## Mark D. Newton, FSA, MAAA

August 18, 2019
Maryland Insurance Administration
200 St. Paul Place, Suite 2700, Baltimore, MD 21202

## Re: LTC2007

Issued by Metropolitan Life Insurance Company (MetLife)

Attached is the filing for the captioned forms. This letter provides an overview of the filing and notes on some of the content. After a careful review of earlier filings, we have endeavored to reflect in this filing additional content based on previous questions submitted by your Department. Hopefully, this will make your review easier and more effective.

## Filing Overview

In addition to this overview, this filing consists of the Actuarial Memorandum and Attachments on specific aspects of the Maryland Administrative Code as well as supporting data based on earlier reviews. These documents are outlined and summarized here for your convenience.

| Title | Description |
| :---: | :---: |
| Actuarial Memorandum Exhibit I-A | Lifetime Loss Ratio ("LLR") <br> - Nationwide experience <br> - Without/with proposed rate increase of $15.00 \%$ <br> - Weighted average statutory rate $4.00 \%$ <br> LLR without rate increase - $94.5 \%$ <br> LLR with rate increase - 86.4\% |
| Exhibit II-A | Demonstration of rate action meeting Rate Stability (58/85) limitations |
| Exhibit I-B | Lifetime Loss Ratio ("LLR") <br> - Maryland experience <br> - Without/with proposed rate increase of $15.00 \%$ <br> - Weighted average statutory rate $4.00 \%$ <br> LLR without rate increase - 84.9\% <br> LLR with rate increase - 78.1\% |
| Exhibit II-B | Demonstration of rate action meeting Rate Stability (58/85) limitations |


| Review of Prior Correspondence | Attachment 1 - Assumptions Summary |
| :--- | :--- |
|  | Attachment 2 - A/E Ratios (Policy Duration) |
|  | Attachment 3 - A/E Ratios (Calendar Year) |
|  | Attachment 4-A/E Ratios (Lapse, Mortality, |
|  | Incidence, Claim Termination) |

Rationale for the Rate Increase Request
Exhibit I demonstrates that the combination of historical and projected experience using the most recent Best Estimate assumptions is clearly far beyond the expected loss ratio using the original pricing assumptions. Attachments 2 and 3 support the development of the experience by analyzing the Actual-toExpected Ratios by Calendar Year and Policy Duration.

Attachment 1 compares the development of the changes in assumptions from the time of original pricing to the latest Experience Study. Generally, worse than expected morbidity and lower decrements are the primary reasons for the rate action.

## Assumption Setting and Review

All projection assumptions are based on the Experience Study performed each year. In general, the assumptions used in all projections are those that reproduce historical experience within a non-material degree of tolerance. Attachment 4 shows the Actual-to-Expected Ratios comparing the latest Best Estimate assumptions with the set of actual experience for Lapse, Mortality, Incidence, and Claim Termination.

Some actuarial judgment is used in areas where credibility or trending requires adjustment. In any case, the methodology, results, conclusions and use are prescribed by MetLife internal Standards and Actuarial Standards of Practice and are reviewed and approved by MetLife management, internal auditors, and external auditors.

## Calculation of the Rate Request

MetLife's evaluation of the Justifiable Rate Increase ("JRI") uses the industry standard "If Knew" basis. This method calculates the premium needed at time zero to achieve the original loss ratio if all current experience had been known at inception. Of course, the Company cannot retroactively charge such premiums, so all historical losses stemming from past premium shortfalls are taken by the Company.

## Additional Notes

COMAR 31.14.01.04A(5) states, "An insurer may not charge a renewal premium rate for a long-term care policy which exceeds by more than 15 percent any premium charged for the policy during the preceding 12 months." The requested rate increase for this filing is $15.00 \%$.

MetLife requests the rate action based on deviations from anticipated experience outlined in the Actuarial Memorandum and the supporting attachments. Lifetime Loss Ratios exceed all minimum requirements in Maryland as well as the application of rate stability standards even at the full requested rate action. In addition, though Maryland-only experience is not necessarily credible, the Maryland LLR's still meet the standards above at the full rate action level.

Despite the rate action requested, the experience of the block does not fully return to pricing levels. In general, the rate action restricts consideration of recovering historical losses by focusing on lifetime experience. We will continue, of course, to analyze and adjust experience assumptions and reserve the right to update those in the future along with requesting any resulting changes in premium rates.

The actuarial justification for experience analysis and projections, including assumptions and methods, are reflective of the Code of Professional Conduct and applicable Actuarial Standards of Practice. I am a Fellow of the Society of Actuaries and a Member of the American Academy of Actuaries, and I meet the Academy's qualification standards for preparing health rate filings and to render the actuarial opinion contained herein.

Thank you for your consideration. I look forward to hearing from you.
Sincerely,
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Mark D. Newton, FSA, MAAA
Actuarial Director, Metropolitan Life Insurance Company

# METROPOLITAN LIFE INSURANCE COMPANY 

# New York, NY <br> Actuarial Memorandum for Life Stage Advantage Series 

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## Policy Forms

The premium rate schedule increase for which we are seeking approval will apply to the following individual long-term care policy forms:

- LTC2007

These forms were developed as part of a nationwide series and were issued in Maryland from July 2009 to May 2011, but are no longer being marketed in any state. Nationwide, the last policies under this series were issued in 2011.

Policy forms LTC2007-MD (subsequently referred to as LTC2007) is an existing individual taxqualified policy forms and were previously approved in 2009, along with any rider or endorsement forms that were contemporaneously or subsequently approved for use with these policy forms. Note, however, that the increase will only apply to those policies issued to policyholders in your state in connection with policy applications dated after April 30, 2009.

Policy form LTC2007 provides comprehensive long-term care coverage.

## 1. Purpose of Filing

This actuarial memorandum has been prepared for the purpose of demonstrating that the anticipated loss ratio standard of this product meets the minimum requirements of your state and may not be suitable for other purposes.

## 2. Description of Benefits

LTC2007 is part of a nationwide series of individually underwritten policy forms which reimburses $100 \%$ of charges, up to a maximum benefit amount, for qualified long-term care services. Benefits are payable for room and board and the following services received in and provided by nursing home, hospice and assisted living facilities: nursing care, maintenance or personal care, therapy services and hospice care. The policy form also covers adult day care and home care service, including hospice care, therapy services and services provided by an independent caregiver and a social worker. Additionally, the policy provides additional benefits for alternate services, international coverage, and return of earned premium upon death.

Coverage is expressed as a combination of a monthly benefit amount and a total benefit amounts. Monthly benefit amount represents the maximum amount a policyholder may receive for covered services in a calendar month. Total benefit amount represents the maximum amount a policyholder may receive for covered services in the lifetime of the policy. Premium rates are determined on benefit duration. Benefit duration (in years) is defined as the ratio between the total benefit amount and the monthly benefit amount, divided by 12 .

