Long-Term Care Actuarial Valuation

As of June 30, 2018

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Actuarial Certification

To the best of our knowledge, this report is complete and accurate and contains sufficient information to fully and fairly disclose the funded condition of the CalPERS Long-Term Care Program. This valuation is based on the participant and financial data as of June 30, 2018. It is our opinion that the valuation has been performed in accordance with generally accepted actuarial principles, in accordance with standards of practice prescribed by the Actuarial Standards Board, and that the assumptions and methods are internally consistent and reasonable for the Program related to actual and anticipated future experience.

The undersigned, with actuarial credentials, meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

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HIGHLIGHTS AND EXECUTIVE SUMMARY

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Introduction

This is the actuarial valuation report as of June 30, 2018 for the CalPERS Long-Term Care Program. The financial projections used in this valuation analysis were produced under the First Principles Model developed by United Health Actuarial Services, Inc. (i.e., "UHAS") in 2017. CalPERS reviewed and updated as necessary the assumptions for the model reflecting an additional year of actual experience, and CalPERS loaded the updated inforce data into the model. UHAS completed a parallel valuation duplicating these steps, and UHAS' valuation results are consistent with CalPERS valuation results.

This actuarial valuation uses best estimate assumptions that are appropriate as of the date of valuation, and these assumptions do not include any margin for adverse deviation. Assumptions could change as more information becomes known, which would impact the funded status reported in this valuation. The model, scenarios, and all assumptions were reviewed and updated this year. This report summarizes the approach, assumptions, and results of our actuarial valuation of the CalPERS Long-Term Care (LTC) Program as of June 30, 2018. For information on the sensitivity of the valuation results to changes in the actuarial assumptions, please refer to the "Risk Analysis" section and Appendix A and B.

Purpose of the Report

The purpose of the June 30, 2018 actuarial valuation report of the CalPERS Long-Term Care Program is to:

- Determine whether assets as of June 30, 2018 and expected future premium levels are sufficient to support the future benefits;
- Provide actuarial information as of June 30, 2018 to the CalPERS Board of Administration and other interested parties; and,
- Provide information as of June 30, 2018 to be used in CalPERS financial statements.

Use of this report for other purposes may be inappropriate. More detailed information can be available upon request.

Funded Status and Margin for the Program

On June 30, 2017, the funded status for the Long-Term Care Program was 99 percent and the margin was negative 1.45 percent. These results were developed by the new valuation projection model called First Principles Model that CalPERS adopted last year. This year the margin was mainly lowered by an update to morbidity improvement factors, and lower-than-expected investment returns in fiscal year 2018. These margin decreases were largely offset by some modeling improvements and revisions. The margin increased to 1.2 percent and the funded status increased to 101 percent as of June 30, 2018. The table below shows the funded status and margin as of June 30, 2018.

Funded Status and Margin as of June 30, 2018

Component	($ in Millions)
1. Present Value of Future Benefits	$6,458
2. Present Value of Future Expenses	$343
3. Present Value of Future Premiums (PVFP)	$2,358
4. Valuation Liabilities (= 1 + 2 – 3)	$4,443
5. Valuation Assets	$4,471
6. Valuation Margin (= 5 – 4)	$28
7. Margin as a % of PVFP (= 6 / 3)	1.20%
8. Funded Status (= 5 / 4)	101%

5-Year History of Funded Status and Margin

Valuation Date	Funded Status	Margin / (Deficit)
June 30, 2013	123%	23.49%
June 30, 2014	111%	14.44%
June 30, 2015	106%	9.59%
June 30, 2017	99%	(1.45%)
June 30, 2018	101%	1.20%

Key Findings

The following are the key findings from this actuarial valuation:

- The Program's margin increased from negative 1.45 percent to 1.20 percent. The funded status increased slightly from 99 percent on June 30, 2017 to 101 percent on June 30, 2018. The updated assumptions of termination, expenses, and lower than expected 2017 investment return, has a negative impact on the margin. The model refinements had a major positive impact on the margin, and the better than expected claim experiences also helped improve the margin.
- The LTC Program uses the same mortality improvement assumptions as CalPERS Pensions and the LTC valuation also applies these improvements as morbidity improvement. The new mortality improvement factors adopted this year by CalPERS had the biggest negative impact on the margin.
- Voluntary withdrawals were less than projected, and death were slightly higher than projected. The combined termination of voluntary lapse and death had a small negative impact on the margin.
- The Program experienced an investment return of 4.0 percent during 2017-18 fiscal year, which was lower than the 5.25 percent assumed discount rate. The investment income was $49 million lower than expected and lowered the margin by about 2 percent.
- This year's expense assumptions are slightly higher than last year and made a small negative impact to the margin.
- This is the second valuation report produced by using the results from the new First Principles Model. These modeling changes removed some unintended conservatism in the model and increased the margin by about 6 percent.

A complete reconciliation of the Program's margin/(deficit) is provided on page 11.

Changes Since the Prior Valuation

Actuarial Model

Last year, CalPERS switched from Claim Cost Model to a First Principles Model for the Program's valuation projection. The modeling improvements and revisions made in this year included 1) On claim days calculation formula; 2) Continuance rates attained age group; 3) Anti-selection factors; and 4) Claim update in the model caused by change in administration claim reporting.

More information about the First Principle Based Model can be found in Appendix C.

Actuarial Assumptions

The First Principles Model requires development of more granular assumptions than the Claim Cost Model. The First Principles Model requires separate claim incidence rates, claim termination rates, and claim utilization rates. The claim termination rates for the First Principles Model are also further refined into assumptions for claims recovery and on-claim death.

Similarly, mortality for the first principles model is separated into active life and disabled life components. First Principles Model lapse rates are only applied to active policies.

Each year, actual experience is measured against the assumptions, and assumptions are updated to reflect actual experience. All assumptions except discount rate are updated to reflect one more year's experiences for the 2018 valuation. Please refer to the "Summary of Key Assumptions" Section on page 11 for more information on the changes that were made. Assumptions are documented in more detail in Appendix C.

New Sensitivity Testing

Falls are the most common cause of injury among older adults, according to a recent meta-analysis published in the Journal of the American Medical Association (JAMA). According to our Third Party Administrator, LTCG, since the inception of the CalPERS LTC Program in 1995 through December 31, 2017, about 22 percent of CalPERS LTC Program claims for those 75 years and older are a result of falls, fall related injuries, and injurious falls resulting from imbalance and gait abnormalities.

As participants continue to live longer and this claim type grows, LTCG recommends their proactive pre-claim intervention program to be offered to CalPERS LTC Program members that are known to be at risk for falling (those 75 years and older). This pre-claim intervention program is called LIFT (Living Independently and Falls-free Together) Wellness Program and is designed to prevent falls and lower future LTC Program claim costs.

To estimate the potential savings by implementing the LIFT Program, a sensitivity testing was done assuming that all members who are age 75 years and older and not on claim as of January 1, 2020 will enroll in the LIFT Program.

More information about the LIFT Wellness Program and its sensitivity testing assumptions can be found in Appendix C.

Premiums and Policies

As of June 30, 2018, there are 124,472 inforce policies with an annual premium payment of $318,899,836. In an effort to stabilize the LTC Fund, CalPERS implemented corrective actions, including premium increases, in 2003, 2007 and 2010. In addition, starting in 2011, all LTC1 policies with lifetime coverage and inflation protection receive an on-going annual 5 percent premium increase. In October 2012, the CalPERS Board approved the Stabilization Plan to help improve the financial position of the Long-Term Care Program. The Stabilization Plan included premium increases for some participants and provided the ability for participants to convert to less expensive policies, and stopped the ongoing 5 percent rate increase after 2014. LTC1 and LTC2 participants with the lifetime benefit period or inflation protection had their premiums increased by 36 percent in both 2017 and 2018 for a cumulative 85 percent increase. This valuation projection reflected all the actions planned and implemented by the Stabilization Plan.

Subsequent Events

The actuarial valuation report as of June 30, 2018 is based on financial information as of that date. Changes in the value of assets subsequent to that date, to the extent that they exist, are not reflected. Investment returns less than assumed will decrease the funded status of the Program, while returns greater than assumed will increase the funded status of the Program.

A lawsuit was filed in 2013 contesting the increase in premiums. There is no way of knowing how or when this will be decided, and the impact this pending decision has not been reflected in this valuation.

VALUATION RESULTS

- COMPARISON OF CURRENT AND PRIOR YEAR
- RECONCILIATION TO PRIOR VALUATION RESULTS
- SUMMARY OF KEY ASSUMPTIONS

Comparison of Current and Prior Year

The Program results summarized throughout this report refer to funded status and also to "deficits" or "margins." A deficit is an estimate of what level of a one-time rate increase in premiums would be needed to bring the Program back to a zero margin. If the current fund balance and present value of earnings are adequate, a positive number or a "margin" would result. A second method of expressing the current financial status of the Program is the funded status. In general, the funded status is the Program assets divided by the accrued liability, or reserves. For the LTC Program, the accrued liability is equal to the present value of future benefits and expenses less the present value of participant premiums. This definition is consistent with a statutory gross premium valuation reserve for LTC insurance. In this context, a breakeven position is a funded ratio of 100 percent.

These two methods of expressing the financial status of the LTC Program are consistent in that both will always produce a margin when the funded ratio is greater than 100 percent and will always produce a deficit when the funded ratio is lower than 100 percent. They are not consistent in that a 10 percent margin does not produce a 110 percent funded ratio.

The table below summarizes the results of the actuarial valuation of the CalPERS Long-Term Care Program as of June 30, 2018, compared to June 30, 2017. Results presented include the present value of future cash flows for the current inforce participants. Present values are based on 60 years of projected cash flow.

Component	6/30/2017 ($ in Millions)	6/30/2018 ($ in Millions)
1. Present Value of Future Benefits	$6,498	$6,458
2. Present Value of Future Expenses	$336	$343
3. Present Value of Future Premiums (PVFP)	$2,455	$2,358
4. Valuation Liabilities (= 1 + 2 – 3)	$4,378	$4,443
5. Valuation Assets	$4,343	$4,471
6. Valuation Margin (= 5 – 4)	($35)	$28
7. Margin as a % of PVFP (= 6 / 3)	(1.45%)	1.20%
8. Funded Status (= 5 / 4)	99%	101%

Our analysis indicates that if experience conforms to our best estimate assumptions, the current assets and rate structure are sufficient to fund future claims and expenses for the next 60 years.

Liability cash flows were derived through the application of a projection of expected future cash flows based on the inforce policies as of June 30, 2018 using a set of underlying assumptions based upon the CalPERS Long-Term Care Program's assumed experience. Policies were projected on a seriatim basis using specific characteristics including issue age, issue date, policy form, benefit period, elimination period, underwriting status and benefit options. We have not generated liabilities and reserves consistent with statutory reporting requirements as this self-funded plan is not subject to such requirements.

Detailed yearly cash flows and projected cash balances are provided in Appendix A.

Reconciliation to Prior Valuation Results

Between June 30, 2017 and June 30, 2018, the Long-Term Care Program increased slightly from a margin of -1.45 percent to a margin of 1.20 percent. Several factors impacted the margin either negatively or positively during the fiscal year.

Several items impacted the margin negatively including updated lapse assumption, new mortality improvement factors, lower than expected investment return in the last fiscal year, and higher new expense assumption.

- One of our primary assumption revisions as compared to last year's annual valuation relates to assumed lapse. The negative impact to the margin caused by the lapse assumption update was partly offset by the mortality assumption update.
- Another primary assumption revision as compared to last year's annual valuation is the mortality improvement factor. This year's valuation applies a15-year mortality improvement projection using 90 percent of Scale MP 2016, the same mortality improvement used by CalPERS' Pension Valuation. The updated mortality improvement factors lead to a corresponding change to morbidity improvement factors.
- The Program experienced an investment loss during 2017-18 fiscal as a result of an investment return of 4.0 percent, which was lower than the assumed 5.25 percent discount rate assumption. The lower than expected return decreased the margin by 2.07 percent.
- The new expense assumption is based on the new five-year TPA contract and was adjusted to reflect actual changes in expense patterns. The expense assumption change made only a small negative impact to the valuation results.

