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

STATE FARM TAX QUALIFIED LONG TERM CARE INSURANCE POLICY FORM 97058MD
SIMPLE AUTOMATIC INCREASE BENEFIT RIDER FORM 99572MD
COMPOUND AUTOMATIC INCREASE BENEFIT RIDER FORM 99573MD
NON-FORFEITURE RIDER FROM 99574MD

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 minimum 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: These policies were sold through a captive agency force but are no longer sold
D. Issue Ages: 18 through 84
E. Average Issue Age of in-force policies: 53

III. APPLICABILITY

This filing is applicable to all in-force policies and associated riders issued in Maryland on the above referenced forms. These forms were marketed in Maryland between December 1, 2002 and September 30, 2004. These forms are no longer marketed in any state. As of December 31, 2017, there were 358 policies in-force on these forms in Maryland and 44,248 nationwide.

IV. DESCRIPTION OF POLICY DESIGN AND COVERAGE

A. Form 97058MD: 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, 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 in a facility after the specified waiting period.

B. Optional Simple Automatic Increase Benefit Rider Form 99572MD: Provides inflation protection by giving a 5% simple automatic benefit increase for each policy year.

C. Optional Compound Automatic Increase Benefit Rider Form 99573MD: Provides compound automatic benefit increases of 5% for each policy year.

D. Optional Non-forfeiture Rider Form 99574MD: Provides shortened benefit period if policyholder lapses coverage after the third year. Total benefits available equal the sum of all premiums paid in while coverage was in-force.

V. REASON FOR RATE INCREASE

A rate increase is necessary due to significantly higher anticipated and 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
1,477,386,548	2,120,032,586	1.43

VI. MORBIDITY ASSUMPTION

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 107.5%. Experience from 2007-2017 provided a cumulative actual to expected ratio of 104.7%. 104.7% of the Milliman claim costs was chosen as the ultimate claim cost level in our projected experience.

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
2001	0.0%	3.0%	0.0%
2002	0.7%	3.1%	22.8%
2003	7.0%	3.9%	180.0%
2004	5.9%	5.4%	107.9%
2005	12.5%	7.3%	170.4%
2006	13.3%	9.3%	143.1%
2007	12.9%	11.4%	112.7%
2008	12.7%	13.9%	91.5%
2009	19.2%	16.8%	114.3%
2010	18.3%	20.0%	91.3%
2011	19.4%	23.3%	83.4%
2012	30.4%	26.4%	115.2%
2013	29.6%	30.2%	98.2%
2014	47.6%	35.5%	134.1%
2015	42.3%	41.5%	102.0%
2016	50.7%	48.4%	104.7%
2017	56.2%	56.3%	99.8%
Total	**25.6%**	**23.8%**	**107.5%**

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

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%	5.5%	2.03
2	108,745	5,884	5.41%	4.5%	1.20
3	99,666	3,387	3.40%	4.5%	0.76
4	91,139	2,448	2.69%	4.0%	0.67
5	83,480	1,800	2.16%	3.0%	0.72
6	75,502	1,417	1.88%	2.0%	0.94
7	68,625	1,098	1.60%	2.0%	0.80
8	62,808	790	1.26%	2.0%	0.63
9	55,106	593	1.08%	2.0%	0.54
10	45,105	450	1.00%	2.0%	0.50
11	33,593	351	1.05%	2.0%	0.53
12+	73,923	531	0.72%	2.0%	0.36

IX. SHOCK LAPSE ASSUMPTION

A shock lapse assumption of 2.52% after this proposed rate increase is included in our projections. Assumed lapse rates (see Section VIII) less than 2.52% are increased to 2.52% for the year following this rate increase. This assumption is based on lapse experience after rate increases implemented to date on policy form 97058 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 97058 policy series as of December 31, 2017.

