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

STATE FARM TAX QUALIFIED LONG TERM CARE INSURANCE POLICY FORM 97045MD.1
SIMPLE AUTOMATIC INCREASE BENEFIT RIDER FORM 99504MD
COMPOUND AUTOMATIC INCREASE BENEFIT RIDER FORM 99505MD

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
D. Issue Ages: ages 30 through 84
E. Average Issue Age: 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 February 1, 1998 and November 30, 2002. These forms are no longer marketed in any state. As of December 31, 2017, there were 1,076 policies in force on these forms in Maryland and 38,721 nationwide.

IV. DESCRIPTION OF POLICY DESIGN AND COVERAGE

A. Form 97045MD.1: 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 99504MD: provides inflation protection by giving a 5% simple automatic benefit increase for each policy year.

C. Optional Compound Automatic Increase Benefit Rider Form 99505MD: provides compound automatic benefit increases of 5% for each policy year.

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 claims costs.

Original persistency assumptions combined both lapses and mortality. For the actual to expected comparison, actual mortality and lapse rates are combined.

Duration	Actual Total Termination Rate	Expected Total Termination Rate	Actual to Expected
1	7.7%	9.2%	83%
2	3.8%	6.6%	58%
3	2.6%	5.7%	45%
4	2.0%	5.6%	36%
5	1.8%	5.6%	32%
6	1.5%	5.6%	26%
7	1.4%	5.6%	26%
8	1.5%	5.6%	27%
9	1.6%	6.0%	27%
10	1.6%	6.0%	27%
11	1.6%	6.2%	26%
12	1.6%	6.3%	25%

The table below compares the present value of future incurred losses using original morbidity assumptions and our current assumptions as outlined below in Section VI. 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
1,789,753,388	2,675,391,967	1.49

VI. CURRENT 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. State Farm experience shows an overall actual to expected ratio of 104.0%. As a result, 104.0% of the Milliman claim costs was chosen as the ultimate claim cost level.

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
1997	0.0%	8.3%	0.0%
1998	0.3%	7.8%	3.6%
1999	5.9%	8.7%	67.3%
2000	9.8%	9.8%	100.7%

2001	7.9%	11.3%	69.8%
2002	11.8%	14.5%	81.3%
2003	19.2%	19.0%	101.4%
2004	30.4%	24.0%	126.8%
2005	23.8%	29.8%	79.9%
2006	46.1%	36.3%	126.8%
2007	39.2%	43.8%	89.6%
2008	58.0%	52.1%	111.4%
2009	64.2%	61.3%	104.8%
2010	67.3%	71.4%	94.2%
2011	86.6%	82.7%	104.7%
2012	106.5%	95.6%	111.4%
2013	103.1%	109.8%	93.9%
2014	126.9%	126.3%	100.5%
2015	173.3%	144.9%	119.6%
2016	176.9%	166.5%	106.2%
2017	198.6%	191.0%	104.0%
Total	67.3%	64.7%	104.0%

No future morbidity improvement was assumed in these claim costs.

Below is a comparison of our actual incurred losses to expected based on our original morbidity assumptions. The expected basis uses actual terminations (both lapse and mortality) to remove any effect that an assumed lapse or mortality assumption would have.

Calendar Year	Actual	Expected - Original Claim Costs	Actual to Expected
1997	0	83,425	0.0%
1998	13,981	1,037,990	1.3%
1999	1,040,702	3,679,983	28.3%
2000	3,866,388	8,455,715	45.7%
2001	4,846,462	14,028,171	34.5%
2002	7,876,112	17,186,564	45.8%
2003	12,393,524	19,378,181	64.0%
2004	18,786,160	21,219,939	88.5%
2005	14,576,901	22,965,958	63.5%
2006	27,730,300	24,805,999	111.8%
2007	23,175,046	26,884,973	86.2%
2008	32,952,600	29,199,744	112.9%
2009	35,551,860	31,784,497	111.9%
2010	36,198,450	34,607,741	104.6%

2011	46,180,055	37,703,103	122.5%
2012	55,817,758	41,226,016	135.4%
2013	52,099,397	44,763,817	116.4%
2014	60,974,152	48,515,770	125.7%
2015	79,224,772	52,549,660	150.8%
2016	80,147,761	57,062,281	140.5%
2017	83,802,508	61,497,190	136.3%
Total	677,254,889	598,636,715	113.1%

VII. CURRENT 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. Please see Appendix A for a detailed issue age vs. duration mortality table.

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. CURRENT VOLUNTARY LAPSE RATE ASSUMPTIONS

Current voluntary lapse rates are based on our nationwide long term care lapse experience from the 97045 form. The following chart shows our actual lapse rate by duration through Dec. 31, 2016. The lapse rate assumed for projections of lifetime loss ratio in policy years 12+ is 0.46%.

Duration	Actual Exposures	Number of Lapses	Assumed Lapse Rate
1	61,805	4,667	7.55%
2	57,009	2,027	3.55%
3	54,764	1,229	2.24%
4	53,280	871	1.63%
5	52,127	694	1.33%
6	51,107	497	0.97%
7	50,275	412	0.82%
8	49,456	398	0.80%
9	48,600	383	0.79%
10	47,251	313	0.66%
11	43,675	253	0.58%
12+	159,423	740	0.46%

IX. CURRENT SHOCK LAPSE ASSUMPTION

A shock lapse assumption of 1.46% after this proposed rate increase is included in our projections. Assumed lapse rates (see Section VIII) less than 1.46% are increased to 1.46% for the year following this rate increase. This assumption is based on lapse experience after rate increases implemented to date on policy form 97045 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 97045 policy series as of December 31, 2017.