Model refinement had the biggest positive impact on the margin.

- The model applies claim termination assumptions based on the age the claim was started, and the assumptions were developed by combining experience by attained age ranges. The modeling enhancement this year assigned the assumed claim terminations consistent with the underlying experience by assigning some of those on claim to lower attained age groups. This resulted in a decrease of the present value of expected claims by 1.85%.
- The second modeling change was related to the modeling of the anti-selection factors. This year, we revised the assumption to align with past modeling, and this reduced the present value of expected claims by 0.54%.
- Finally, the model change reflects that the third-party administrator modified definition of pending claims. This increased the expected claims by 2.71%.

In addition, morbidity assumption changes and better than expected liability cash flow contributed to the margin improvement. Note that this valuation is based on assumed morbidity more favorable than actual program experience. With one more year's CalPERS' claim experience, valuation results deteriorated as the credibility attributable to that experience increases. The updated claim incidence rates and continuance rates assumptions are slightly worse than last year, but the updated salvage factor assumption and this year's IBNR are better than last year. All those combined updates increased the margin by 1.1 percent.

The following table provides a detailed reconciliation as to the factors that contributed to the margin.

	Change in Margin	Resulting Margin
Margin under Claim Cost Model as of 6/30/17:		(1.45%)
2017 Margin with 2017 Restated Fund Balance	(0.40%)	(1.85%)
Projected One Year Forward and with 2018 Demographic	1.40%	(0.45%)
Updated 2018 Actual Liability Cash Flow	0.80%	0.35%
Investment Loss for FY 2017-2018	(2.07%)	(1.72%)
Model Improvements	6.09%	4.37%
Morbidity Assumption Change	1.10%	5.47%
Mortality/Lapse Change	(0.65%)	4.82%
Mortality and Morbidity Improvement	(3.02%)	1.80%
Expenses Assumption Change	(0.60%)	1.20%
Margin under First Principle Based Model as of 6/30/18		1.20%

Summary of Key Assumptions

To calculate the future claim payments, premiums and investment income, assumptions are made about future events that affect the amount and timing of benefits to be paid and assets to be accumulated. Actual experience is measured against the assumptions, and assumptions are updated to reflect actual experiences. This section provides general information on key assumptions used in the 2018 valuation.

Discount Rate

The discount rate of 5.25 percent used in this valuation was approved in February 2018 by Finance and Administration Committee, which reflects the investment mix that was approved in April 2012 Investment Committee and the revised set of Capital Market Assumptions adopted in June 2018 by Finance and Administration Committee. The discount rate is a major component of the valuation process and is used to project asset growth and to determine present values of future premiums, expenses, and benefits. CalPERS Long-Term Care Program experienced an investment loss during the fiscal year ended June 30, 2018, with the actual return for the year only 4.0 percent.

Morbidity

Morbidity represents a substantial financial risk for Long-Term Care insurance products. The morbidity assumption reflects the expected claim payments for participants. The key components driving claim payments are:

- Claim incidence, which is the probability of going on claim;
- Claim termination, which is the probability that an existing claim will close in a given month; and,
- Utilization, which is the level of amount of claim payment reimbursed relative to the maximum daily benefit.

Assumptions were developed for each of these 3 key claim based on data as of March 31, 2018, with an experience study cutoff date of December 31, 2016 applied for claim incidence and claim termination assumptions. Expected claim incidence rates and claim termination rates were credibility weighted between CalPERS actual claim experience and the industry data using the Society of Actuaries 2000-2011 Long-Term Care Aggregated Databases, from the Long Term Care Intercompany Experience Study. Additional credibility is assigned to the Program’s experience as the experience continues to emerge. Changes were also made that addressed the potential for anti-selection resulting from the less healthy participants not converting to less expensive policies which were offered as part of the Stabilization Plan. Actual claim experience is summarized in the table “Comparison of Actual to Expected Cash Flows for 2017-18” in the Assets Section on page 22.

Lapse

The lapse assumption reflects the expected portion of participants who terminate their policies each year by not paying the renewal premiums. Lapse assumptions can vary based on a variety of factors, including the participants' age at enrollment and the number of years participants have their policies. In general, it is assumed that the longer that participants keep their policies, the less likely they are to lapse. Lapse rate assumptions greatly affect long-term care insurance premiums because when individuals lapse, future liabilities are immediately reduced although current assets are not affected.

The First Principles Model uses an active life lapse assumption that only applies to active policyholders.

Mortality

The mortality assumption summarizes the expected death rate of the population. Similar to the lapse assumption, mortality reduces future liabilities without affecting assets.

The First Principles Model tracks policyholder status and uses separate mortality assumptions for active policies and disabled policies. This method more accurately models the plan's overall mortality, particularly to the extent the mix of active and disabled individuals may be different for a given attained age.

Active life and disabled life mortality assumptions are developed independently.

The 2012 IAM table is used as the assumed industry level mortality, and selection factors are developed based on CalPERS actual experience.

Actual CalPERS mortality experience is then compared to the expected assumption based on the 2012 IAM and CalPERS selection factors to determine more refined experience-based adjustment factors that vary by attained-age for both active participants and participants on claim. These experience adjustment factors combined with the 2012 IAM mortality table and CalPERS selection factors result in the CalPERS experienced-based mortality assumption.

Mortality rates are broken out by the following categories: age, gender, and marital status at issue.

Mortality improvement assumption development can be very challenging and often relies on a very large population base to complete a credible study. Therefore, it is common in the LTC industry to rely on industry mortality improvement scales rather than to independently calculate this assumption. Since most of CalPERS' LTC Program's members are also in the CalPERS' Pension Program, we have chosen the same mortality improvement used by CalPERS' Pension Valuation, which is a 15-year mortality improvement projection using 90 percent of Scale MP 2016.

Expense

Expenses for the Program include Third Party Administrator fees and CalPERS expenses related to internal staff working on the LTC Program. Expense assumptions were updated based on last year's actual expenses and the new five-year TPA contract which has been effective since January 2018. The administration expenses are expressed either as per participant per month or flat expenses per month. Credit card premium payment related expenses are also reflected as a percent of premium paid.

RISK ANALYSIS

- SENSITIVITY TESTING OF KEY ASSUMPTIONS
- ADDITIONAL SENSITIVITY TESTING

Risk Analysis

The actuarial calculations supplied in this report are based on a number of assumptions about very long-term demographic and economic behavior. Unless these assumptions (claim incidence, claim continuance, lapses, deaths, expenses, and investment return) are exactly realized each year, there will be differences on a year-to-year basis. The year-to-year differences between actual experience and the assumptions are called actuarial gains and losses and either increase or decrease the funded status and margin of the LTC Program. If the actual experience differs from the assumption over a prolonged period, it may result in a need for premium changes to ensure the financial integrity of the LTC Program. Included next are the results of sensitivity testing that was performed around key actuarial assumptions.

Sensitivity Testing of Key Assumptions

Several scenarios were run to test the sensitivity of future cash flows to changes in assumptions with respect to claim incidence, claim continuance, voluntary lapses, mortality, and investment earnings. Tables below illustrate the impact of changes to the base assumptions on asset adequacy levels.

Results are highly sensitive to the assumptions underlying the calculations. While these tests indicate outcomes under each of these scenarios, they do not indicate the likelihood of each scenario, and therefore, this testing does not indicate the probability that projected values will be realized.

Detailed yearly cash flows and projected fund balances for the base case and each of the scenarios tested as part of the sensitivity testing are provided in Appendix A. The base case scenario is the scenario that is based on our current actuarial assumptions used for this valuation.

Discount Rate

The discount rate assumption used in this valuation is 5.25 percent. For the sensitivity analysis, we are testing the impact of future investment returns on the margin and funded ratio of the LTC Program by increasing and decreasing the discount rate by 0.5 percent. The table below shows the impact on the margin and funded status. As expected, a lower discount rate results in a lower margin and lower funded status while a higher discount rate results in an increase for both measures.

Impact of Discount Rate on Margin and Funded Ratio

Scenario Description	Margin	Funded Ratio
Base Case	1.20%	101%
Discount rate increased by 0.5% to 5.75%	15.36%	109%
Discount rate decreased by 0.5% to 4.75%	(13.63%)	93%

Claim Incidence

Claim incidence is the probability of an active policyholder going on claim. This is a key morbidity assumption for long term care modeling, and is calculated using new claim counts and active exposure life years. This sensitivity analysis tests the impact that claim incidence has on the margin and funded ratio of the LTC Program by increasing and decreasing future expected claim incidence by 10 percent. As shown in the table below, higher than expected incidence lowers both the margin and funded status, while lower than expected claim incidence increases both measures.

Impact of Claim Incidence on Margin and Funded Ratio

Scenario Description	Margin	Funded Ratio
Base Case	1.20%	101%
Lower Claim Incidence (Future claims incidence reduced by 10%)	16.73%	110%
Higher Claim Incidence (Future claims incidence increased by 10%)	(13.76%)	93%

Claim Termination

Claim Termination is the probability that an existing claim will cease in a given month. Claim termination occurs due to recovery or death of a member while on-claim. This sensitivity analysis tests the impact that claim terminations have on the margin and funded ratio of the LTC Program by increasing and decreasing future expected claim terminations by 10 percent. As shown in the table below, higher-than-expected claim terminations increase both the margin and funded status while lower-than-expected claim terminations decrease both measures.

Impact of Claim Termination on Margin and Funded Ratio

Scenario Description	Margin	Funded Ratio
Base Case	1.20%	101%
Higher Claim Termination (Future claim termination increased by 10%)	15.68%	109%
Lower Claim Termination (Future claim termination decreased by 10%)	(16.52%)	92%

Lapses

The lapse assumption reflects the expected portion of active participants who terminate their policies each year by not paying the renewal premiums. For the sensitivity analysis, we are testing the impact lapses have on the margin and funded ratio of the LTC Program by increasing and decreasing the assumed lapse rates by 0.25 percent. As shown in the table below, lower than expected lapse assumptions decrease both the margin and funded status while higher than expected lapses would increase both measures.

Impact of Lapses on Margin and Funded Ratio

Scenario Description	Margin	Funded Ratio
Base Case	1.20%	101%
Lapse Rates increased by 0.25%	6.88%	104%
Lapse Rates decreased by 0.25%	(4.58%)	98%

Mortality

The mortality assumption reflects the expected death rate of the participants in the LTC Program. Similar to the lapse assumption, mortality reduces future liabilities without affecting the assets on hand. For this reason, higher-than-expected active mortality will generally result in an increase in the margin and funded status. For the sensitivity analysis, we are testing the impact mortality rates have on the margin and funded ratio of the LTC Program by increasing and decreasing the mortality rates by 10 percent. As shown in the table below, if mortality rates improve, i.e., rates are lower, both the margin and funded status will be lower, while if mortality rates deteriorate, i.e., rates are higher, both measures would increase.

Impact of Active Mortality on Margin and Funded Ratio

Scenario Description	Margin	Funded Ratio
Base Case	1.20%	101%
Mortality rates increased by 10%	11.19%	106%
Mortality rates decreased by 10%	(11.06%)	94%

Best and Worst Case

In order to test for the potential "best case" and "worst case" scenarios, the sensitivity of five of the key assumptions was tested simultaneously. The table below shows the combined impact on the margin and the funded status if the experience were to be better and worse than expected for the discount rate, claim incidence, claim termination, lapses and mortality.