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Benefit eligibility is based on the inability to perform at least two of six activities of daily living (ADLs) including bathing, continence, dressing, eating, toileting, and transferring, for a period of at least 90 days due to loss of functional capacity; or due to severe cognitive impairment.

Benefit payments commence after a specified number of days in a waiting period, selected at issue, which accumulate over the lifetime of the policy. The waiting period need not be satisfied before receiving coverage for needs assessment; however, receipt of these services does not count towards satisfying the waiting period. Waiver of premium is provided beginning on the first day of the policy month coincident with or following the day the insured becomes eligible for benefit payments (includes completion of the waiting period).

Contingent Benefit upon Lapse provides limited benefits if the insured lapses, or cancels the policy within 120 days of a substantial premium increase as defined in the policy.

At issue, the insured had the option of choosing one of the following benefit increase riders: $5 \%$ Automatic Compound Inflation Protection Rider, 3\% Automatic Compound Inflation Protection Rider, 5\% Simple Inflation Protection Rider, Graded Automatic Compound Inflation Protection Rider, Graded Automatic Compound Inflation Protection through Age 75 Rider, or Urban CPI Compound Inflation Protection Rider, Future Purchase Rider, Guaranteed Purchase Option Rider, Annual Purchase Inflation Protection Rider or Convertible Inflation Protection Rider.

At issue, the insured had the option of selecting the following riders: Cash Benefit Rider, Nonforfeiture Coverage Rider, Shared Care Rider and Ten Year Premium Payment Rider.

## 3. Renewability

These policy forms are guaranteed renewable for life.

## 4. Applicability

This filing is applicable to in-force policies only, as these policy forms are no longer being sold in the market. The premium changes will apply to the base forms as well as all applicable riders. Note, however, that the increase will only apply to those policies issued to policyholders in your state in connection with policy applications dated after April 30, 2009.

## 5. Actuarial Assumptions

a. Expected Claim Costs are the product of attained age frequency rates and continuance curves, adjusted by utilization factors and underwriting selection factors based on actual experience through June 30, 2017.
b. Voluntary Termination Rates vary by duration as developed from actual experience through June 30, 2017 and are shown in the following table:

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Voluntary Termination Rates

| Policy Duration | Lapse Rate |
| :---: | :---: |
| 1 | $5.00 \%$ |
| 2 | $4.50 \%$ |
| 3 | $4.00 \%$ |
| 4 | $3.50 \%$ |
| 5 | $2.50 \%$ |
| 6 | $2.00 \%$ |
| 7 | $1.80 \%$ |
| 8 | $1.50 \%$ |
| 9 | $1.30 \%$ |
| 10 | $1.10 \%$ |
| $11+$ | $0.90 \%$ |

In the year of rate increase implementation, it is assumed that an additional $3.22 \%$ of policies lapse and there is $2.14 \%$ net reduction to future premiums and benefits due to benefit downgrades. There is no adverse selection assumed due to the additional lapse rates.
c. Mortality $88 \%$ of Annuity 2000 Basic Table with selection consistent with experience.
d. Expenses Expenses have not been explicitly projected. It is assumed that the originally filed expense assumptions remain appropriate.

The above assumptions are based on actual inforce experience of MetLife and are deemed reasonable for these particular policy forms. In establishing the assumptions described in this section, the policy design, underwriting, and claims adjudication practices for the above-referenced policy forms were taken into consideration.

## 6. Marketing Method

These policy forms were marketed by agents and brokers of MetLife.

## 7. Underwriting Description

These policy forms were fully underwritten with the use of various underwriting tools in addition to the application, which may have included medical records, an attending physician's statement, telephone interview and/or face-to-face assessment.

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## 8. Premiums

Premiums are unisex, but vary by issue age, rating class, coverage amount, benefit duration the waiting period, the payment method, premium mode and the selection of any other options or riders. Benefit duration, in years, is defined as (Total Benefit Amount/Monthly Benefit Amount)/12.

## 9. Issue Age Range

These policy forms were issued up to age 84

## 10. Area Factors

Area factors are not used for this product.

## 11. Premium Modalization Rules

The following modal factors are applied to the annual premium (AP):

| Premium Mode | Modal Factors |
| :---: | :---: |
| Annual | $1.00^{*} \mathrm{AP}$ |
| Semi-Annual | $0.51^{*} \mathrm{AP}$ |
| Quarterly | $0.265^{*} \mathrm{AP}$ |
| Monthly | $0.09^{*} \mathrm{AP}$ |

## 12. Reserves

Active life reserves have not been used in this rate increase analysis. Claim reserves as of December 31, 2017 have been discounted to the incurral date of each respective claim and included in historical incurred claims. Incurred but not reported reserve balances as of December 31, 2017 have been allocated to a calendar year of incurral and included in historical incurred claims.

## 13. Trend Assumptions

As this is not medical insurance, we have not included any explicit medical cost trends in the projections.

## 14. Past and Future Policy Experience

Nationwide and Maryland experience for policy form series LTC2007 are shown in Exhibit I-A and I-B, respectively.

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Historical experience is shown by claim incurral year. Claim payments and reserves were discounted to the mid-point of the year of incurral at the weighted average maximum valuation interest rate for contract reserves which is $4.00 \%$. Incurred but not reported reserve balances as of December 31, 2017 have been allocated to a calendar year of incurral and included in historical incurred claims.

Annual loss ratios are calculated, with and without interest, as incurred claims divided by earned premiums.

A lifetime loss ratio as of December 31, 2017 is calculated as the sum of accumulated past experience and discounted future experience where accumulation and discounting occur at the weighted average maximum valuation interest rate for contract reserves, which is $4.00 \%$.

## 15. Projected Earned Premiums and Incurred Claims

Earned premiums for projection years 2018 through 2098 are developed by multiplying each prior period's earned premium (starting with December 31, 2017 actual earned premium) by a persistency factor. For a year in which the rate increase is effective, the earned premium prior to the increase is multiplied by 1 plus the rate increase percent and an effectiveness factor.

Each projection year claim amount is calculated by multiplying incidence, continuance and utilization factors by the policy and rider benefits on a seriatim basis.

Present and accumulated values in the lifetime projections in Exhibit I-A and I-B are determined at the average maximum valuation interest rate for contract reserves applicable to LTC business issued in the years in which the applicable business of this filing were issued. The maximum valuation interest rate averages 4.00\%.

The assumptions used in the projections in Exhibit I-A and I-B were developed from the company's LTC insurance experience.

Projections in Exhibit II provide a demonstration that the sum of the accumulated value of incurred claims without the inclusion of active life reserves, and the present value of future projected incurred claims, without the inclusion of active life reserves, will not be less than the sum of the following:

1. Accumulated value of the initial earned premium times $58 \%$;
2. $85 \%$ of the accumulated value of prior premium rate schedule increases;
3. Present value of future projected initial earned premium times $58 \%$; and
4. $85 \%$ of the present value of future projected premium in excess of the projected initial earned premium.