Number of Policyholders Receiving Rate Increase	Number of Policyholders Lapsing After Rate Increase	Lapse Rate
92,979	1,358	1.46%

X. HISTORY OF RATE ADJUSTMENTS

On May 9, 2000, we filed new rate tables to be used for new business on these forms. This change was implemented on September 1, 2001.

On May 11, 2012, a 15% average rate increase was approved for in-force policyholders. This increase was implemented beginning December 1, 2012.

On April 3, 2013, a 15% average rate increase was approved for in-force policyholders. This increase was implemented beginning December 1, 2013.

On August 21, 2015, a 14.6% average rate increase was approved for in-force policyholders. This increase was implemented beginning January 1, 2016.

On May 24, 2016, a 14.3% average rate increase was approved for in-force policyholders. This increase was implemented beginning January 1, 2017.

XI. AVERAGE ANNUAL PREMIUM

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

Maryland	$2,005
Nationwide	$1,789

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

Maryland	$2,289
Nationwide	$2,035

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

XII. MINIMUM LIFETIME LOSS RATIO

The minimum lifetime loss ratio for policies issued prior to October 1, 2002 is 60%. Those issued on or after October 1, 2002 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.

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	1,687,240,507	1,687,240,507	900,554,510	53.4%	53.4%
Anticipated	610,045,040	678,085,892	2,675,391,967	438.6%	394.6%
Lifetime	2,297,285,547	2,365,326,399	3,575,946,477	155.7%	151.2%

XIV. MAXIMUM ALLOWABLE RATE INCREASE

This form consists of policies written both before and after Maryland implemented the rate stability regulations for Long Term Care. As of December 31, 2017 there are 862 policies inforce that were written prior to rate stabilization, and 214 policies in force that were written after rate stabilization. We will demonstrate loss ratio compliance under the two different methods.

Method 1 – Pre Rate Stability

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 ($510,748,027).

(b) The present value of projected incurred claims.

Is equal to:

(c) The accumulated value of past premium and the present value of future projected original premium times the greater of:
  - (i) 60%; and
  - (ii) The lifetime loss ratio consistent with the original filing.

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 is 70.5%.

This methodology results in an indicated average rate increase of 364.2% and a lifetime loss ratio of 79.1%.

This increase is based on nationwide data and assumes that the 15% average increase that was implemented on December 1, 2012, the 15% average increase that was implemented on December 1, 2013, the 14.6% average increase that was implemented on January 1, 2016, and the 14.3% average increase that was implemented on January 1, 2017 were applied nationwide. 364.2% is the indicated rate increase in addition to the first 15%, second 15%, 14.6%, and 14.3% that were already implemented.

Method 2 - Post-Rate Stability

PV Incurred Losses = 58% * (PV Original Premium) + 85% * (PV Increases)

3,575,946,477 = .58 * (1,959,021,468) + .85*(2,297,285,547 – 1,959,021,468) + .85 * (Proposed Increase)

2,152,189,559 = .85 * (Proposed Increase)

2,531,987,717 = Proposed Increase

Divide proposed increase by future premium including prior increases:

2,531,987,717/610,045,040 = 415.0%

This increase is based on nationwide data and assumes that the 15% average increase that was implemented on December 1, 2012, the 15% average increase that was implemented on December 1, 2013, the 14.6% average increase that was implemented on January 1, 2016, and the 14.3% average increase that was implemented on January 1, 2017 were applied nationwide.

XV. SUMMARY OF PROPOSED RATE INCREASE

We are proposing an average rate increase of 13.8% based on the nationwide distribution of business. This results in an average increase of 14.1% 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%. Policyholders with a 2-year benefit period and no inflation protection will not receive an increase.

This proposed increase is further reduced in cases where this maximum increase would cause the new rates to be higher than the corresponding rate on our currently marketed long term care insurance product.

Although a rate increase larger than 14.1% 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 than the new business premium rate schedule.

XVI. CONTINGENT BENEFIT UPON LAPSE

The policies sold on this block are outside of the scope of the contingent benefit upon lapse provision described in COMAR 31.14.01.13(E) as they were all sold prior to April 1, 2003.

XVII. EFFECTIVE DATE

These rates will be implemented approximately 135 days after approval.

XVIII. POLICYHOLDER NOTIFICATION

Policyholders will be notified at least 90 days before their premium increase is effective. A generic policyholder letter is included as an exhibit entitled 97045 5th Round MD Customer Letter.

XIX. ASSUMPTION CREDIBILITY

Claim costs, mortality, and lapse assumptions were developed using nationwide data. We assigned zero credibility to Maryland experience, although it is included in the nationwide data.

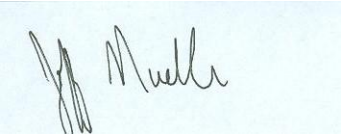
XX. ACTUAL COMPARED TO PREVIOUS FILING STLH-130580947

Attached to this filing is a comparison of actual loss ratios from 2016-2017 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. 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 and Health Insurance, and Entities Providing Health Benefits" and Actuarial Standard of Practice No. 18, "Long-Term Care Insurance". Additionally, policy design, underwriting, and claims adjudication practices have been taken into consideration when determining the appropriate rate increase.

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 are limited by the Code of Maryland Regulations 31.14.01.04A(5)to a maximum increase of 15%; therefore further rate increases will be necessary.



Jeff Mueller, FSA, MAAA

July 13, 2018
Date