Combined Impact of key Assumptions on Margin and Funded Status

Scenario Description	Margin	Funded Ratio
Base Case	1.20%	101%
Discount rate increases by 0.5% to 5.75% Lower Claim Incidence (Future claim incidence reduced by 10%) Higher Claim Termination (Future claim termination increased by 10%) Lapses increased by 0.25% Mortality rates increased by 10%	45.62%	131%
Discount rate decreases by 0.5% to 4.75% Higher Claim Incidence (Future claim incidence increased by 10%) Lower Claim Termination (Future claim termination decreased by 10%) Lapses decreased by 0.25% Mortality rates decreased by 10%	(50.94%)	79%

LIFT

The LIFT Wellness Program is designed to prevent falls and lower future LTC Program claim costs. To test the impact to the margin by implementing the LIFT Wellness Program, CalPERS relied on the cost and savings information provided by LTCG. The cost assumption has a one-time setup fee of $550. The incidence rates for those members will be increased or decreased as shown below:

Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Incidence Savings	40.00%	30.00%	25.00%	20.00%	5.00%	-5.00%	-10.00%	-15.00%	-10.00%	-5.00%

We assume that all members who are age 75 years and older and not on claim as of January 1, 2020 will be in the LIFT Wellness Program.

The table below shows the impact to the margin with 2 scenarios. One scenario assumes that all the incidence rate improvements are 100 percent realized. One scenario assumes that only 50 percent of the incidence rate improvements are realized in the first 5 years, while the incidence deterioration stays the same from year 6 to year 10. If less than 100 percent of the eligible members enroll in the LIFT Wellness Program, the expected impact will be similar to what is shown below; however, the amount of the impact would be less because of less enrollees.

Scenario Description	Margin	Funded Ratio
Base Case	1.20%	101%
LIFT Incidence Savings 100% Realized	6.44%	104%
LIFT Incidence Savings 50% Realized	3.22%	102%

Additional Sensitivity Testing

In addition to the sensitivity testing summarized above, we tested varing investment scenarios on the base case scenario using the New York 7 interest rate scenarios. In private industry, most LTC insurance companies use the seven interest rate scenarios defined in New York Regulation 126 to test asset adequacy and form an opinion with respect to asset adequacy analysis. Those scenarios prescribe the use of specific discount rate assumptions as described in the table below

New York Regulation 126 Discount Rate Sensitivity

Projection Years

Scenarios	1	2	3	4	5	6	7	8	9	10	11+
Scenario #1	5.25%	5.25%	5.25%	5.25%	5.25%	5.25%	5.25%	5.25%	5.25%	5.25%	5.25%
Scenario #2	5.25%	5.75%	6.25%	6.75%	7.25%	7.75%	8.25%	8.75%	9.25%	9.75%	10.25%
Scenario #3	5.25%	6.25%	7.25%	8.25%	9.25%	10.25%	9.25%	8.25%	7.25%	6.25%	5.25%
Scenario #4	8.25%	8.25%	8.25%	8.25%	8.25%	8.25%	8.25%	8.25%	8.25%	8.25%	8.25%
Scenario #5	5.25%	4.75%	4.25%	3.75%	3.25%	2.75%	2.25%	1.75%	1.25%	0.75%	0.25%
Scenario #6	5.25%	4.25%	3.25%	2.25%	1.25%	0.25%	1.25%	2.25%	3.25%	4.25%	5.25%
Scenario #7	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%

The table below shows the impact on the margin and the funded status of varying the discount rate assumption as described in the above table.

Impact of Additional Discount Rate Sensitivity on Margin and Funded Ratio

Scenario	Margin	Funded Ratio
Scenario #1	1.20%	101%
Scenario #2	77.80%	156%
Scenario #3	39.77%	123%
Scenario #4	78.91%	153%
Scenario #5	(139.24%)	53%
Scenario #6	(38.45%)	81%
Scenario #7	(99.14%)	61%

Detailed yearly cash flows and projected fund balances for these additional discount rate sensitivity scenarios are provided in Appendix B.

ASSETS

- RECONCILIATION OF THE MARKET VALUE OF ASSETS OVER THE PRIOR FISCAL YEAR
- COMPARISON OF ACTUAL TO EXPECTED CASH FLOWS
- ASSET ALLOCATION

Reconciliation of the Market Value of Assets Over the Prior Fiscal Year

1. Restated Market Value of Assets as of June 30, 2017	$4,332,737,678
2. Premiums Received during fiscal year 2017 -18	$296,323,401
3. Benefit Payments in 2017 -18	($306,879,262)
4. Expense Payments in 2017 -18	($28,909,984)
5. Investment Returns in 2017 -18	$177,562,189
6. Market Value of Assets as of June 30, 2018 [(1) + (2) + (3) + (4) + (5)]	$4,470,834,021

Comparison of Actual to Expected Cash Flows

Below is a table comparing the actual cash flows in 2017-18 to the cash flows that were projected as part of the June 30, 2017 valuation. As can be seen, the investment experience had the biggest impact on the assets.

Comparison of Actual to Expected Cash Flows for 2017-18

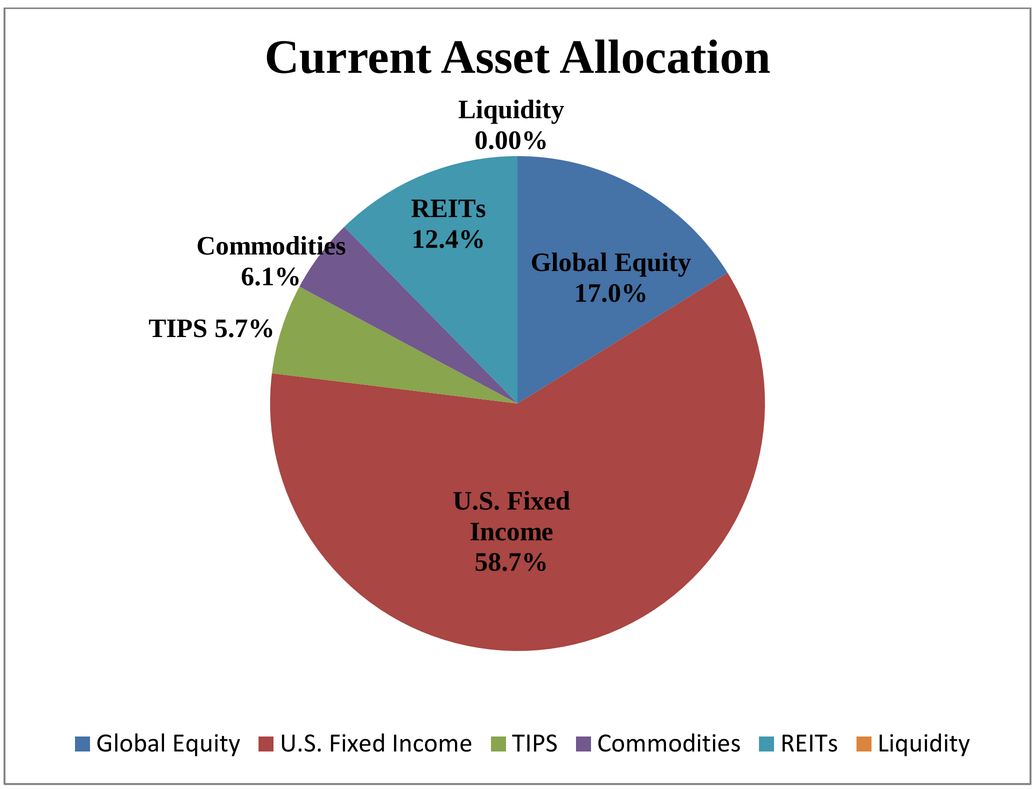
	Projected Results in the June 30, 2017 Valuation	Actual Results in June 30, 2018 Valuation	Difference
Fund Balance as of June 30, 2017	$4,332,737,678	$4,332, 737,678	$-
Cash Flows for 2017-18			
• Premiums	$292,669,997	$296,323,401	3,653,404
• Investment Income	$226,636,332	$177,562,189	($49,074,143)
• Paid Claims	($325,202,633)	($306,879,262)	$18,323,371
• Expenses	($25,995,905)	($28,909,984)	($2,914,079)
Balance as of June 30, 2018	$4,500,845,468	$4,470,834,021	($30,011,447)

Asset Allocation

CalPERS follows a strategic allocation policy that identifies the percentage of funds to be invested in each asset class. The target allocation was changed to a more conservative asset mix by the Board in April 2012.

The asset allocation and market value of assets are shown below as of June 30, 2018.

Asset Class	Target Allocation	Current Allocation	Current Market Value (Millions)
Global Equity	15.0%	17.0%	$707.7
U.S. Fixed Income	61.0%	58.7%	$2,650.7
Treasury-Inflation Protected Securities (TIPS)	6.0%	5.7%	$259.4
Commodities	6.0%	6.1%	$275.7
Real Estate Investment Trusts (REITs)	12.0%	12.4%	$561.8
Liquidity	0.0%	0.0%	$0.1
Total Net Assets At Market:	**100.0**	**100.0%**	**$4,515.3**



APPENDIX A

60 Year Projection of Fund Balance for Scenarios Used in Sensitivity Testing of Key Assumptions

Base Case Scenario

The tables below contain information about the margin, funded status and expected cash flows for the next 60 years based on the actuarial assumptions used in this valuation.

Main Results

Margin as Percentage of the Present Value of Premiums	Margin ($ in millions)	Funded Status
1.20%	$28	101%

Projected Cash Flows and Fund Balance Over the Next 60 years ($ in thousands)

Calendar Year[1]	Lives	Expected Premiums	Expected Claims	Expenses	Investment Earnings	Fund Balance[2]
						$4,470,834
2018	122,099	$146,863	$150,819	$13,739	$115,655	$4,568,793
2019	117,346	$278,669	$312,720	$27,016	$238,345	$4,746,071
2020	112,533	$264,183	$328,779	$26,404	$246,882	$4,901,954
2021	107,635	$249,651	$344,868	$25,783	$254,284	$5,035,239
2022	102,677	$235,179	$360,818	$25,155	$260,508	$5,144,954
2023	97,646	$220,829	$375,426	$24,981	$265,508	$5,230,884
2024	92,627	$206,675	$387,794	$24,738	$269,337	$5,294,363
2025	87,617	$192,785	$400,506	$24,604	$271,980	$5,334,019
2026	82,626	$179,224	$411,438	$24,400	$273,424	$5,350,829
2027	77,697	$166,049	$421,601	$24,131	$273,704	$5,344,849
2028	72,849	$153,272	$431,574	$23,800	$272,809	$5,315,557
2038	31,080	$54,092	$461,548	$17,100	$202,360	$3,843,005
2048	8,131	$11,408	$270,456	$7,682	$90,981	$1,691,157
2058	1,350	$1,544	$93,134	$2,228	$31,978	$594,710
2068	159	$147	$21,938	$506	$17,173	$333,305
2078	20	$6	$2,397	$100	$10,212	$403,051

Note:

1- Cash flows for 2018 and 2078 are for 6 months only.

2- Fund balances are as of the end of the Calendar Year, except for the opening balance which is as of June 30, 2018 and the last projected fund balance which is as of June 30, 2078.

Total Sum of all cash Flows and Present Values ($ in thousands)

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	$3,551,486	$14,452,297	$645,078	$7,478,106
Present Value as of June 30, 2018	$2,358,206	$6,457,640	$343,200	$3,738,951

Discount Rate Increased by 0.50 Percent to 5.75 Percent

The tables below contain information about the margin, funded status and expected cash flows for the next 60 years if the assumed discount rate and expected return were 5.75 percent, i.e. 0.50 percent higher.