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## 16. History of Previous Inforce Rate Increases

| Round | Authorized \% | Authorization Date | Implementation Date |
| :---: | :---: | :---: | :---: |
| 1 | $15.00 \%$ | $10 / 10 / 2017$ | $4 / 1 / 2018$ |
| 2 | $5.00 \%$ | $11 / 14 / 2018$ | $4 / 1 / 2019$ |

## 17. Requested Rate Increase

The company is requesting an increase of $15.00 \%$ for the policy forms listed above. Corresponding rate tables reflecting the $15.00 \%$ increase are included with this filing.

The actual rates implemented may vary slightly from those filed due to implementation rounding algorithms. Also note that the increase will only apply to those policies issued to policyholders in your state in connection with policy applications dated after April 30, 2009.

## 18. Analysis Performed

The initial premium schedule was based on pricing assumptions believed to be appropriate, given the information available, at the time the initial rate schedule was developed. The original pricing assumptions for claim costs, voluntary termination rates, and mortality were as follows:
a. Incidence and continuance rates: The morbidity assumptions used in the pricing were primarily based on the company's own experience. Since the company's own individual block of business was relatively new, these assumptions were modified to reflect the experience of other long term care business that MetLife issued or administered, and to incorporate industry expectation and competitive rate information. Morbidity selection factors were also applied to reflect the effect of underwriting. Due to lack of actual experience of the individual business, we used industry standard selection factors developed by our consultants. These issue-age and duration dependent selection factors are expected to be consistent with our underwriting methods in early durations. Due to lack of actual data, late duration selection factors primarily reflect industry expectations.
b. The original pricing expected voluntary termination rates varied by duration as shown in the following table:

| Policy Duration | Lapse Rate |
| :---: | :---: |
| 1 | $5.50 \%$ |
| 2 | $3.00 \%$ |
| 3 | $1.75 \%$ |
| 4 | $1.50 \%$ |
| 5 | $1.40 \%$ |
| 6 | $1.20 \%$ |

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| 7 | $1.05 \%$ |
| :---: | :---: |
| 8 | $0.95 \%$ |
| $9+$ | $0.90 \%$ |

c. The original pricing expected mortality rates were based on the company's own experience. The mortality rates used in the pricing were equal to $88 \%$ of the Annuity 2000 Basic Mortality Table with additional modifications to reflect the selection effects of underwriting.

As part of the in-force management of its long-term care insurance business, MetLife monitors its performance by completing periodic analyses of lapse rates, mortality rates, claim incidence rates, claim continuance rates and claim utilization rates. The findings from these analyses were used to determine the current experience assumptions. A model of this business was developed for use in the cash flow testing that is part of the company's annual statutory reporting requirements. Using this model, a future projection of these policies under the new experience assumptions was performed and the projected lifetime loss ratio for these policies was determined. For these policies, the past experience and future projections based on current experience assumptions combine to a resulting loss ratio that far exceeds both original pricing expectations and state minimum requirements.

Similar analyses were done for the prior premium rate increases. Since then, morbidity levels have been worse than that assumed in the prior rate increase.

The experience analysis, management's view of when a change to the original rate schedule may be considered, and the seriatim inforce and claim data used in developing the projections in Exhibit I and II have been relied upon by the actuary in the development of this memorandum.

## 19. Loss Ratio Requirement Compliance Demonstration

Projected experience assuming the increase is implemented is shown in Exhibit I. As shown in these exhibits, the expected lifetime loss ratio, both with and without the requested rate increase, exceeds the minimum requirements under rate stability regulations.

## 20. Average Annual Premium

The average September 30, 2018 annualized premiums for all premium-paying policies issued in Maryland, before and after the current requested increase of $15.00 \%$ are:

Before increase:
After prior authorized 15\%/5\% increases:
After current requested $15.00 \%$ increase:
\$2,414
\$2,725
\$3,134

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## 21. Proposed Effective Date

This rate increase will become effective on each policy's modal premium due date (monthly, quarterly, semi-annually and annually) following at least a 60-day advance written notification to the policyholder.
22. Nationwide Distribution of Business as of September 30, 2018 (based on premium-paying policies inforce count)

By Issue Age

| Issue Age | \% |
| :---: | :---: |
| $<45$ | $9 \%$ |
| $45-49$ | $10 \%$ |
| $50-54$ | $19 \%$ |
| $55-59$ | $26 \%$ |
| $60-64$ | $22 \%$ |
| $65-69$ | $10 \%$ |
| $70-74$ | $3 \%$ |
| $75+$ | $1 \%$ |
| Total | $100 \%$ |

By Benefit Period

| Benefit Period <br> (in days) | $\mathbf{\%}$ |
| :---: | :---: |
| $750-1,000$ | $30 \%$ |
| $1,250-1,500$ | $23 \%$ |
| $1,667-2,500$ | $31 \%$ |
| $2,667-3,000$ | $8 \%$ |
| $>3,000$ | $7 \%$ |
| Total | $100 \%$ |

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By Inflation Type

| Inflation Type | $\mathbf{\%}$ |
| :---: | :---: |
| Compound 3\% | $32 \%$ |
| Compound 5\% | $17 \%$ |
| FPO | $19 \%$ |
| GPO | $5 \%$ |
| None | $27 \%$ |
| Total | $100 \%$ |

By Gender

| Gender | \% |
| :---: | :---: |
| Female | $60 \%$ |
| Male | $40 \%$ |
| Total | $100 \%$ |

By Premium Payment Option

| Payment Option | $\mathbf{\%}$ |
| :---: | :---: |
| Standard | $98 \%$ |
| Ten Year | $2 \%$ |
| Total | $100 \%$ |

## 23. Number of Policyholders

As of September 30, 2018, the number of premium-paying policies inforce and premiums that will be affected by this increase are:

|  | Issued Before Rate |  | Issued On or After Rate |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Stability Regulation Effective Date | Stability Regulation Effective Date |  |  |
|  | Number of | $\mathbf{2 0 1 8}$ | Number of | $\mathbf{2 0 1 8}$ |
| Insured | Annualized Premium | Insured | Annualized Premium |  |
| Maryland | - | - | 82 | $\$ 197,937$ |

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## 24. Actuarial Certification

I am a Fellow of the Society of Actuaries and a Member of the American Academy of Actuaries, and I meet the Academy's qualification standards for preparing health rate filings and to render the actuarial opinion contained herein.

This memorandum has been prepared in conformity with all applicable Actuarial Standards of Practice, including ASOP No. 8.

The projections contained in this actuarial memorandum are based on best estimate assumptions that do not reflect any margins for moderately adverse experience. I certify that (1) if the requested premium rate schedule increase is implemented and (2) unless underlying assumptions which reflect moderately adverse conditions are realized, no further premium rate schedule increases are anticipated. Moderately adverse conditions are interpreted as those conditions where aggregate experience deviates unfavorably from the aggregate experience assumptions used in determining the lifetime projections, such that the value of the deviation is equal to $5 \%$ of gross premiums or more.

