Losses Original Claim Costs	PV Future Incurred Losses Current Claim Costs	Ratio of Current to Original
738,342,824	851,443,223	1.15

VI. MORBIDITY ASSUMPTIONS

Current claim costs were developed using 2011 Milliman Inc. internal claim cost guidelines. These guidelines are a cooperative effort of Milliman Health actuaries and represent a combination of their experience, research and judgment. These claim costs were developed based on the benefits provided under these forms.

The table below demonstrates our actual to expected loss ratio experience by year based on the actual distribution of business using the 2011 Milliman claim costs as our expected basis. State Farm experience shows an overall actual to expected ratio of 98.7%. The latest six years of experience show a lower actual to expected ratio than all years combined. As a result, we are proposing using a credibility weighted assumption using the past 6 years of actual experience that results in an ultimate claim cost level of 97.2% used in our projected experience.

Using the formula on page 22 of the American Academy of Actuaries Long-Term Care Credibility Monograph that takes into account claim variability, we calculated that we would need 2,732 claims to be fully credible. To date, we have had 372 claims on this block of business. Taking the square root of 372/2,732 results in an assignment of 36.9% credibility to State Farm experience. This is then applied to the past 6 years A to E of 92.3%. We assign the remaining 62.1% credibility to 100% of the 2011 Milliman claim costs. Combining the two results in our assumption of 97.2% of the 2011 Milliman claim costs.

The expected basis for the table below is the 2011 Milliman claims costs using actual termination information. This differs from the Maryland and Nationwide Actual to Expected exhibits attached to this filing in that the expected basis is actual sales and original pricing assumptions.

Year	Actual Loss Ratio	Expected Loss Ratio Based on 2011 Milliman Claim Costs	Actual to Expected Ratio
2004	0.0%	2.0%	0.0%
2005	2.5%	2.4%	106.9%
2006	0.6%	3.0%	21.4%
2007	4.9%	3.6%	138.0%
2008	6.2%	4.2%	147.3%
2009	4.7%	5.4%	86.3%
2010	8.7%	6.9%	124.7%
2011	12.5%	8.8%	142.4%
2012	9.3%	11.0%	84.4%
2013	11.2%	13.7%	82.1%
2014	15.9%	17.0%	93.6%
2015	20.5%	20.6%	99.3%
2016	25.3%	24.8%	101.9%
2017	25.8%	29.5%	87.5%
Total	**12.5%**	**12.7%**	**98.7%**

No future morbidity improvement was assumed in these claim costs.

VII. MORTALITY ASSUMPTION

Sex distinct mortality is now assumed to follow the 2012 IAM Static table. Data was broken down into 2 issue age groups, 0-59 and 60+. To gain credibility for both age groups, later durations were grouped together until a 500 death credibility level was reached, 14+ for age group 0-59 and 16+ for issue age group 60+. The selection factors for the first 19 years are based on actual mortality results on State Farm's long term care block. Actual and expected deaths include data from all policy forms for credibility purposes.

For issue ages 0-59, selection factors grade from 33% to 74% of the table over 13 years, with the ultimate factor being 74% in years 14 and beyond. The selection factors then are smoothed using linear interpolation from 74% to 119% by attained age 76. Mortality rates between durations are also smoothed using linear interpolation (these cells are highlighted in table below).

Duration	Actual Deaths	Expected Deaths Based on 2012 IAM	Actual to Expected	Actual to Expected using Smoothed Assumptions
1	80	240	33%	33%
2	140	248	56%	39%
3	136	261	52%	45%
4	139	272	51%	51%
5	179	283	63%	53%
6	161	292	55%	55%
7	180	303	60%	60%
8	208	313	66%	61%
9	203	316	64%	62%
10	199	317	63%	63%
11	200	317	63%	63%
12	209	314	67%	67%
13	222	302	73%	73%
14+	559	752	74%	74%

For issue ages 0-59, selection factors grade from 30% to 118% of the table over 15 years, with the ultimate factor being 119% in years 16 and beyond. Mortality rates between durations are smoothed using linear interpolation (these cells are highlighted in table below).

Duration	Actual Deaths	Expected Deaths Based on 2012 IAM	Actual to Expected	Actual to Expected using Smoothed Assumptions
1	169	561	30%	30%
2	311	583	53%	53%
3	385	608	63%	63%
4	410	628	65%	65%
5	480	645	74%	74%
6	476	660	72%	80%
7	575	677	85%	85%
8	610	695	88%	88%
9	670	710	94%	94%
10	747	722	103%	97%
11	731	735	99%	99%
12	758	743	102%	102%
13	834	738	113%	113%
14	805	682	118%	118%
15	680	574	118%	118%
16+	1,018	854	119%	119%

VIII. VOLUNTARY LAPSE RATE ASSUMPTIONS

Current voluntary lapse rates are based on our nationwide long term care lapse experience. All policy forms are included for credibility purposes except for form 97045. The following chart shows our actual lapse rate by duration through Dec. 31, 2016. These actual lapse rates by duration are used in the projection. The lapse rate assumed for projections of lifetime loss ratio in policy years 12+ is 0.72%.