Main Results

Margin as Percentage of the Present Value of Premiums	Margin ($ in millions)	Funded Status
15.36%	$351	109%

Projected Cash Flows and Fund Balance Over Next 60 years ($ in thousands)

Calendar Year[1]	Lives	Expected Premiums	Expected Claims	Expenses	Investment Earnings	Fund Balance[2]
						$4,470,834
2018	122,099	$146,863	$150,819	$13,739	$126,517	$4,579,656
2019	117,346	$278,669	$312,720	$27,017	$261,670	$4,780,259
2020	112,533	$264,183	$328,779	$26,406	$272,363	$4,961,620
2021	107,635	$249,651	$344,868	$25,787	$281,935	$5,122,551
2022	102,677	$235,179	$360,818	$25,161	$290,342	$5,262,094
2023	97,646	$220,829	$375,426	$24,990	$297,534	$5,380,042
2024	92,627	$206,675	$387,794	$24,749	$303,569	$5,477,743
2025	87,617	$192,785	$400,506	$24,617	$308,432	$5,553,838
2026	82,626	$179,224	$411,438	$24,416	$312,109	$5,609,316
2027	77,697	$166,049	$421,601	$24,151	$314,640	$5,644,253
2028	72,849	$153,272	$431,574	$23,824	$316,013	$5,658,141
2038	31,080	$54,092	$461,548	$17,187	$269,734	$4,746,719
2048	8,131	$11,408	$270,456	$7,907	$194,745	$3,448,587
2058	1,350	$1,544	$93,134	$2,757	$205,547	$3,733,586
2068	159	$147	$21,938	$1,724	$318,153	$5,839,645
2078	20	$6	$2,397	$1,440	$269,266	$9,765,888

Note:

1- Cash flows for 2018 and 2078 are for 6 months only.

2- Fund balances are as of the end of the Calendar Year, except for the opening balance which is as of June 30, 2018 and the last projected fund balance which is as of June 30, 2078.

Total Sum of all cash Flows and Present Values ($ in thousands)

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	$3,551,486	$14,452,297	$677,941	$16,873,807
Present Value as of June 30, 2018	$2,283,021	$6,073,301	$329,828	$4,783,719

Discount Rate Decreased by 0.50 Percent to 4.75 Percent

The tables below contain information about the margin, funded status and expected cash flows for the next 60 years if the assumed discount rate and expected return were 4.75 percent, i.e. 0.50 percent lower.

Main Results

Margin as Percentage of the Present Value of Premiums	Margin ($ in millions)	Funded Status
(13.63%)	($332)	93%

Projected Cash Flows and Fund Balance Over the Next 60 years ($ in thousands)

Calendar Year[1]	Lives	Expected Premiums	Expected Claims	Expenses	Investment Earnings	Fund Balance[2]
						$4,470,834
2018	122,099	$146,863	$150,819	$13,739	$104,766	$4,557,905
2019	117,346	$278,669	$312,720	$27,015	$215,127	$4,711,965
2020	112,533	$264,183	$328,779	$26,401	$221,748	$4,842,716
2021	107,635	$249,651	$344,868	$25,779	$227,251	$4,948,971
2022	102,677	$235,179	$360,818	$25,149	$231,597	$5,029,781
2023	97,646	$220,829	$375,426	$24,973	$234,748	$5,084,959
2024	92,627	$206,675	$387,794	$24,728	$236,751	$5,115,863
2025	87,617	$192,785	$400,506	$24,591	$237,594	$5,121,146
2026	82,626	$179,224	$411,438	$24,384	$237,267	$5,101,816
2027	77,697	$166,049	$421,601	$24,112	$235,804	$5,057,955
2028	72,849	$153,272	$431,574	$23,777	$233,195	$4,989,072
2038	31,080	$54,092	$461,548	$17,022	$147,257	$3,033,771
2048	8,131	$11,408	$270,456	$7,494	$16,721	$236,136
2058	1,350	$1,544	$93,134	$2,110	($78,775)	($1,783,471)
2068	159	$147	$21,938	$427	($157,042)	($3,474,110)
2078	20	$6	$2,397	$42	($126,870)	($5,532,658)

Notes
1- Cash flows for 2018 and 2078 are for 6 months only.
2- Fund balances are as of the end of the Calendar Year, except for the opening balance which is as of June 30, 2018 and the last projected fund balance which is as of June 30, 2078.

Total Sum of all cash Flows and Present Values ($ in thousands)

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	$3,551,486	$14,452,297	$639,695	$1,537,015
Present Value as of June 30, 2018	$2,438,247	$6,882,108	$359,404	$2,751,853

Claim Incidence Rates Increased by 10 Percent

The tables below contain information about the margin, funded status and expected cash flows for the next 60 years if the future claim costs were to be 10 percent higher than expected.

Main Results

Margin as Percentage of the Present Value of Premiums	Margin ($ in millions)	Funded Status
(13.76%)	($319)	93%

Projected Cash Flows and Fund Balance Over the Next 60 years ($ in thousands)

Calendar Year[1]	Lives	Expected Premiums	Expected Claims	Expenses	Investment Earnings	Fund Balance[2]
						$4,470,834
2018	122,094	$146,778	$151,842	$13,739	$115,646	$4,567,677
2019	117,305	$277,976	$321,009	$27,012	$238,087	$4,735,720
2020	112,429	$262,879	$343,596	$26,390	$245,947	$4,874,559
2021	107,452	$247,817	$364,631	$25,756	$252,305	$4,984,295
2022	102,402	$232,896	$384,154	$25,111	$257,183	$5,065,108
2023	97,274	$218,172	$401,163	$24,910	$260,589	$5,117,797
2024	92,157	$203,717	$414,956	$24,636	$262,625	$5,144,546
2025	87,055	$189,591	$428,475	$24,467	$263,310	$5,144,506
2026	81,978	$175,852	$439,727	$24,228	$262,656	$5,119,059
2027	76,974	$162,551	$449,864	$23,923	$260,716	$5,068,538
2028	72,062	$149,693	$459,652	$23,556	$257,485	$4,992,509
2038	30,209	$51,412	$480,448	$16,570	$158,116	$2,945,541
2048	7,741	$10,525	$274,471	$7,123	$8,635	$38,220
2058	1,263	$1,391	$92,668	$1,976	($106,234)	($2,175,824)
2068	147	$130	$21,506	$395	($212,937)	($4,279,587)
2078	18	$6	$2,351	$39	($179,139)	($7,093,085)

Note:

1- Cash flows for 2018 and 2078 are for 6 months only.

2- Fund balances are as of the end of the Calendar Year, except for the opening balance which is as of June 30, 2018 and the last projected fund balance which is as of June 30, 2078.

Total Sum of all cash Flows and Present Values ($ in thousands)

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	$3,472,142	$15,028,326	$627,680	$619,945
Present Value as of June 30, 2018	$2,319,175	$6,770,791	$338,221	$2,864,716

Claim Incidence Rates Reduced by 10 Percent

The tables below contain information about the margin, funded status and expected cash flows for the next 60 years if the future claim costs were to be 10 percent lower than expected.

Main Results

Margin as Percentage of the Present Value of Premiums	Margin ($ in millions)	Funded Status
16.73%	$402	110%

Projected Cash Flows and Fund Balance Over the Next 60 years ($ in thousands)

Calendar Year[1]	Lives	Expected Premiums	Expected Claims	Expenses	Investment Earnings	Fund Balance[2]
						$4,470,834
2018	122,103	$146,947	$149,803	$13,740	$115,663	$4,569,902
2019	117,388	$279,366	$304,401	$27,020	$238,602	$4,756,448
2020	112,637	$265,503	$313,802	$26,417	$247,823	$4,929,555
2021	107,821	$251,520	$324,753	$25,810	$256,283	$5,086,795
2022	102,957	$237,521	$336,903	$25,199	$263,881	$5,226,095
2023	98,027	$223,569	$348,866	$25,054	$270,518	$5,346,261
2024	93,110	$209,742	$359,567	$24,843	$276,199	$5,447,791
2025	88,196	$196,116	$371,242	$24,744	$280,874	$5,528,796
2026	83,296	$182,757	$381,642	$24,577	$284,510	$5,589,843
2027	78,448	$169,731	$391,641	$24,347	$287,121	$5,630,707
2028	73,668	$157,056	$401,624	$24,054	$288,688	$5,650,773
2038	32,017	$57,041	$439,844	$17,668	$249,305	$4,796,155
2048	8,565	$12,422	$264,833	$8,296	$179,552	$3,469,736
2058	1,450	$1,727	$93,207	$2,888	$181,142	$3,584,798
2068	173	$168	$22,326	$1,649	$265,242	$5,305,735
2078	21	$7	$2,444	$1,263	$213,865	$8,464,849

Note:

1- Cash flows for 2018 and 2078 are for 6 months only.

2- Fund balances are as of the end of the Calendar Year, except for the opening balance which is as of June 30, 2018 and the last projected fund balance which is as of June 30, 2078.

Total Sum of all cash Flows and Present Values ($ in thousands)

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	$3,637,238	$13,808,703	$687,971	$14,853,451
Present Value as of June 30, 2018	$2,399,798	$6,118,683	$350,345	$4,674,225

Claim Termination Rates Increased by 10 Percent

The tables below contain information about the margin, funded status and expected cash flows for the next 60 years if the future claim costs were to be 10 percent higher than expected.

Main Results

Margin as Percentage of the Present Value of Premiums	Margin ($ in millions)	Funded Status
15.68%	$374	109%

Projected Cash Flows and Fund Balance Over the Next 60 years ($ in thousands)

Calendar Year[1]	Lives	Expected Premiums	Expected Claims	Expenses	Investment Earnings	Fund Balance[2]
						$4,470,834
2018	122,075	$146,925	$150,241	$13,738	$115,657	$4,569,437
2019	117,304	$279,171	$305,610	$27,010	$238,545	$4,754,532
2020	112,500	$265,096	$315,876	$26,398	$247,663	$4,925,017
2021	107,631	$250,899	$327,757	$25,782	$255,956	$5,078,334
2022	102,715	$236,701	$340,714	$25,161	$263,321	$5,212,481
2023	97,740	$222,579	$353,239	$25,002	$269,668	$5,326,487
2024	92,777	$208,612	$364,325	$24,776	$275,010	$5,421,009
2025	87,825	$194,878	$376,055	$24,660	$279,313	$5,494,485
2026	82,892	$181,444	$386,473	$24,478	$282,551	$5,547,528
2027	78,017	$168,367	$396,346	$24,232	$284,744	$5,580,061
2028	73,216	$155,665	$406,200	$23,925	$285,876	$5,591,477
2038	31,571	$56,036	$439,260	$17,431	$242,083	$4,651,342
2048	8,336	$12,052	$258,742	$8,070	$169,669	$3,274,610
2058	1,389	$1,653	$88,627	$2,752	$168,502	$3,333,699
2068	163	$159	$20,444	$1,538	$246,387	$4,928,724
2078	20	$7	$2,101	$1,173	$198,779	$7,867,803

Note:

1- Cash flows for 2018 and 2078 are for 6 months only.

2- Fund balances are as of the end of the Calendar Year, except for the opening balance which is as of June 30, 2018 and the last projected fund balance which is as of June 30, 2078.

Total Sum of all cash Flows and Present Values ($ in thousands)

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	$3,606,836	$13,730,342	$678,705	$14,199,181
Present Value as of June 30, 2018	$2,385,081	$6,134,088	$347,876	$4,572,064

Claim Termination Rates Reduced by 10 Percent

The tables below contain information about the margin, funded status and expected cash flows for the next 60 years if the future claim costs were to be 10 percent higher than expected.