I further certify that:

- the analysis described in Section 18 of this memorandum was used in determining the need for a rate increase;
- the policy design, underwriting and claims adjudication practices have been taken into consideration in this rate increase request;
- the actuarial assumptions are appropriate and the gross premiums bear reasonable relationship to the benefits; and
- the relationship between renewal premium rate schedules and new business premium rate schedules is not applicable because we are no longer marketing new business.


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Mark D. Newton, FSA, MAAA
Actuarial Director, Metropolitan Life Insurance Company









## Exhibit II-A

## Demonstration that Lifetime Incurred Claims with Requested Increase are

## Not Less than Lifetime Earned Premium with Prescribed Factors

Policy Forms: LTC2007
Policies with Application Dates After April 30, 2009

| 1 Accumulated value of initial earned premium | 109,283,326 | x | 58\% | $=$ | 63,384,329 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 2a Accumulated value of earned premium | 109,283,326 |  |  |  |  |
| 2 b Accumulated value of prior premium rate schedule increases (2a-1) | 0 |  | 85\% | $=$ | 0 |
| 3 Present value of future projected initial earned premium | 127,536,880 |  | 58\% | = | 73,971,391 |
| 4a Present value of future projected premium | 162,329,167 |  |  |  |  |
| 4b Present value of future projected premium in excess of the projected initial earned premiums (4a-3) | 34,792,286 |  | 85\% | $=$ | 29,573,443 |
| 5 Lifetime Earned Premium Times Prescribed Factor: Sum of 1, 2b, 3, and 4b |  |  |  |  | 166,929,163 |
| 6a Accumulated value of incurred claims without the inclusion of active life reserves |  |  |  |  | 8,081,060 |
| 6b Present value of future projected incurred claims without the inclusion of active life reserves |  |  |  |  | 226,467,887 |
| 7 Lifetime Incurred Claims with Rate Increase: Sum of $\mathbf{6 a}$ and 6b |  |  |  |  | 234,548,947 |
| 8 Test: 7 is not less than 5 |  |  |  |  | TRUE |





Exibit - -B



The priection are based on the assumptions detived using expeience a alat atrough 1 /3020.

## Exhibit II-B

## Demonstration that Lifetime Incurred Claims with Requested Increase are

## Not Less than Lifetime Earned Premium with Prescribed Factors

Policy Forms: LTC2007
Policies with Application Dates After April 30, 2009

| 1 Accumulated value of initial earned premium | 1,855,082 | x | 58\% | $=$ | 1,075,948 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 2a Accumulated value of earned premium | 1,855,082 |  |  |  |  |
| 2 b Accumulated value of prior premium rate schedule increases (2a-1) | 0 |  | 85\% | $=$ | 0 |
| 3 Present value of future projected initial earned premium | 2,018,168 |  | 58\% | = | 1,170,537 |
| 4a Present value of future projected premium | 2,566,130 |  |  |  |  |
| 4b Present value of future projected premium in excess of the projected initial earned premiums (4a-3) | 547,962 |  | 85\% | $=$ | 465,768 |
| 5 Lifetime Earned Premium Times Prescribed Factor: Sum of 1, 2b, 3, and 4b |  |  |  |  | 2,712,253 |
| 6a Accumulated value of incurred claims without the inclusion of active life reserves |  |  |  |  | 462,408 |
| 6b Present value of future projected incurred claims without the inclusion of active life reserves |  |  |  |  | 2,991,501 |
| 7 Lifetime Incurred Claims with Rate Increase: Sum of $\mathbf{6 a}$ and 6b |  |  |  |  | 3,453,909 |
| 8 Test: 7 is not less than 5 |  |  |  |  | TRUE |

Attachment 1
Metropolitan Life Insurance Company
Policy Forms: LTC2007 with Application Dates After April 30, 2009 on New Rate Basis
Assumptions Summary


Attachment 2
Metropolitan Life Insurance Company
Nationwide Experience Projections (Premium Normalized to Include Prior Authorized Increases)
Actual to Expected Ratios
Policy Forms: LTC2007