Duration	Actual Exposures	Number of Lapses	Actual Lapse Rate	Original Pricing Lapse Rate	Actual to Expected Based on Original Pricing Assumption
1	124,690	13,949	11.19%	9.5%*	1.18
2	108,745	5,884	5.41%	6.0%*	0.90
3	99,666	3,387	3.40%	3.5%*	0.97
4	91,139	2,448	2.69%	2.5%*	1.08
5	83,480	1,800	2.16%	1.50%	1.44
6	75,502	1,417	1.88%	1.50%	1.25
7	68,625	1,098	1.60%	1.50%	1.07
8	62,808	790	1.26%	1.50%	0.84
9	55,106	593	1.08%	1.50%	0.72
10	45,105	450	1.00%	1.50%	0.67
11	33,593	351	1.05%	1.50%	0.7
12+	73,923	531	0.72%	1.50%	0.48

IX. SHOCK LAPSE ASSUMPTION

A shock lapse assumption of 3.31% after this proposed rate increase is included in our projections. Assumed lapse rates (see Section VIII) less than 3.31% are increased to 3.31% for the year following this rate increase. This assumption is based on lapse experience after rate increases implemented to date on policy form 97059 series policies. We will continue to closely monitor policyholder behavior after rate increases.

Below is a chart showing the number of policyholders who have received a rate increase and the number who have lapsed after an increase on the 97059 policy series as of December 31, 2017.

Number of Policyholders Receiving Rate Increase	Number of Policyholders Lapsing After Rate Increase	Lapse Rate
31,001	1,027	3.31%

X. HISTORY OF RATE ADJUSTMENTS

On September 18, 2013, a 15% average rate increase was approved for in-force policyholders. This increase was implemented beginning February 1, 2014.

On March 3, 2016, a 12.8% average rate increase was approved for in-force policyholders. This increase was implemented beginning August 1, 2016.

XI. AVERAGE ANNUAL PREMIUM

The average annual premium for this form and associated riders prior to the rate increase is:

Maryland $2,504
Nationwide $2,154

The average annual premium for this form and associated riders after the rate increase is:

Maryland $2,775
Nationwide $2,360

XII. MINIMUM LIFETIME LOSS RATIO

Policies written had no initial minimum loss ratio, but have a minimum loss ratio based on 58% of the original premium and 85% of any rate increase premium.

XIII. PAST, ANTICIPATED AND LIFETIME LOSS RATIO

Past and projected nationwide and Maryland experience are shown in the projection exhibits attached to this filing. Projected premiums are shown both with and without the proposed rate increase. Future incurred claims reflect a 10% moderately adverse claim cost margin. See section XV and section XVIII for further explanation.

Nationwide data is used to justify the proposed rates. The nationwide projection exhibit contains three columns of premiums. The first one titled "Earned Premium Original Rates" reflects the original premium with no rate increases. The second column, "Earned Premium Current Rates", applies this state's specific pattern of prior increases to the nationwide original premium. This is done to avoid subsidization amongst states due to the allowance/disallowance of needed rate increases. The final premium column, "Earned Premium with Proposed Increase", reflects the proposed increase applied nationwide. A summary of the resulting loss ratios is shown below.

The lifetime loss ratio is calculated as the sum of the accumulated value of past incurred claims and the present value of anticipated incurred claims divided by the sum of the accumulated value of past earned premium and the present value of the anticipated earned premium. The present values and accumulated values are calculated at 4.5%.

The following table shows the present and accumulated values of nationwide premiums and claims at the valuation rate of 4.5%.

	Earned Premium Current Rates	Earned Premium with Proposed Increase	Incurred Claims	Loss Ratio Current Rates	Loss Ratio with Proposed Rates
Past	592,500,688	592,500,688	67,212,083	11.3%	11.3%
Anticipated	499,140,192	536,549,579	936,587,545	187.6%	174.6%
Lifetime	1,091,640,880	1,129,050,267	1,003,799,629	92.0%	88.9%

XIV. ORIGINAL PRICING MODERATELY ADVERSE

The following separate occurrences are shown as examples of what was considered to be moderately adverse experience in the original pricing assumptions. Any combination of assumptions that results in a similar decrease in profitability would also be considered moderately adverse.