Main Results

Margin as Percentage of the Present Value of Premiums	Margin ($ in millions)	Funded Status
(16.52%)	($386)	92%

Projected Cash Flows and Fund Balance Over the Next 60 years ($ in thousands)

Calendar Year[1]	Lives	Expected Premiums	Expected Claims	Expenses	Investment Earnings	Fund Balance[2]
						$4,470,834
2018	122,130	$146,806	$151,379	$13,741	$115,652	$4,568,172
2019	117,412	$278,202	$320,031	$27,025	$238,143	$4,737,462
2020	112,607	$263,321	$342,446	$26,415	$246,078	$4,878,000
2021	107,700	$248,468	$363,424	$25,792	$252,533	$4,989,784
2022	102,719	$233,737	$383,050	$25,160	$257,521	$5,072,831
2023	97,651	$219,180	$400,364	$24,978	$261,040	$5,127,709
2024	92,591	$204,860	$414,547	$24,723	$263,185	$5,156,485
2025	87,537	$190,836	$428,741	$24,574	$263,962	$5,157,968
2026	82,498	$177,164	$440,597	$24,354	$263,374	$5,133,555
2027	77,525	$163,905	$451,391	$24,066	$261,471	$5,083,474
2028	72,635	$151,066	$461,759	$23,716	$258,249	$5,007,313
2038	30,741	$52,332	$489,870	$16,834	$156,530	$2,909,248
2048	7,998	$10,837	$286,863	$7,324	($1,620)	($173,558)
2058	1,329	$1,449	$99,923	$2,077	($130,204)	($2,660,013)
2068	159	$137	$24,288	$425	($256,281)	($5,149,921)
2078	20	$6	$2,842	$43	($215,410)	($8,529,249)

Note:

1- Cash flows for 2018 and 2078 are for 6 months only.
2- Fund balances are as of the end of the Calendar Year, except for the opening balance which is as of June 30, 2018 and the last projected fund balance which is as of June 30, 2078.

Total Sum of all cash Flows and Present Values ($ in thousands)

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	$3,500,882	$15,366,202	$635,458	($499,304)
Present Value as of June 30, 2018	$2,333,458	$6,849,004	$340,811	$2,760,684

Lapses Increased by 0.25 Percent

The tables below contain information about the margin, funded status and expected cash flows for the next 60 years if the lapse rates were to be 0.25 percent higher than expected for each of the next 60 years.

Main Results

Margin as Percentage of the Present Value of Premiums	Margin ($ in millions)	Funded Status
6.88%	$159	104%

Projected Cash Flows and Fund Balance Over the Next 60 years ($ in thousands)

Calendar Year[1]	Lives	Expected Premiums	Expected Claims	Expenses	Investment Earnings	Fund Balance[2]
						$4,470,834
2018	121,950	$146,737	$150,824	$13,732	$115,653	$4,568,668
2019	116,922	$277,914	$312,598	$26,966	$238,325	$4,745,343
2020	111,855	$262,806	$328,316	$26,308	$246,823	$4,900,348
2021	106,728	$247,729	$343,887	$25,647	$254,179	$5,032,723
2022	101,564	$232,786	$359,166	$24,982	$260,360	$5,141,720
2023	96,352	$218,036	$372,972	$24,750	$265,334	$5,227,368
2024	91,176	$203,552	$384,427	$24,449	$269,164	$5,291,207
2025	86,033	$189,399	$396,138	$24,257	$271,845	$5,332,056
2026	80,933	$175,636	$406,000	$23,997	$273,376	$5,351,072
2027	75,919	$162,318	$415,043	$23,674	$273,799	$5,348,471
2028	71,007	$149,455	$423,835	$23,293	$273,111	$5,323,908
2038	29,564	$51,441	$442,355	$16,351	$209,858	$4,002,110
2048	7,548	$10,580	$253,123	$7,233	$115,958	$2,200,373
2058	1,224	$1,396	$85,338	$2,205	$82,147	$1,604,271
2068	141	$130	$19,865	$845	$103,887	$2,072,543
2078	17	$5	$2,221	$502	$81,785	$3,236,425

Note:

1- Cash flows for 2018 and 2078 are for 6 months only.

2- Fund balances are as of the end of the Calendar Year, except for the opening balance which is as of June 30, 2018 and the last projected fund balance which is as of June 30, 2078.

Total Sum of all cash Flows and Present Values ($ in thousands)

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	$3,470,388	$13,908,111	$634,485	$9,837,799
Present Value as of June 30, 2018	$2,317,709	$6,292,510	$336,597	$3,986,248

Lapses Decreased by 0.25 Percent

The tables below contain information about the margin, funded status and expected cash flows for the next 60 years if the lapse rates were to be 0.25 percent lower than expected for each of the next 60 years.

Main Results

Margin as Percentage of the Present Value of Premiums	Margin ($ in millions)	Funded Status
(4.58%)	($110)	98%

Projected Cash Flows and Fund Balance Over the Next 60 years ($ in thousands)

Calendar Year[1]	Lives	Expected Premiums	Expected Claims	Expenses	Investment Earnings	Fund Balance[2]
						$4,470,834
2018	122,247	$146,988	$150,813	$13,747	$115,656	$4,568,918
2019	117,771	$279,425	$312,841	$27,067	$238,365	$4,746,800
2020	113,213	$265,564	$329,242	$26,499	$246,941	$4,903,564
2021	108,548	$251,584	$345,853	$25,919	$254,390	$5,037,766
2022	103,800	$237,592	$362,477	$25,329	$260,657	$5,148,209
2023	98,955	$223,651	$377,896	$25,215	$265,684	$5,234,432
2024	94,099	$209,838	$391,190	$25,031	$269,512	$5,297,560
2025	89,227	$196,224	$404,922	$24,956	$272,116	$5,336,023
2026	84,350	$182,876	$416,948	$24,810	$273,473	$5,350,615
2027	79,513	$169,856	$428,262	$24,596	$273,611	$5,341,224
2028	74,734	$157,178	$439,450	$24,318	$272,507	$5,307,140
2038	32,671	$56,872	$481,552	$17,884	$194,652	$3,679,321
2048	8,757	$12,299	$288,965	$8,166	$64,989	$1,161,012
2058	1,489	$1,708	$101,666	$2,323	($20,555)	($462,647)
2068	180	$167	$24,264	$480	($73,927)	($1,494,153)
2078	23	$7	$2,598	$47	($65,171)	($2,581,352)

Note:

1- Cash flows for 2018 and 2078 are for 6 months only.

2- Fund balances are as of the end of the Calendar Year, except for the opening balance which is as of June 30, 2018 and the last projected fund balance which is as of June 30, 2078.

Total Sum of all cash Flows and Present Values ($ in thousands)

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	$3,635,565	$15,027,912	$663,443	$5,003,604
Present Value as of June 30, 2018	$2,399,857	$6,630,170	$350,552	$3,480,497

Mortality Rates Increased by 10 Percent

The tables below contain information about the margin, funded status and expected cash flows for the next 60 years if the mortality rates were to be 10 percent higher than expected.

Main Results

Margin as Percentage of the Present Value of Premiums	Margin ($ in millions)	Funded Status
11.19%	$258	106%

Projected Cash Flows and Fund Balance Over the Next 60 years ($ in thousands)

Calendar Year[1]	Lives	Expected Premiums	Expected Claims	Expenses	Investment Earnings	Fund Balance[2]
						$4,470,834
2018	121,961	$146,770	$151,292	$13,733	$115,647	$4,568,226
2019	116,940	$277,854	$313,261	$26,968	$238,281	$4,744,133
2020	111,867	$262,603	$328,409	$26,311	$246,750	$4,898,766
2021	106,725	$247,395	$343,172	$25,647	$254,102	$5,031,445
2022	101,540	$232,337	$357,516	$24,979	$260,321	$5,141,607
2023	96,304	$217,490	$370,323	$24,741	$265,379	$5,229,411
2024	91,102	$202,925	$380,764	$24,434	$269,346	$5,296,484
2025	85,930	$188,700	$391,500	$24,234	$272,222	$5,341,672
2026	80,801	$174,874	$400,454	$23,965	$274,003	$5,366,130
2027	75,759	$161,501	$408,673	$23,633	$274,732	$5,370,056
2028	70,818	$148,590	$416,726	$23,241	$274,405	$5,353,084
2038	29,170	$50,459	$430,896	$16,168	$217,720	$4,165,130
2048	7,328	$10,183	$243,468	$7,088	$136,353	$2,613,933
2058	1,175	$1,327	$81,639	$2,259	$120,588	$2,376,694
2068	135	$122	$18,982	$1,121	$169,326	$3,384,744
2078	17	$5	$2,154	$808	$135,677	$5,369,822

Note:

1- Cash flows for 2018 and 2078 are for 6 months only.
2- Fund balances are as of the end of the Calendar Year, except for the opening balance which is as of June 30, 2018 and the last projected fund balance which is as of June 30, 2078.

Total Sum of all cash Flows and Present Values ($ in thousands)

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	$3,446,214	$13,581,417	$636,774	$11,670,964
Present Value as of June 30, 2018	$2,307,146	$6,183,968	$335,763	$4,190,775

Mortality Rates Decreased by 10 Percent

The tables below contain information about the margin, funded status and expected cash flows for the next 60 years if the mortality were to be 10 percent lower than expected.

Main Results

Margin as Percentage of the Present Value of Premiums	Margin ($ in millions)	Funded Status
(11.06%)	($267)	94%

Projected Cash Flows and Fund Balance Over the Next 60 years ($ in thousands)

Calendar Year[1]	Lives	Expected Premiums	Expected Claims	Expenses	Investment Earnings	Fund Balance[2]
						$4,470,834
2018	122,244	$146,963	$150,301	$13,747	$115,662	$4,569,411
2019	117,779	$279,544	$312,127	$27,067	$238,414	$4,748,175
2020	113,247	$265,890	$329,175	$26,503	$247,026	$4,905,413
2021	108,624	$252,114	$346,724	$25,929	$254,482	$5,039,357
2022	103,928	$238,320	$364,475	$25,347	$260,711	$5,148,566
2023	99,142	$224,569	$381,152	$25,248	$265,646	$5,232,381
2024	94,345	$210,926	$395,790	$25,080	$269,317	$5,291,754
2025	89,536	$197,468	$410,882	$25,024	$271,692	$5,325,008
2026	84,722	$184,261	$424,245	$24,898	$272,744	$5,332,869
2027	79,945	$171,365	$436,840	$24,707	$272,497	$5,315,183
2028	75,222	$158,795	$449,241	$24,452	$270,928	$5,271,213
2038	33,486	$58,726	$500,318	$18,271	$183,564	$3,448,252
2048	9,217	$13,093	$306,804	$8,494	$33,976	$530,581
2058	1,599	$1,858	$109,383	$2,492	($80,936)	($1,676,984)
2068	195	$184	$26,299	$520	($177,784)	($3,577,258)
2078	24	$8	$2,769	$50	($151,035)	($5,980,700)

Note:

1- Cash flows for 2018 and 2078 are for 6 months only.

2- Fund balances are as of the end of the Calendar Year, except for the opening balance which is as of June 30, 2018 and the last projected fund balance which is as of June 30, 2078.

Total Sum of all cash Flows and Present Values ($ in thousands)

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	$3,681,293	$15,588,556	$673,998	$2,129,726
Present Value as of June 30, 2018	$2,419,473	$6,804,101	$353,686	$3,167,021

"Best Case" Scenario

The tables below contain information about the margin, funded status and expected cash flows for the next 60 years if the experience were to be better than expected for the key assumptions. Specifically, if the discount rate and expected return were to be 0.50 percent higher or 5.75 percent, if lapse rates were to be 0.25 percent higher, if mortality rates were to be higher by 10 percent, and if morbidity rates were 10 percent lower.