| Duration | Actual Experience through 12/31/2017 Projections based on Current Assumptions |  |  | Reproduced based on Original Pricing Assumptions since inception |  |  | G = C / F |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | A | B | $\mathrm{C}=\mathrm{B} / \mathrm{A}$ | D | E | F = E / D |  |
|  | Earned Premium | Incurred Claims | Loss <br> Ratio | Earned Premium | Incurred Claims | Loss <br> Ratio | Actual to Expected Ratio |
| 1 | 6,965,827 | 0 | 0.0\% | 6,965,827 | 766,209 | 11.0\% | 0.00 |
| 2 | 13,340,586 | 651,903 | 4.9\% | 13,340,586 | 2,017,823 | 15.1\% | 0.32 |
| 3 | 12,789,112 | 462,852 | 3.6\% | 12,635,697 | 2,912,094 | 23.0\% | 0.16 |
| 4 | 12,577,039 | 143,110 | 1.1\% | 12,079,604 | 3,556,804 | 29.4\% | 0.04 |
| 5 | 12,314,899 | 961,874 | 7.8\% | 11,529,997 | 3,933,295 | 34.1\% | 0.23 |
| 6 | 12,055,805 | 1,050,105 | 8.7\% | 10,980,636 | 4,482,522 | 40.8\% | 0.21 |
| 7 | 11,839,970 | 1,716,933 | 14.5\% | 10,433,406 | 4,844,733 | 46.4\% | 0.31 |
| 8 | 11,991,619 | 2,180,673 | 18.2\% | 9,883,629 | 5,339,858 | 54.0\% | 0.34 |
| 9 | 12,929,187 | 2,092,105 | 16.2\% | 9,310,780 | 6,057,206 | 65.1\% | 0.25 |
| 10 | 13,051,059 | 2,261,192 | 17.3\% | 8,709,865 | 6,403,630 | 73.5\% | 0.24 |
| 11 | 12,333,057 | 2,603,764 | 21.1\% | 8,089,572 | 6,835,215 | 84.5\% | 0.25 |
| 12 | 11,745,882 | 3,010,675 | 25.6\% | 7,469,487 | 7,011,555 | 93.9\% | 0.27 |
| 13 | 11,414,876 | 3,488,588 | 30.6\% | 6,867,472 | 7,272,024 | 105.9\% | 0.29 |
| 14 | 11,075,037 | 4,045,995 | 36.5\% | 6,284,732 | 7,575,871 | 120.5\% | 0.30 |
| 15 | 10,725,128 | 4,690,833 | 43.7\% | 5,721,740 | 7,643,282 | 133.6\% | 0.33 |
| 16 | 10,364,374 | 5,427,396 | 52.4\% | 5,189,882 | 7,772,130 | 149.8\% | 0.35 |
| 17 | 9,992,506 | 6,254,536 | 62.6\% | 4,687,899 | 7,701,394 | 164.3\% | 0.38 |
| 18 | 9,609,702 | 7,171,561 | 74.6\% | 4,214,706 | 7,687,554 | 182.4\% | 0.41 |
| 19 | 9,216,055 | 8,175,332 | 88.7\% | 3,772,122 | 7,527,997 | 199.6\% | 0.44 |
| 20 | 8,812,332 | 9,261,806 | 105.1\% | 3,361,632 | 7,340,734 | 218.4\% | 0.48 |
| 21 | 8,399,453 | 10,423,901 | 124.1\% | 2,986,784 | 7,143,893 | 239.2\% | 0.52 |
| 22 | 7,978,592 | 11,648,699 | 146.0\% | 2,644,431 | 6,816,342 | 257.8\% | 0.57 |
| 23 | 7,551,329 | 12,914,087 | 171.0\% | 2,331,867 | 6,571,092 | 281.8\% | 0.61 |
| 24 | 7,119,609 | 14,211,365 | 199.6\% | 2,049,707 | 6,069,203 | 296.1\% | 0.67 |
| 25 | 6,685,230 | 15,510,097 | 232.0\% | 1,797,873 | 5,740,283 | 319.3\% | 0.73 |
| 26 | 6,250,563 | 16,764,031 | 268.2\% | 1,574,586 | 5,440,389 | 345.5\% | 0.78 |
| 27 | 5,818,229 | 17,960,915 | 308.7\% | 1,376,591 | 5,048,405 | 366.7\% | 0.84 |
| 28 | 5,390,829 | 19,077,686 | 353.9\% | 1,201,395 | 4,751,386 | 395.5\% | 0.89 |
| 29 | 4,970,905 | 20,068,238 | 403.7\% | 1,048,386 | 4,212,317 | 401.8\% | 1.00 |
| 30 | 4,561,141 | 20,898,959 | 458.2\% | 916,231 | 3,928,359 | 428.8\% | 1.07 |
| 31 | 4,164,381 | 21,575,088 | 518.1\% | 802,013 | 3,677,716 | 458.6\% | 1.13 |
| 32 | 3,782,653 | 22,070,285 | 583.5\% | 702,504 | 3,386,739 | 482.1\% | 1.21 |
| 33 | 3,418,010 | 22,382,929 | 654.9\% | 616,016 | 3,158,457 | 512.7\% | 1.28 |
| 34 | 3,072,047 | 22,486,923 | 732.0\% | 541,732 | 2,797,509 | 516.4\% | 1.42 |
| 35 | 2,746,338 | 22,382,215 | 815.0\% | 478,275 | 2,572,112 | 537.8\% | 1.52 |
| 36 | 2,441,982 | 22,103,831 | 905.2\% | 423,413 | 2,424,441 | 572.6\% | 1.58 |
| 37 | 2,159,700 | 21,650,221 | 1002.5\% | 375,697 | 2,250,017 | 598.9\% | 1.67 |
| 38 | 1,899,738 | 21,041,437 | 1107.6\% | 334,394 | 2,112,694 | 631.8\% | 1.75 |
| 39 | 1,661,847 | 20,248,274 | 1218.4\% | 298,708 | 1,919,705 | 642.7\% | 1.90 |
| 40 | 1,445,715 | 19,327,159 | 1336.9\% | 267,780 | 1,849,905 | 690.8\% | 1.94 |
| 41 | 1,251,157 | 18,330,214 | 1465.1\% | 240,749 | 1,753,540 | 728.4\% | 2.01 |
| 42 | 1,076,972 | 17,232,675 | 1600.1\% | 216,618 | 1,690,144 | 780.2\% | 2.05 |
| 43 | 922,217 | 16,059,623 | 1741.4\% | 195,110 | 1,640,707 | 840.9\% | 2.07 |
| 44 | 785,782 | 14,857,154 | 1890.7\% | 175,715 | 1,600,597 | 910.9\% | 2.08 |
| 45 | 666,228 | 13,642,923 | 2047.8\% | 158,200 | 1,552,359 | 981.3\% | 2.09 |
| 46 | 562,157 | 12,455,472 | 2215.7\% | 142,407 | 1,494,624 | 1049.5\% | 2.11 |
| 47 | 472,222 | 11,286,384 | 2390.1\% | 127,989 | 1,423,370 | 1112.1\% | 2.15 |
| 48 | 395,072 | 10,180,964 | 2577.0\% | 114,820 | 1,381,757 | 1203.4\% | 2.14 |
| 49 | 329,140 | 9,118,498 | 2770.4\% | 102,761 | 1,315,320 | 1280.0\% | 2.16 |
| 50 | 273,138 | 8,131,811 | 2977.2\% | 91,708 | 1,310,874 | 1429.4\% | 2.08 |
| 51 | 225,785 | 7,206,791 | 3191.9\% | 81,612 | 1,246,846 | 1527.8\% | 2.09 |
| 52 | 185,917 | 6,346,223 | 3413.5\% | 72,254 | 1,219,952 | 1688.4\% | 2.02 |
| 53 | 152,607 | 5,561,090 | 3644.1\% | 63,684 | 1,179,031 | 1851.4\% | 1.97 |
| 54 | 124,860 | 4,843,943 | 3879.5\% | 55,748 | 1,146,573 | 2056.7\% | 1.89 |
| 55 | 101,835 | 4,187,176 | 4111.7\% | 48,455 | 1,089,066 | 2247.6\% | 1.83 |
| 56 | 82,808 | 3,610,298 | 4359.9\% | 41,808 | 1,005,204 | 2404.4\% | 1.81 |
| 57 | 67,128 | 3,097,962 | 4615.0\% | 35,822 | 926,342 | 2586.0\% | 1.78 |
| 58 | 54,253 | 2,653,248 | 4890.5\% | 30,471 | 844,543 | 2771.6\% | 1.76 |
| 59 | 43,705 | 2,257,376 | 5165.0\% | 25,660 | 755,292 | 2943.5\% | 1.75 |
| 60 | 35,085 | 1,917,878 | 5466.4\% | 21,378 | 700,286 | 3275.7\% | 1.67 |
| Lifetime | 324,470,411 | 613,375,277 | 189.0\% | 186,340,624 | 221,829,327 | 119.0\% | 1.59 |
| Lifetime* | 187,564,200 | 176,439,682 | 94.1\% | 107,571,316 | 76,217,927 | 71.0\% | 1.32 |

- Figures in column A are normalized to reflect the prior rate action authorized by Maryland rather than the prior rate action approved by other states.

Figures in column $D$ do not reflect any rate action.