- 10% increase in claim costs
- 100 basis point drop in investment income
- Non-commission renewal expenses increase by 50%
- 20% drop in mortality rate
- 50% drop in voluntary lapse rate assumption in every duration

Mortality
From Section VII above, actual deaths are approximately 48% less than the originally anticipated deaths. Therefore, mortality experience is outside the originally prescribed moderately adverse definition and a rate increase is justified.

Voluntary Lapse Rate
We are currently projecting a 0.72% ultimate lapse rate. This is less than 1/2 of the originally priced ultimate lapse rate of 1.5%. The lower voluntary lapse rate has had a significant impact on our future lifetime loss ratios and has contributed to our need for a rate increase.

Morbidity (Claim Costs)
On a lifetime basis, updated claim costs are 15% higher than our original claim costs. Therefore, morbidity is outside the originally prescribed moderately adverse definition and a rate increase is justified. No margins for moderately adverse experience were included in the projections used to create the table in Section V.

As shown above, the original pricing moderately adverse assumptions have been breached and a rate increase is justified.

XV. MAXIMUM ALLOWABLE RATE INCREASE

The maximum allowable rate increase was calculated so that the sum of:
(a) The lesser of:
  (i) The accumulated value of actual past incurred claims; and
  (ii) The accumulated value of expected past claims including margins for moderately adverse experience ($78,631,136).
(b) The present value of projected incurred claims including margins for moderately adverse experience

Is equal to the sum of:
(c) The accumulated value of past original premium and the present value of future projected original premium times the greater of:
  (i) 58%; and
  (ii) The lifetime loss ratio consistent with the original filing including margins for moderately adverse experience.
(d) The accumulated value of any prior rate increase premium and the present value of future projected rate increase premium times 85%.

Actual past claims are less than expected past incurred claims; therefore, actual past claims are used in the calculation.

The lifetime loss ratio consistent with the original filing including margins for moderately adverse experience is 72.6%.

This methodology results in an indicated average rate increase of 45.8% and a lifetime loss ratio of 76.0%.

A 10% claim cost margin for adverse experience was included in the calculations for this method.

This increase is based on nationwide data and assumes the 15% average increase that was implemented on February 1, 2014 and the 12.8% average increase that was implemented on August 1, 2016 were applied nationwide. 45.8% is the indicated rate increase in addition to the 15% and 12.8% that were already implemented.

XVI. SUMMARY OF PROPOSED RATE INCREASE

We are proposing an average rate increase of 9.6% based on the nationwide distribution of business. This results in an average increase of 10.8% in Maryland reflecting differences between the Maryland and nationwide distribution of business.

In accordance with the Code of Maryland Regulations 31.14.01.04A(5), we are proposing a maximum increase of 15%. The proposed increase will vary by benefit period and inflation protection and will range from 0% to 15%. This proposed increase is reduced in cases where the maximum proposed increase would cause the new rates to be higher than the corresponding rate on our most recently marketed long term care insurance product.

Although a rate increase larger than 10.8% can be justified at this time, State Farm is not currently seeking a higher increase. We will continue to monitor emerging experience and anticipate further increases in the future.

A comparison of rates before and after the proposed change is included in the supporting documentation.

The renewal rate schedule after this rate increase is implemented will not be greater that the new business premium rate schedule.

The proposed effective date of the rate increase is approximately 135 days after approval.

XVII. CONTINGENT BENEFIT UPON LAPSE

This increase will trigger the contingent benefit upon lapse for 12 policyholders.

XVIII. MODERATELY ADVERSE ASSUMPTIONS

A 10% margin on claim costs is included in this filing to reflect moderately adverse experience.

Moderately adverse experience as used in the Actuarial Certification is defined as any combination of changes in morbidity, mortality, and voluntary lapse rates that results in a similar reduction to profitability as the 10% claim cost margin included in this filing.

XIX. ACTUAL COMPARED TO PREVIOUS FILING STLH-130316008

Attached to this filing is a comparison of actual loss ratios from 2016 and 2017 compared to the loss ratios that were projected for those years in the previously approved filing. This exhibit is intended to fulfill the actual to expected reporting requirements.

XX. CERTIFICATION

I certify that to the best of my knowledge this rate filing is in compliance with the applicable laws and rules of your state, and complies with all applicable Actuarial Standards of Practice including Actuarial Standard of Practice No. 8, “Regulatory Filings for Health Benefits, Accident & Health Insurance, & Entities Providing Health Benefits” and Actuarial Standard of Practice No. 18, “Long-Term Care Insurance”.

At this time, we cannot certify that if the requested premium rate schedule increase is implemented and the underlying assumptions are realized, that no further premium rate schedule increases are anticipated. We have chosen to limit our requested rate increase at this time; therefore further rate increases will be necessary.

______________________________	July 13, 2018
Jeff Mueller, FSA, MAAA	Date