Main Results

Margin as Percentage of the Present Value of Premiums	Margin ($ in millions)	Funded Status
45.62%	$1,062	131%

Projected Cash Flows and Fund Balance Over the Next 60 years ($ in thousands)

Calendar Year[1]	Lives	Expected Premiums	Expected Claims	Expenses	Investment Earnings	Fund Balance[2]
						$4,470,834
2018	121,787	$146,783	$149,755	$13,724	$115,657	$4,569,796
2019	116,498	$278,234	$297,972	$26,914	$238,709	$4,761,853
2020	111,235	$263,335	$300,680	$26,220	$248,375	$4,946,663
2021	105,963	$248,401	$306,005	$25,532	$257,577	$5,121,103
2022	100,696	$233,550	$313,343	$24,850	$266,185	$5,282,645
2023	95,418	$218,857	$321,050	$24,591	$274,086	$5,429,947
2024	90,201	$204,408	$327,992	$24,271	$281,277	$5,563,369
2025	85,035	$190,274	$336,020	$24,061	$287,712	$5,681,274
2026	79,930	$176,519	$343,114	$23,789	$293,364	$5,784,255
2027	74,918	$163,201	$349,969	$23,458	$298,254	$5,872,284
2028	70,016	$150,335	$356,919	$23,070	$302,373	$5,945,003
2038	28,865	$52,019	$371,512	$16,199	$306,860	$5,982,774
2048	7,265	$10,714	$210,617	$7,508	$317,941	$6,270,733
2058	1,157	$1,410	$69,926	$3,312	$437,909	$8,743,510
2068	131	$130	$15,911	$3,485	$702,275	$14,069,397
2078	16	$5	$1,743	$3,300	$573,952	$22,719,596

Note:

1- Cash flows for 2018 and 2078 are for 6 months only.
2- Fund balances are as of the end of the Calendar Year, except for the opening balance which is as of June 30, 2018 and the last projected fund balance which is as of June 30, 2078.

Total Sum of all cash Flows and Present Values ($ in thousands)

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	$3,489,094	$11,769,794	$695,849	$27,225,311
Present Value as of June 30, 2018	$2,327,771	$5,397,067	$339,687	$6,098,121

"Worst Case" Scenario

The tables below contain information about the margin, funded status and expected cash flows for the next 60 years if the experience were to be worse than expected for the key assumptions. Specifically, if the discount rate and expected return were to be 0.50 percent lower or 4.75 percent, if lapse rates were to be 0.25 percent lower, if mortality rates were to be lower by 10 percent, and if morbidity rates were 10 percent higher.

Main Results

Margin as Percentage of the Present Value of Premiums	Margin ($ in millions)	Funded Status
(50.94%)	($1,217)	79%

Projected Cash Flows and Fund Balance Over the Next 60 years ($ in thousands)

Calendar Year[1]	Lives	Expected Premiums	Expected Claims	Expenses	Investment Earnings	Fund Balance[2]
						$4,470,834
2018	122,411	$146,939	$151,932	$13,755	$115,652	$4,567,738
2019	118,208	$279,071	$328,120	$27,120	$237,964	$4,729,534
2020	113,868	$264,967	$358,755	$26,591	$245,306	$4,854,461
2021	109,375	$250,819	$387,105	$26,042	$250,763	$4,942,895
2022	104,758	$236,718	$413,258	$25,473	$254,366	$4,995,247
2023	100,004	$222,711	$436,299	$25,393	$256,134	$5,012,400
2024	95,211	$208,861	$455,476	$25,234	$256,175	$4,996,726
2025	90,383	$195,231	$474,191	$25,183	$254,507	$4,947,090
2026	85,529	$181,881	$490,144	$25,055	$251,133	$4,864,905
2027	80,704	$168,869	$504,696	$24,856	$246,103	$4,750,325
2028	75,928	$156,204	$518,701	$24,590	$239,402	$4,602,639
2038	33,609	$56,277	$571,383	$18,119	$80,559	$1,346,365
2048	9,176	$12,176	$347,505	$8,340	($178,056)	($3,740,816)
2058	1,594	$1,698	$124,772	$2,481	($453,461)	($9,152,922)
2068	197	$167	$30,697	$526	($805,540)	($16,164,438)
2078	25	$7	$3,396	$53	($668,757)	($26,477,002)

Note:

1- Cash flows for 2018 and 2078 are for 6 months only.

2- Fund balances are as of the end of the Calendar Year, except for the opening balance which is as of June 30, 2018 and the last projected fund balance which is as of June 30, 2078.

Total Sum of all cash Flows and Present Values ($ in thousands)

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	$3,615,527	$17,753,713	$672,582	($16,137,068)
Present Value as of June 30, 2018	$2,388,857	$7,722,537	$353,975	$941,902

LIFT Incidence Savings 100% Realized

The tables below contain information about the margin, funded status and expected cash flows for the next 60 years if the estimated incidence rate improvements from LIFT program are 100% realized.

Main Results

Margin as Percentage of the Present Value of Premiums	Margin ($ in millions)	Funded Status
6.44%	$154	104%

Projected Cash Flows and Fund Balance Over the Next 60 years ($ in thousands)

Calendar Year[1]	Lives	Expected Premiums	Expected Claims	Expenses	Investment Earnings	Fund Balance[2]
						$4,470,834
2018	122,099	$146,863	$150,841	$13,739	$115,654	$4,568,771
2019	117,346	$278,669	$312,757	$27,016	$238,343	$4,746,010
2020	112,611	$265,521	$311,803	$55,691	$245,722	$4,889,759
2021	107,889	$253,189	$302,890	$25,812	$254,751	$5,068,996
2022	103,146	$240,080	$307,071	$25,221	$263,769	$5,240,552
2023	98,332	$226,527	$318,215	$25,110	$272,160	$5,395,914
2024	93,484	$212,329	$338,752	$24,929	$279,492	$5,524,054
2025	88,566	$197,515	$370,728	$24,846	$285,033	$5,611,028
2026	83,568	$182,681	$403,260	$24,672	$288,357	$5,654,133
2027	78,552	$168,169	$432,708	$24,406	$289,471	$5,654,660
2028	73,563	$154,316	$455,092	$24,056	$288,515	$5,618,343
2038	31,107	$54,140	$462,583	$17,144	$220,531	$4,206,792
2048	8,131	$11,409	$270,507	$7,757	$121,013	$2,293,169
2058	1,350	$1,544	$93,132	$2,397	$81,991	$1,597,267
2068	159	$147	$21,938	$877	$100,434	$2,002,294
2078	20	$6	$2,397	$489	$78,593	$3,109,981

Note:

1- Cash flows for 2018 and 2078 are for 6 months only.

2- Fund balances are as of the end of the Calendar Year, except for the opening balance which is as of June 30, 2018 and the last projected fund balance which is as of June 30, 2078.

Total Sum of all cash Flows and Present Values ($ in thousands)

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	$3,585,635	$14,329,470	$686,688	$10,069,670
Present Value as of June 30, 2018	$2,383,328	$6,327,981	$372,602	$4,117,332

LIFT Incidence Savings 50% Realized

The tables below contain information about the margin, funded status and expected cash flows for the next 60 years if the estimated incidence rate improvements from LIFT program are 50% realized in the first 5 years, while the incidence deterioration stays the same from year 6 to year 10.

Main Results

Margin as Percentage of the Present Value of Premiums	Margin ($ in millions)	Funded Status
3.22%	$76	102%

Projected Cash Flows and Fund Balance Over the Next 60 years ($ in thousands)

Calendar Year[1]	Lives	Expected Premiums	Expected Claims	Expenses	Investment Earnings	Fund Balance[2]
						$4,470,834
2018	122,099	$146,863	$150,829	$13,739	$115,654	$4,568,782
2019	117,346	$278,669	$312,738	$27,016	$238,344	$4,746,041
2020	112,571	$264,850	$320,310	$55,688	$245,566	$4,880,459
2021	107,761	$251,404	$324,054	$25,796	$253,705	$5,035,718
2022	102,909	$237,594	$334,319	$25,187	$261,268	$5,175,075
2023	97,984	$223,625	$347,359	$25,044	$267,891	$5,294,189
2024	93,049	$209,444	$363,804	$24,831	$273,390	$5,388,388
2025	88,084	$195,102	$385,934	$24,721	$277,403	$5,450,238
2026	83,088	$180,920	$407,404	$24,532	$279,717	$5,478,939
2027	78,117	$167,091	$427,004	$24,265	$280,354	$5,475,116
2028	73,199	$153,785	$443,094	$23,924	$279,375	$5,441,259
2038	31,093	$54,115	$462,054	$17,118	$209,367	$3,983,247
2048	8,131	$11,409	$270,481	$7,711	$102,538	$1,922,816
2058	1,350	$1,544	$93,133	$2,293	$51,223	$980,491
2068	159	$147	$21,938	$649	$49,211	$975,527
2078	20	$6	$2,397	$250	$36,525	$1,444,671

Note:

1- Cash flows for 2018 and 2078 are for 6 months only.

2- Fund balances are as of the end of the Calendar Year, except for the opening balance which is as of June 30, 2018 and the last projected fund balance which is as of June 30, 2078.

Total Sum of all cash Flows and Present Values ($ in thousands)

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	$3,568,262	$14,391,657	$679,323	$8,476,554
Present Value as of June 30, 2018	$2,370,555	$6,393,679	$371,264	$3,884,681

APPENDIX B

60 Year Projection of Fund Balance for Additional Discount Rate Sensitivity Testing from New York Regulation 126

Scenario 1 - Base Case

The tables below contain information about the margin, funded status and expected cash flows for the next 60 years based on the actuarial assumptions used in this valuation. This is the same as the base scenario with a discount rate and expected return of 5.25 percent.

Main Results

Margin as Percentage of the Present Value of Premiums	Margin ($ in millions)	Funded Status
1.20%	28	101%

Projected Cash Flows and Fund Balance Over the Next 60 years ($ in thousands)

Calendar Year[1]	Lives	Expected Premiums	Expected Claims	Expenses	Investment Earnings	Fund Balance[2]
						$4,470,834
2018	122,099	$146,863	$150,819	$13,739	$115,655	$4,568,793
2019	117,346	$278,669	$312,720	$27,016	$238,345	$4,746,071
2020	112,533	$264,183	$328,779	$26,404	$246,882	$4,901,954
2021	107,635	$249,651	$344,868	$25,783	$254,284	$5,035,239
2022	102,677	$235,179	$360,818	$25,155	$260,508	$5,144,954
2023	97,646	$220,829	$375,426	$24,981	$265,508	$5,230,884
2024	92,627	$206,675	$387,794	$24,738	$269,337	$5,294,363
2025	87,617	$192,785	$400,506	$24,604	$271,980	$5,334,019
2026	82,626	$179,224	$411,438	$24,400	$273,424	$5,350,829
2027	77,697	$166,049	$421,601	$24,131	$273,704	$5,344,849
2028	72,849	$153,272	$431,574	$23,800	$272,809	$5,315,557
2038	31,080	$54,092	$461,548	$17,100	$202,360	$3,843,005
2048	8,131	$11,408	$270,456	$7,682	$90,981	$1,691,157
2058	1,350	$1,544	$93,134	$2,228	$31,978	$594,710
2068	159	$147	$21,938	$506	$17,173	$333,305
2078	20	$6	$2,397	$100	$10,212	$403,051

Note:

1- Cash flows for 2018 and 2078 are for 6 months only.

2- Fund balances are as of the end of the Calendar Year, except for the opening balance which is as of June 30, 2018 and the last projected fund balance which is as of June 30, 2078.

Total Sum of all cash Flows and Present Values ($ in thousands)

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	$3,551,486	$14,452,297	$645,078	$7,478,106
Present Value as of June 30, 2018	$2,358,206	$6,457,640	$343,200	$3,738,951

Scenario 2 - Discount Rate Increasing 0.50 Percent for 10 Years

The tables below contain information about the margin, funded status and expected cash flows for the next 60 years under scenario 2 of the NY 7 interest rates scenarios.