* Columns $A$ and $B$ are discounted back to the inception date at an interest rate of $4 \%$, which is the weighted average maximum valuation interest rate for contract reserves. Columns D and E are discounted back to the inception date at the original pricing interest rate of 6\%.

|  | Calendar Year | Actual / Projected Experience |  |  | Reproduced Expected Pricing Experience |  |  |  | Accumulative Loss Ratio as of 12/31/2017 |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | A | B | $C=B / A$ | D | E | F = E/D | $\mathrm{G}=\mathbf{C} / \mathrm{F}$ | H | I | $\mathrm{J}=\mathrm{H} / \mathrm{l}$ |
|  |  | Earned Premium | Incurred Claims | Loss <br> Ratio | Earned Premium | Incurred Claims | Loss <br> Ratio | Actual to Expected Ratio | Actual/Projected at 4\% (on C) | $\begin{gathered} \hline \text { Expected at } 6 \% \\ \text { (on F) } \\ \hline \end{gathered}$ | Actual to Expected Ratio |
| Historical Experience | 2009 | 904,206 | 0 | 0.0\% | 904,206 | 99,459 | 11.0\% | 0.00 | 0.0\% | 11.0\% | 0.00 |
|  | 2010 | 6,471,612 | 471,938 | 7.3\% | 5,103,353 | 634,696 | 12.4\% | 0.59 | 6.4\% | 12.2\% | 0.52 |
|  | 2011 | 12,943,235 | 192,502 | 1.5\% | 10,673,256 | 1,623,572 | 15.2\% | 0.10 | 3.3\% | 14.1\% | 0.23 |
|  | 2012 | 12,768,074 | 35,323 | 0.3\% | 12,073,039 | 2,468,495 | 20.4\% | 0.01 | 2.2\% | 16.6\% | 0.13 |
|  | 2013 | 12,624,976 | 958,098 | 7.6\% | 11,596,033 | 3,042,970 | 26.2\% | 0.29 | 3.6\% | 19.2\% | 0.19 |
|  | 2014 | 12,338,858 | 781,271 | 6.3\% | 11,146,197 | 3,477,770 | 31.2\% | 0.20 | 4.1\% | 21.5\% | 0.19 |
|  | 2015 | 12,036,604 | 904,646 | 7.5\% | 10,691,292 | 3,918,493 | 36.7\% | 0.21 | 4.7\% | 23.8\% | 0.20 |
|  | 2016 | 11,864,837 | 1,831,626 | 15.4\% | 10,230,020 | 4,329,583 | 42.3\% | 0.36 | 6.1\% | 26.0\% | 0.23 |
|  | 2017 | 11,488,619 | 2,133,522 | 18.6\% | 9,755,706 | 4,820,905 | 49.4\% | 0.38 | 7.4\% | 28.3\% | 0.26 |
| Projected Experience | 2018 | 11,780,897 | 1,972,500 | 16.7\% | 9,254,469 | 5,386,188 | 58.2\% | 0.29 | 8.3\% | 30.6\% | 0.27 |
|  | 2019 | 12,702,647 | 2,261,362 | 17.8\% | 8,720,422 | 5,828,262 | 66.8\% | 0.27 | 9.1\% | 33.0\% | 0.28 |
|  | 2020 | 12,477,233 | 2,604,001 | 20.9\% | 8,161,117 | 6,197,048 | 75.9\% | 0.27 | 10.1\% | 35.4\% | 0.28 |
|  | 2021 | 11,859,339 | 3,008,501 | 25.4\% | 7,593,236 | 6,470,995 | 85.2\% | 0.30 | 11.1\% | 37.7\% | 0.29 |
|  | 2022 | 11,515,758 | 3,485,213 | 30.3\% | 7,031,650 | 6,750,580 | 96.0\% | 0.32 | 12.2\% | 40.0\% | 0.31 |
|  | 2023 | 11,173,026 | 4,043,020 | 36.2\% | 6,481,361 | 7,025,951 | 108.4\% | 0.33 | 13.5\% | 42.2\% | 0.32 |
|  | 2024 | 10,819,713 | 4,685,547 | 43.3\% | 5,945,808 | 7,199,911 | 121.1\% | 0.36 | 14.8\% | 44.4\% | 0.33 |
|  | 2025 | 10,455,475 | 5,416,745 | 51.8\% | 5,431,977 | 7,319,886 | 134.8\% | 0.38 | 16.4\% | 46.4\% | 0.35 |
|  | 2026 | 10,080,075 | 6,239,113 | 61.9\% | 4,941,999 | 7,357,442 | 148.9\% | 0.42 | 18.0\% | 48.4\% | 0.37 |
|  | 2027 | 9,693,728 | 7,151,499 | 73.8\% | 4,475,943 | 7,354,598 | 164.3\% | 0.45 | 19.9\% | 50.3\% | 0.39 |
|  | 2028 | 9,296,386 | 8,148,044 | 87.6\% | 4,035,595 | 7,277,306 | 180.3\% | 0.49 | 21.9\% | 52.1\% | 0.42 |
|  | 2029 | 8,888,935 | 9,228,338 | 103.8\% | 3,623,734 | 7,150,595 | 197.3\% | 0.53 | 24.0\% | 53.8\% | 0.45 |
|  | 2030 | 8,472,136 | 10,378,004 | 122.5\% | 3,242,831 | 6,982,730 | 215.3\% | 0.57 | 26.3\% | 55.3\% | 0.48 |
|  | 2031 | 8,047,480 | 11,590,394 | 144.0\% | 2,891,858 | 6,754,292 | 233.6\% | 0.62 | 28.8\% | 56.8\% | 0.51 |
|  | 2032 | 7,616,454 | 12,847,129 | 168.7\% | 2,569,229 | 6,485,427 | 252.4\% | 0.67 | 31.5\% | 58.1\% | 0.54 |
|  | 2033 | 7,180,994 | 14,132,752 | 196.8\% | 2,275,327 | 6,121,548 | 269.0\% | 0.73 | 34.2\% | 59.2\% | 0.58 |
|  | 2034 | 6,742,921 | 15,412,722 | 228.6\% | 2,010,488 | 5,801,880 | 288.6\% | 0.79 | 37.1\% | 60.3\% | 0.62 |
|  | 2035 | 6,304,694 | 16,654,612 | 264.2\% | 1,773,436 | 5,511,710 | 310.8\% | 0.85 | 40.1\% | 61.2\% | 0.66 |