Number of Policyholders Receiving Rate Increase	Number of Policyholders Lapsing After Rate Increase	Lapse Rate
70,273	1,771	2.52%

X. HISTORY OF RATE ADJUSTMENTS

On April 16, 2013, a 14% average rate increase was approved for in-force policyholders. This increase was implemented beginning September 1, 2013.

On August 27, 2014, a 14.9% average rate increase was approved for in-force policyholders. This increase was implemented beginning January 1, 2015.

On November 12, 2015, a 13.4% average rate increase was approved for in-force policyholders. This increase was implemented beginning April 1, 2016.

XI. AVERAGE ANNUAL PREMIUM

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

Maryland	$2,296
Nationwide	$1,990

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

Maryland	$2,589
Nationwide	$2,234

The nationwide average annual premium figure was calculated assuming that the proposed rate increase in Maryland is implemented nationwide.

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 exhibits entitled Actual & Projected Nationwide Experience Exhibit and Actual & Projected Maryland Experience Exhibit. 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	1,337,127,598	1,337,127,598	287,067,590	21.5%	21.5%
Anticipated	870,827,076	957,728,344	2,332,035,844	267.8%	243.5%
Lifetime	2,207,954,674	2,294,855,942	2,619,103,435	118.6%	114.1%

We have excluded some policyholders from the past experience and the projections. The excluded policyholders converted from an older policy form and did so without evidence of insurability. Including that experience would result in a higher indicated rate change. These policyholders will receive the approved rate increase.

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.

- 29% drop in mortality rate
- 50% drop in voluntary lapse rate assumptions in every duration
- 10% increase in morbidity (claim costs)
- 100 basis point drop in investment income

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
Although Section VIII shows lapse rates higher than originally projected, lapses have been significantly below expectations in later durations. Although lapse rates are not 50% lower in all durations, we are currently projecting a 0.72% ultimate lapse rate, which is 64% lower than our originally estimated 2% ultimate lapse rate. 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 43% 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 provided in Section V. 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 ($245,651,715).
(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%.

Expected past claims are less than actual past incurred claims; therefore, expected past claims are used in the calculation to demonstrate that past losses are not being recouped.

The lifetime loss ratio consistent with the original filing including margins for moderately adverse experience is 77.1%.

This methodology results in an indicated average rate increase of 114.4% and a lifetime loss ratio of 81.7%.

This increase is based on nationwide data and assumes the 14% average increase that was implemented on September 1, 2013, the 14.9% average increase that was implemented on January 1, 2015, and the 13.4% average increase that was implemented on April 1, 2016 were applied nationwide. 114.4% is the indicated rate increase in addition to the 14%, 14.9%, and 13.4% that were already implemented.

XVI. CONTINGENT BENEFIT UPON LAPSE

It is expected that this increase will trigger the contingent benefit upon lapse for 34 policyholders.

XVII. SUMMARY OF PROPOSED RATE INCREASE

We are proposing an average rate increase of 12.3% based on the nationwide distribution of business. This results in an average increase of 12.8% 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%. This proposed increase is reduced in cases where this maximum 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 12.8% can be justified at this time, State Farm is not currently seeking a higher increase based on the Code of Maryland Regulations 31.14.01.04A(5) . 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.

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. ASSUMPTION VALIDATION

The mortality, lapse, and morbidity assumptions used in this filing and the prior filing were reviewed internally and approved by management.

Within the mortality study, the mortality factors were adjusted to reflect an additional year of data.

Within the lapse study, the lapse assumptions were adjusted to reflect an additional year of data.

We continue to use the 2011 Milliman claim cost guidelines for all projections and rate filings.

XX. ACTUAL COMPARED TO PREVIOUS FILING STLH-130066514

Attached to this filing is a comparison of actual loss ratios from 2015-2017 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.

XXI. ACTUARIAL 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. Our requested rate increase is limited by the Code of Maryland Regulations 31.14.01.04A(5); therefore further rate increases will be necessary.

Jeff Mueller, FSA, MAAA	July 13, 2018 Date