Main Results

Margin as Percentage of the Present Value of Premiums	Margin ($ in millions)	Funded Status
77.80%	$1,609	156%

Projected Cash Flows and Fund Balance Over the Next 60 years ($ in thousands)

Calendar Year[1]	Lives	Expected Premiums	Expected Claims	Expenses	Investment Earnings	Fund Balance[2]
						$4,470,834
2018	122,099	$146,863	$150,819	$13,739	$115,655	$4,568,793
2019	117,346	$278,669	$312,720	$27,016	$249,645	$4,757,372
2020	112,533	$264,183	$328,779	$26,404	$282,764	$4,949,136
2021	107,635	$249,651	$344,868	$25,786	$317,816	$5,145,949
2022	102,677	$235,179	$360,818	$25,162	$355,003	$5,350,151
2023	97,646	$220,829	$375,426	$24,996	$394,588	$5,565,146
2024	92,627	$206,675	$387,794	$24,762	$437,054	$5,796,319
2025	87,617	$192,785	$400,506	$24,640	$482,907	$6,046,865
2026	82,626	$179,224	$411,438	$24,454	$532,777	$6,322,975
2027	77,697	$166,049	$421,601	$24,206	$587,528	$6,630,744
2028	72,849	$153,272	$431,574	$23,902	$648,134	$6,976,675
2038	31,080	$54,092	$461,548	$17,856	$1,141,533	$12,062,582
2048	8,131	$11,408	$270,456	$10,643	$2,406,167	$25,745,589
2058	1,350	$1,544	$93,134	$12,694	$6,067,979	$65,215,560
2068	159	$147	$21,938	$36,947	$15,974,990	$171,798,410
2078	20	$6	$2,397	$59,459	$20,614,894	$432,881,617

Note:
1- Cash flows for 2018 and 2078 are for 6 months only.
2- Fund balances are as of the end of the Calendar Year, except for the opening balance which is as of June 30, 2018 and the last projected fund balance which is as of June 30, 2078.

Total Sum of all cash Flows and Present Values ($ in thousands)

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	$3,551,486	$14,452,297	$1,654,616	$440,966,210
Present Value as of June 30, 2018	$2,068,411	$4,645,586	$284,428	$11,940,371

Scenario 3 - Discount Rate Increasing 1 Percent for 5 Years then Decreasing 1 Percent for 5 Years

The tables below contain information about the margin, funded status and expected cash flows for the next 60 years under scenario 3 of the NY 7 interest rates scenarios.

Main Results

Margin as Percentage of the Present Value of Premiums	Margin ($ in millions)	Funded Status
39.77%	$838	123%

Projected Cash Flows and Fund Balance Over the Next 60 years ($ in thousands)

Calendar Year[1]	Lives	Expected Premiums	Expected Claims	Expenses	Investment Earnings	Fund Balance[2]
						$4,470,834
2018	122,099	$146,863	$150,819	$13,739	$115,655	$4,568,793
2019	117,346	$278,669	$312,720	$27,016	$260,920	$4,768,646
2020	112,533	$264,183	$328,779	$26,405	$318,787	$4,996,432
2021	107,635	$249,651	$344,868	$25,789	$382,511	$5,257,937
2022	102,677	$235,179	$360,818	$25,170	$453,463	$5,560,591
2023	97,646	$220,829	$375,426	$25,010	$533,395	$5,914,379
2024	92,627	$206,675	$387,794	$24,787	$567,082	$6,275,555
2025	87,617	$192,785	$400,506	$24,676	$539,411	$6,582,571
2026	82,626	$179,224	$411,438	$24,494	$500,656	$6,826,519
2027	77,697	$166,049	$421,601	$24,245	$451,791	$6,998,513
2028	72,849	$153,272	$431,574	$23,931	$394,165	$7,090,445
2038	31,080	$54,092	$461,548	$17,392	$349,918	$6,801,033
2048	8,131	$11,408	$270,456	$8,319	$336,836	$6,619,630
2058	1,350	$1,544	$93,134	$3,619	$441,463	$8,803,198
2068	159	$147	$21,938	$3,545	$698,871	$13,998,160
2078	20	$6	$2,397	$3,287	$570,082	$22,566,048

Note:

1- Cash flows for 2018 and 2078 are for 6 months only.

2- Fund balances are as of the end of the Calendar Year, except for the opening balance which is as of June 30, 2018 and the last projected fund balance which is as of June 30, 2078.

Total Sum of all cash Flows and Present Values ($ in thousands)

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	$3,551,486	$14,452,297	$728,667	$29,724,694
Present Value as of June 30, 2018	$2,107,148	$5,436,527	$303,406	$6,409,627

Scenario 4 – Discount Rate Increased 3 Percent

The tables below contain information about the margin, funded status and expected cash flows for the next 60 years under scenario 4 of the NY 7 interest rates scenarios.

Main Results

Margin as Percentage of the Present Value of Premiums	Margin ($ in millions)	Funded Status
78.91%	$1,552	153%

Projected Cash Flows and Fund Balance Over the Next 60 years ($ in thousands)

Calendar Year[1]	Lives	Expected Premiums	Expected Claims	Expenses	Investment Earnings	Fund Balance[2]
						$4,470,834
2018	122,099	$146,863	$150,819	$13,739	$180,450	$4,633,589
2019	117,346	$278,669	$312,720	$27,020	$379,899	$4,952,417
2020	112,533	$264,183	$328,779	$26,417	$404,998	$5,266,402
2021	107,635	$249,651	$344,868	$25,807	$429,679	$5,575,057
2022	102,677	$235,179	$360,818	$25,191	$453,932	$5,878,160
2023	97,646	$220,829	$375,426	$25,032	$477,749	$6,176,280
2024	92,627	$206,675	$387,794	$24,806	$501,276	$6,471,631
2025	87,617	$192,785	$400,506	$24,690	$524,562	$6,763,783
2026	82,626	$179,224	$411,438	$24,507	$547,666	$7,054,728
2027	77,697	$166,049	$421,601	$24,262	$570,727	$7,345,640
2028	72,849	$153,272	$431,574	$23,959	$593,817	$7,637,198
2038	31,080	$54,092	$461,548	$17,779	$857,760	$11,039,686
2048	8,131	$11,408	$270,456	$9,827	$1,442,852	$18,797,435
2058	1,350	$1,544	$93,134	$8,528	$2,961,789	$38,812,395
2068	159	$147	$21,938	$18,777	$6,463,678	$84,790,766
2078	20	$6	$2,397	$25,128	$6,974,233	$179,450,743

Note:

1- Cash flows for 2018 and 2078 are for 6 months only.

2- Fund balances are as of the end of the Calendar Year, except for the opening balance which is as of June 30, 2018 and the last projected fund balance which is as of June 30, 2078.

Total Sum of all cash Flows and Present Values ($ in thousands)

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	$3,551,486	$14,452,297	$1,138,105	$187,018,826
Present Value as of June 30, 2018	$1,967,301	$4,609,405	$276,396	$10,575,395

Scenario 5 – Discount Rate Decreasing 0.50 Percent for 10 Years

The tables below contain information about the margin, funded status and expected cash flows for the next 60 years under scenario 5 of the NY 7 interest rates scenarios.

Main Results

Margin as Percentage of the Present Value of Premiums	Margin ($ in millions)	Funded Status
(139.24%)	($3,967)	53%

Projected Cash Flows and Fund Balance Over the Next 60 years ($ in thousands)

Calendar Year[1]	Lives	Expected Premiums	Expected Claims	Expenses	Investment Earnings	Fund Balance[2]
						$4,470,834
2018	122,099	$146,863	$150,819	$13,739	$115,655	$4,568,793
2019	117,346	$278,669	$312,720	$27,016	$227,017	$4,734,743
2020	112,533	$264,183	$328,779	$26,403	$211,142	$4,854,887
2021	107,635	$249,651	$344,868	$25,780	$191,912	$4,925,802
2022	102,677	$235,179	$360,818	$25,147	$169,912	$4,944,928
2023	97,646	$220,829	$375,426	$24,968	$145,804	$4,911,168
2024	92,627	$206,675	$387,794	$24,715	$120,363	$4,825,696
2025	87,617	$192,785	$400,506	$24,569	$94,355	$4,687,761
2026	82,626	$179,224	$411,438	$24,351	$68,560	$4,499,756
2027	77,697	$166,049	$421,601	$24,065	$43,774	$4,263,912
2028	72,849	$153,272	$431,574	$23,715	$20,746	$3,982,642
2038	31,080	$54,092	$461,548	$16,737	$883	$142,150
2048	8,131	$11,408	$270,456	$7,428	($8,249)	($3,439,515)
2058	1,350	$1,544	$93,134	$2,110	($12,808)	($5,181,931)
2068	159	$147	$21,938	$427	($14,425)	($5,795,372)
2078	20	$6	$2,397	$42	($7,531)	($6,037,042)

Note:

1- Cash flows for 2018 and 2078 are for 6 months only.

2- Fund balances are as of the end of the Calendar Year, except for the opening balance which is as of June 30, 2018 and the last projected fund balance which is as of June 30, 2078.

Total Sum of all cash Flows and Present Values ($ in thousands)

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	$3,551,486	$14,452,297	$635,665	$1,028,601
Present Value as of June 30, 2018	$2,848,842	$10,797,867	$488,442	$959,866

Scenario 6 - Discount Rate Decreasing 1 Percent for 5 Years then Increasing 1 Percent for 5 Years

The tables below contain information about the margin, funded status and expected cash flows for the next 60 years under scenario 6 of the NY 7 interest rates scenarios.

Main Results

Margin as Percentage of the Present Value of Premiums	Margin ($ in millions)	Funded Status
(38.45%)	($1,029)	81%

Projected Cash Flows and Fund Balance Over the Next 60 years ($ in thousands)

Calendar Year[1]	Lives	Expected Premiums	Expected Claims	Expenses	Investment Earnings	Fund Balance[2]
						$4,470,834
2018	122,099	$146,863	$150,819	$13,739	$115,655	$4,568,793
2019	117,346	$278,669	$312,720	$27,016	$215,663	$4,723,389
2020	112,533	$264,183	$328,779	$26,402	$175,543	$4,807,934
2021	107,635	$249,651	$344,868	$25,777	$130,694	$4,817,635
2022	102,677	$235,179	$360,818	$25,140	$83,147	$4,750,004
2023	97,646	$220,829	$375,426	$24,954	$35,127	$4,605,580
2024	92,627	$206,675	$387,794	$24,694	$33,471	$4,433,238
2025	87,617	$192,785	$400,506	$24,541	$75,240	$4,276,217
2026	82,626	$179,224	$411,438	$24,321	$113,754	$4,133,436
2027	77,697	$166,049	$421,601	$24,037	$149,450	$4,003,297
2028	72,849	$153,272	$431,574	$23,694	$182,687	$3,883,989
2038	31,080	$54,092	$461,548	$16,865	$83,345	$1,457,152
2048	8,131	$11,408	$270,456	$7,428	($107,353)	($2,284,843)
2058	1,350	$1,544	$93,134	$2,110	($298,739)	($6,035,334)
2068	159	$147	$21,938	$427	($534,434)	($10,725,069)
2078	20	$6	$2,397	$42	($443,940)	($17,576,287)

Note:

1- Cash flows for 2018 and 2078 are for 6 months only.

2- Fund balances are as of the end of the Calendar Year, except for the opening balance which is as of June 30, 2018 and the last projected fund balance which is as of June 30, 2078.

Total Sum of all cash Flows and Present Values ($ in thousands)

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	$3,551,486	$14,452,297	$636,514	($10,509,796)
Present Value as of June 30, 2018	$2,674,679	$7,773,925	$400,100	$536,313

Scenario 7 - Discount Rate Decreasing 3 Percent

The tables below contain information about the margin, funded status and expected cash flows for the next 60 years under scenario 7 of the NY 7 interest rates scenarios.