|  | 2036 | 5,868,973 | 17,839,708 | 304.0\% | 1,561,672 | 5,190,988 | 332.4\% | 0.91 | 43.2\% | 62.1\% | 0.70 |
|  | 2037 | 5,438,269 | 18,945,786 | 348.4\% | 1,373,215 | 4,846,523 | 352.9\% | 0.99 | 46.4\% | 62.9\% | 0.74 |
|  | 2038 | 5,015,237 | 19,937,670 | 397.5\% | 1,207,250 | 4,432,675 | 367.2\% | 1.08 | 49.6\% | 63.5\% | 0.78 |
|  | 2039 | 4,602,502 | 20,765,026 | 451.2\% | 1,062,533 | 4,117,288 | 387.5\% | 1.16 | 52.7\% | 64.1\% | 0.82 |
|  | 2040 | 4,202,712 | 21,440,311 | 510.2\% | 936,471 | 3,865,812 | 412.8\% | 1.24 | 55.9\% | 64.6\% | 0.87 |
|  | 2041 | 3,818,208 | 21,936,429 | 574.5\% | 826,172 | 3,608,244 | 436.7\% | 1.32 | 59.0\% | 65.1\% | 0.91 |
|  | 2042 | 3,450,917 | 22,256,473 | 644.9\% | 729,833 | 3,344,874 | 458.3\% | 1.41 | 62.1\% | 65.5\% | 0.95 |
|  | 2043 | 3,102,448 | 22,366,819 | 720.9\% | 646,434 | 3,042,570 | 470.7\% | 1.53 | 65.0\% | 65.8\% | 0.99 |
|  | 2044 | 2,774,293 | 22,283,374 | 803.2\% | 574,541 | 2,806,525 | 488.5\% | 1.64 | 67.8\% | 66.1\% | 1.03 |
|  | 2045 | 2,467,614 | 22,020,872 | 892.4\% | 512,149 | 2,640,717 | 515.6\% | 1.73 | 70.5\% | 66.4\% | 1.06 |
|  | 2046 | 2,183,112 | 21,563,513 | 987.7\% | 457,698 | 2,482,934 | 542.5\% | 1.82 | 73.1\% | 66.6\% | 1.10 |
|  | 2047 | 1,921,058 | 20,971,095 | 1091.6\% | 410,267 | 2,326,371 | 567.0\% | 1.93 | 75.5\% | 66.9\% | 1.13 |
|  | 2048 | 1,681,240 | 20,230,488 | 1203.3\% | 369,034 | 2,170,844 | 588.3\% | 2.05 | 77.7\% | 67.1\% | 1.16 |
|  | 2049 | 1,463,509 | 19,328,565 | 1320.7\% | 333,089 | 2,071,658 | 622.0\% | 2.12 | 79.7\% | 67.2\% | 1.19 |
|  | 2050 | 1,266,916 | 18,341,225 | 1447.7\% | 301,442 | 1,991,972 | 660.8\% | 2.19 | 81.6\% | 67.4\% | 1.21 |
|  | 2051 | 1,091,033 | 17,265,985 | 1582.5\% | 273,168 | 1,929,307 | 706.3\% | 2.24 | 83.3\% | 67.5\% | 1.23 |
|  | 2052 | 934,758 | 16,117,787 | 1724.3\% | 247,734 | 1,885,214 | 761.0\% | 2.27 | 84.8\% | 67.7\% | 1.25 |
|  | 2053 | 796,861 | 14,934,255 | 1874.1\% | 224,694 | 1,847,958 | 822.4\% | 2.28 | 86.2\% | 67.8\% | 1.27 |
|  | 2054 | 675,944 | 13,733,596 | 2031.8\% | 203,749 | 1,804,644 | 885.7\% | 2.29 | 87.4\% | 67.9\% | 1.29 |
|  | 2055 | 570,642 | 12,546,233 | 2198.6\% | 184,670 | 1,748,807 | 947.0\% | 2.32 | 88.4\% | 68.0\% | 1.30 |
|  | 2056 | 479,676 | 11,394,815 | 2375.5\% | 167,162 | 1,688,176 | 1009.9\% | 2.35 | 89.4\% | 68.1\% | 1.31 |
|  | 2057 | 401,507 | 10,283,153 | 2561.1\% | 151,029 | 1,636,758 | 1083.7\% | 2.36 | 90.2\% | 68.2\% | 1.32 |
|  | 2058 | 334,740 | 9,234,014 | 2758.6\% | 136,136 | 1,591,356 | 1168.9\% | 2.36 | 90.9\% | 68.3\% | 1.33 |
|  | 2059 | 277,923 | 8,234,278 | 2962.8\% | 122,377 | 1,565,686 | 1279.4\% | 2.32 | 91.5\% | 68.4\% | 1.34 |
|  | 2060 | 229,883 | 7,309,759 | 3179.8\% | 109,650 | 1,524,441 | 1390.3\% | 2.29 | 92.0\% | 68.4\% | 1.34 |
|  | 2061 | 189,444 | 6,446,098 | 3402.6\% | 97,809 | 1,488,917 | 1522.3\% | 2.24 | 92.4\% | 68.5\% | 1.35 |
|  | 2062 | 155,598 | 5,655,950 | 3635.0\% | 86,804 | 1,455,104 | 1676.3\% | 2.17 | 92.8\% | 68.6\% | 1.35 |
|  | 2063 | 127,423 | 4,937,295 | 3874.7\% | 76,555 | 1,416,216 | 1849.9\% | 2.09 | 93.1\% | 68.6\% | 1.36 |
|  | 2064 | 104,023 | 4,276,661 | 4111.3\% | 67,041 | 1,354,059 | 2019.8\% | 2.04 | 93.3\% | 68.7\% | 1.36 |
|  | 2065 | 84,694 | 3,688,088 | 4354.6\% | 58,287 | 1,266,666 | 2173.1\% | 2.00 | 93.6\% | 68.7\% | 1.36 |
|  | 2066 | 68,730 | 3,167,867 | 4609.2\% | 50,319 | 1,173,552 | 2332.2\% | 1.98 | 93.7\% | 68.7\% | 1.36 |
|  | 2067 | 55,627 | 2,713,642 | 4878.3\% | 43,108 | 1,076,229 | 2496.6\% | 1.95 | 93.9\% | 68.8\% | 1.36 |
|  | 2068 | 44,874 | 2,314,407 | 5157.6\% | 36,583 | 980,736 | 2680.8\% | 1.92 | 94.0\% | 68.8\% | 1.37 |
|  | 2069 | 36,100 | 1,966,923 | 5448.5\% | 30,709 | 891,659 | 2903.5\% | 1.88 | 94.1\% | 68.8\% | 1.37 |
|  | 2070 | 28,953 | 1,670,698 | 5770.4\% | 25,463 | 784,669 | 3081.6\% | 1.87 | 94.2\% | 68.9\% | 1.37 |


| Past | $93,441,021$ | $7,308,926$ | $7.8 \%$ | $82,173,101$ | $24,415,942$ | $29.7 \%$ | 0.26 | 0.26 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Future | $231,053,333$ | $607,378,353$ | $262.9 \%$ | $104,155,327$ | $197,026,503$ | $189.2 \%$ | 1.39 | $156.6 \%$ | $131.8 \%$ |
| Lifetime | $324,494,354$ | $614,687,279$ | $189.4 \%$ | $186,328,428$ | $221,442,444$ | $118.8 \%$ | 1.59 | $94.2 \%$ | 1.19 |

## Note

-Figures in column A are normalized to reflect the prior rate action authorized by Maryland rather than the prior rate action approved by other states.

- Figures in column D do not reflect any rate action.


## Attachment 4

## Metropolitan Life Insurance Company

Actual to Expected Lapse/Mortality Individual Business

| Lapse |  |  |  |
| :---: | :---: | :---: | :---: |
| Policy <br> Duration | Actual | Expected * | A/E\% |
| 1 | 10,950 | 12,042 | $90.93 \%$ |
| 2 | 13,842 | 10,123 | $136.73 \%$ |
| 3 | 9,571 | 8,558 | $111.83 \%$ |
| 4 | 6,947 | 7,167 | $96.92 \%$ |
| 5 | 5,555 | 4,621 | $120.22 \%$ |
| 6 | 3,723 | 3,359 | $110.82 \%$ |
| 7 | 2,835 | 2,838 | $99.88 \%$ |
| 8 | 2,094 | 2,165 | $96.73 \%$ |
| 9 | 1,647 | 1,644 | $100.18 \%$ |
| $10+$ | 3,441 | 4,031 | $85.35 \%$ |


| Mortality |  |  |  |
| :---: | :---: | :---: | :---: |
| Policy <br> Duration | Actual | Expected * | A/E\% |
| 1 | 536 | 541 | $99.05 \%$ |
| 2 | 924 | 1,129 | $81.85 \%$ |
| 3 | 1,110 | 1,318 | $84.25 \%$ |
| 4 | 1,316 | 1,663 | $79.11 \%$ |
| 5 | 1,532 | 1,922 | $79.72 \%$ |
| 6 | 1,703 | 2,213 | $76.97 \%$ |
| 7 | 1,903 | 2,520 | $75.52 \%$ |
| 8 | 2,125 | 2,801 | $75.86 \%$ |
| 9 | 2,218 | 3,068 | $72.30 \%$ |
| 10 | 2,416 | 3,259 | $74.13 \%$ |
| 11 | 2,462 | 3,388 | $72.67 \%$ |
| 12 | 2,476 | 3,260 | $75.95 \%$ |
| 13 | 2,305 | 2,836 | $81.28 \%$ |
| $14+$ | 6,736 | 7,196 | $93.61 \%$ |

* The expecteds are based on current best estimate assumptions.


## Attachment 4

Metropolitan Life Insurance Company
Actual to Expected Incidence
Individual Business

| Attained Age | Female |  |  |  |  |  | Male |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Facility Care |  |  | Home Care |  |  | Facility Care |  |  | Home Care |  |  |
|  | Actual <br> Claims ${ }^{1}$ | Expected Claims ${ }^{2}$ | A/E\% | Actual Claims ${ }^{1}$ | Expected Claims ${ }^{2}$ | A/E\% | Actual <br> Claims ${ }^{1}$ | Expected Claims ${ }^{2}$ | A/E\% | Actual <br> Claims ${ }^{1}$ | Expected Claims ${ }^{2}$ | A/E\% |
| under 50 | 0 | 11 | 0\% | 7 | 13 | 56\% | 5 | 6 | 90\% | 6 | 8 | 72\% |
| 50 to 54 | 5 | 20 | 25\% | 15 | 27 | 56\% | 2 | 10 | 20\% | 14 | 17 | 84\% |
| 55 to 59 | 21 | 53 | 40\% | 71 | 75 | 94\% | 17 | 26 | 66\% | 46 | 48 | 96\% |
| 60 to 64 | 73 | 101 | 73\% | 148 | 157 | 94\% | 36 | 52 | 70\% | 97 | 108 | 89\% |
| 65 to 69 | 152 | 140 | 109\% | 220 | 213 | 104\% | 101 | 87 | 116\% | 173 | 163 | 106\% |
| 70 to 74 | 308 | 263 | 117\% | 261 | 251 | 104\% | 173 | 171 | 101\% | 234 | 218 | 107\% |
| 75 to 79 | 433 | 418 | 104\% | 320 | 328 | 97\% | 244 | 231 | 106\% | 225 | 239 | 94\% |
| 80 to 84 | 476 | 500 | 95\% | 299 | 315 | 95\% | 192 | 202 | 95\% | 173 | 175 | 99\% |
| 85 to 89 | 354 | 363 | 97\% | 183 | 181 | 101\% | 106 | 103 | 103\% | 81 | 79 | 102\% |
| over 89 | 125 | 124 | 101\% | 65 | 48 | 135\% | 36 | 25 | 145\% | 21 | 17 | 121\% |
| Total | 1,947 | 1,991 | 98\% | 1,589 | 1,609 | 99\% | 912 | 912 | 100\% | 1,070 | 1,072 | 100\% |

${ }^{1}$ Based on actual experience through 6/30/2017 including adjustments for incurred but not reported claims.
${ }^{2}$ The expected claims are based on current best estimate assumptions.

## Attachment 4

Metropolitan Life Insurance Company Actual to Expected Claim Termination

All Business (exclude AARP-Pru)

| Claim Duration (Months) | Actual Deaths | Expected Deaths ${ }^{1}$ | Actual Recoveries | Expected Recoveries ${ }^{1}$ | Deaths A/E\% | Recoveries A/E\% | Total A/E\% |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | 881 | 542 | 64 | 85 | 163\% | 76\% | 151\% |
| 2 | 766 | 1,329 | 163 | 260 | 58\% | 63\% | 58\% |
| 3 | 822 | 1,155 | 251 | 247 | 71\% | 102\% | 77\% |
| 4 | 928 | 1,272 | 324 | 281 | 73\% | 115\% | 81\% |
| 5 | 926 | 1,047 | 288 | 230 | 88\% | 125\% | 95\% |
| 6 | 806 | 916 | 212 | 199 | 88\% | 106\% | 91\% |
| 7 | 703 | 760 | 193 | 164 | 93\% | 118\% | 97\% |
| 8 | 631 | 654 | 143 | 136 | 96\% | 105\% | 98\% |
| 9 | 613 | 575 | 123 | 114 | 107\% | 108\% | 107\% |
| 10 | 541 | 519 | 120 | 97 | 104\% | 124\% | 107\% |
| 11 | 491 | 478 | 91 | 84 | 103\% | 108\% | 104\% |
| 12 | 536 | 449 | 87 | 74 | 119\% | 118\% | 119\% |
| 13 | 442 | 423 | 78 | 66 | 104\% | 118\% | 106\% |
| 14+ | 13,138 | 11,830 | 1,272 | 1,427 | 111\% | 89\% | 109\% |
| Total | 22,224 | 21,949 | 3,409 | 3,461 | 101\% | 98\% | 101\% |

${ }^{1}$ The expected deaths and recoveries are based on current best estimate assumptions.