Main Results

Margin as Percentage of the Present Value of Premiums	Margin ($ in millions)	Funded Status
(99.14%)	($2,903)	61%

Projected Cash Flows and Fund Balance Over the Next 60 years ($ in thousands)

Calendar Year[1]	Lives	Expected Premiums	Expected Claims	Expenses	Investment Earnings	Fund Balance[2]
						$4,470,834
2018	122,099	$146,863	$150,819	$13,739	$49,929	$4,503,068
2019	117,346	$278,669	$312,720	$27,012	$100,666	$4,542,671
2020	112,533	$264,183	$328,779	$26,390	$101,225	$4,552,910
2021	107,635	$249,651	$344,868	$25,760	$101,119	$4,533,052
2022	102,677	$235,179	$360,818	$25,121	$100,339	$4,482,632
2023	97,646	$220,829	$375,426	$24,936	$98,878	$4,401,978
2024	92,627	$206,675	$387,794	$24,679	$96,769	$4,292,949
2025	87,617	$192,785	$400,506	$24,531	$94,019	$4,154,717
2026	82,626	$179,224	$411,438	$24,311	$90,634	$3,988,826
2027	77,697	$166,049	$421,601	$24,026	$86,643	$3,795,891
2028	72,849	$153,272	$431,574	$23,678	$82,052	$3,575,963
2038	31,080	$54,092	$461,548	$16,735	$7,521	$129,180
2048	8,131	$11,408	$270,456	$7,428	($81,514)	($3,836,401)
2058	1,350	$1,544	$93,134	$2,110	($145,420)	($6,654,608)
2068	159	$147	$21,938	$427	($194,699)	($8,858,879)
2078	20	$6	$2,397	$42	($122,345)	($11,059,491)

Note:

1- Cash flows for 2018 and 2078 are for 6 months only.

2- Fund balances are as of the end of the Calendar Year, except for the opening balance which is as of June 30, 2018 and the last projected fund balance which is as of June 30, 2078.

Total Sum of all cash Flows and Present Values ($ in thousands)

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	$3,551,486	$14,452,297	$635,227	($3,994,286)
Present Value as of June 30, 2018	$2,928,726	$9,832,201	$470,805	($781,814)

APPENDIX C

Long-Term Care Model and Assumptions

Model

Projection results are based on 124,472 inforce participants as of June 30, 2018. CalPERS LTC business consists of facility-only and comprehensive coverage and includes a variety of elimination periods, benefit periods, and inflation coverage combinations. New optional benefits available to LTC4 policies are projected in the model, which include 3 percent simple or compound automatic inflation protection, 5 percent simple automatic inflation protection, restoration of benefits, and survivorship benefit. A summary of the model cells we used for projection purposes has been included as Appendix D. Projection results for each cell reflect output from the First Principles Model.

The first principles modeling approach is becoming the industry standard for modeling long-term care insurance. The more detailed modeling now includes claims incidence, continuance, and utilization. The First Principles Model automatically tracks policyholder status. In the First Principles Model, policyholders are classified as either "healthy", "disabled" (including site of care), or "Inactive" (either due to lapsation, death, or benefit expiration). In addition to tracking the status of policyholders, the First Principles Model follows lives as they progress through claims or as they recover back into the healthy population, tracking their used and remaining benefits. This detailed tracking of lives allows for first principles models to more accurately project when benefits will be exhausted, and also to more accurately reflect the claim payment patterns as claimants move along their respective continuance curves.

Benefit exhaustion and the runout of incurred claims into paid claims are calculated inside of the model. For the runout of incurred claims into paid claims, The First Principles Model pays claims exactly as the continuance curve and utilization assumptions suggest, allowing for detailed patterns for all segments of the population.

The improved modeling allows important statistics to be easily tracked using the information available in the First Principles Model—the number of new and open claims, the rate at which claims are terminating (often with splits for death, recovery, and exhaustion), and the split of the population between disabled and healthy lives. These statistics offer increased transparency on what is driving deviations in experience, e.g., higher/lower than assumed claim incidence or claims persisting longer/shorter than expected. The ability to directly compare these figures against emerging experience is a useful tool that is not readily available with the Claim Cost Model. Used together with sensitivity testing, the additional information accessible in the First Principles Model allows for better insight into the CalPERS Program and the impacts of different assumption changes on its projected development.

The first principles modeling gives more credibility to CalPERS experience and allows for more detailed actual-to-expected observations including the number of new claimants, the number of claim terminations, and the utilization of benefits.

Assumptions

Morbidity:

There are three separate morbidity assumptions. The first assumption is the incidence rate, which determines the probability that an individual will go on claim at a given time. The second assumption is the continuance rate, or claim termination rate, which is the probability that an individual will continue with their claim from one month to the next. The third assumption is the Salvage Factor or the Utilization Rate, which determines how much of the available benefit a policyholder will use during claim as a percentage of the maximum benefit available.

Incidence Rates

The incidence rate is developed using CalPERS claim data, and when there is insufficient claim data available for full credibility, the incidence rates are credibility weighted with industry data using the Society of Actuaries (SOA) 2000-2011 Long-Term Care Aggregated Databases, from the Long Term Care Intercompany Experience Study. A link to the study and the databases can be found at, https://www.soa.org/experience-studies/2015/research-ltc-study-2000-11-aggregrated/. Please note that this is a website outside of CalPERS and the web address may be subject to change, or removal. Unless noted otherwise, all references to the SOA material in this section is in reference to this report and its associated databases.

Separate incidence rates were developed for the following categories:

- Gender: Male and Female
- Duration of claim: Long or Short Duration Claims. For a further explanation of this breakdown, please see the paragraph following this list
- Attained Age Bands: 0-49, 50-54, 55-59, 60-64, 65-69, 70-74, 75-79, 80-84, 85-89, and 90+
- Initial Site of Care: Home Health Care, Assisted Living Facility, and Nursing Home
- Policy Type: Comprehensive and Non-Comprehensive

The initial diagnosis is used to determine the duration of claim, and this is based on the following groupings from the SOA 2000-2011 Long-Term Care Aggregated Databases Long Duration claims: Alzheimer's, Mental, and Nervous System and Sense Organs. A listing of ICD9 codes can be found in the 1984-2007 Long-Term Care Intercompany Report & Tables, in Appendix G1. A link to the report and tables can be found at https://www.soa.org/experience-studies/2011/research-ltc-study-1984-report/. Please note that this is a website outside of CalPERS and the web address may be subject to change, or removal.

The experience study data for the June 30, 2018 valuation uses all claim and exposure data as of March 31, 2018, with an experience study cutoff date of December 31, 2016. The experience study uses the following steps to calculate the incidence rates:

- Step 1: Determine the active life exposure.
  - The active life exposure is found by adding up all exposures while an individual is not on claim. In years when an individual goes on claim, a full year of exposure is credited to the individual for that year.
- Step 2: Determine claims.
  - The claim count is grouped based on the different categories.
- Step 3: Determine the CalPERS-experience based incidence rates.
  - The incidence rates are the total number of claims divided by the exposure.
- Step 4: Obtain industry incidence rates.
  - Base industry incidence rates are obtained from the SOA Claim Incidence Rates Database 2000-2011. Split between Long and Short Duration claims is then applied to the based industry rates. The split ratio is determined by the ratio of Long and Short Duration exposure amount from the SOA Claim Termination Rates Database 2000-2011.
- Step 5: Calculate the credibility weighted incidence rates.
  - Final incidence rates are weighted average between CalPERS-experience based incidence rates and SOA industry rates, based on credibility.
  - CalPERS experience receives full credibility in areas with 271 or more claims. Otherwise, CalPERS experience receives partial or zero credibility.
- Step 6: Develop adjustment factors for underwriting groups, benefit period, and marital status.
  - Underwriting group factors are applied in projection to reflect expected claim incidence variation between different underwriting methods. This set of factors are developed by underwriting groups and by policy durations. Underwriting groups include Short Form (SF), Modified Guarantee Issue (MGI) with issue dates in 1995, Modified Guarantee Issue (MGI) with issue dates after 1996, Long Form (LF) with issue dates from 1995 to 1998, and Long Form (LF) with issue dates after 1999.
  - Benefit period factors are applied in projection to reflect expected claim incidence variation between policies with lifetime and non-lifetime benefits.
  - Marital status factors are applied in projection to reflect expected claim incidence variation between married and single policy holders.
- Step 7: Apply morbidity improvement factors.
  - 90% of SOA Mortality Improvement Scale MP-2016 is used for morbidity improvement factors, with annual improvement amount capped at 1.25%. 15 years of morbidity improvement projection is included in the assumption. A link to SOA's table and report can be found at: https://www.soa.org/experience-studies/2016/mortality-improvement-scale-mp-2016/

<u>Claim Termination Rates</u>

The claim termination rates are developed using CalPERS claim data, and when there is insufficient claim data available for full credibility, the termination rates are credibility weighted with industry data using the Society of Actuaries (SOA) 2000-2011 Long-Term Care Aggregated Databases, from the Long Term Care Intercompany Experience Study. A link to the study and the databases can be found here, https://www.soa.org/experience-studies/2015/research-ltc-study-2000-11-aggregrated/. Please note that this is a website outside of CalPERS and the web address may be subject to change, or removal. Unless noted otherwise, all references to the SOA material in this section is in reference to this report and its associated databases.

Separate claim termination rates were developed for the following categories:

- Gender: Male and Female
- Duration of claim: Long or Short Duration Claims, for a further explanation of this breakdown, please see the paragraph following this list
- Incurred Age Bands: 0-64, 65-74, 75-84, 85-89, and 90+
- Initial Site of Care: Home Health Care, Assisted Living Facility, and Nursing Home
    - Due to low amounts of data, ages 0-64 did not have separate continuance rates for the different sites of care.
- Days on Claim: rates were developed for 300 30-day intervals starting from the incurred date of a claim.

The initial diagnosis is used to determine the duration of claim and is based on the following groupings from the SOA 2000-2011 Long-Term Care Aggregated Databases, including the following groupings for Long Duration claims: Alzheimer's, Mental, and Nervous System and Sense Organs. A listing of ICD9 codes can be found in the 1984-2007 Long-Term Care Intercompany Report & Tables, in Appendix G1. A link to the report and tables can be found at https://www.soa.org/experience-studies/2011/research-ltc-study-1984-report/. Please note that this is a website outside of CalPERS and the web address may be subject to change, or removal.

The experience study data for the June 30, 2018 valuation uses all claim and exposure information as of March 31, 2018, with an experience study cutoff date of December 31, 2016. The claim termination study uses the following steps to calculate the claim termination rates:

- Step 1: Calculate exposure.
    - Exposure is the on-claim time for all the claims that commenced on or before December 31, 2016. The claims are categorized as open, closed, and closed due to expiration of benefits as of December 31, 2016. These claims are then categorized based on their characteristics.
- Step 2: Obtain claim termination counts.

  - Claim terminations account for claims that have closed on or before December 31, 2016, excluding claims terminated due to expiration of benefits. The terminations are grouped based on their characteristics.
- Step 3: Determine the CalPERS-experience based Claim Termination Rate.
  - The claim termination rates are determined from the date of incurral including the elimination period. Claim Termination Rates are the number of claim terminations in a given period divided by the exposure in that period.
- Step 4: Calculate industry claim termination rates.
  - SOA Claim Terminations Rates Database 2000-2011 was used to development the industry rates. For areas without sufficient industry data, CalPERS disabled mortality values were used.
- Step 5: Calculate the credibility weighted Claim Termination Rates.
  - Final Claim Termination Rates are weighted average between CalPERS-experience based rates and the industry rates, based on credibility.
  - CalPERS experience receives full credibility in areas with 271 or more exposure. Otherwise, CalPERS experience receives partial or zero credibility.
- Step 6: Develop marital status factors.
  - Marital status factors are applied in projection to reflect claim termination rate variations between married and not-married population. They are calculated for each age band, based on marital status at issue.

Salvage Factors

The salvage factors are developed using CalPERS claim data, using all open claims as of March 31, 2018. If a grouping does not have any claims to develop salvage factors, the salvage factors from the prior series are used (i.e. if LTC2 in a specific grouping does not have data, the salvage factor for the same group from LTC1 is used).

The following groupings were used for the salvage factors:

- Product Series: LTC1, LTC2, LTC3, and LTC4
- Initial Site of Care: Home Health Care, Assisted Living Facility, or Nursing Home
- Inflation: Policies having inflation, or Policies not having inflation
- Policy Type: Comprehensive, Facilities Only, or Partnership

Salvage factors were developed following the steps below:

- Step 1: Summarize total benefit paid using open claim data based on data groupings.
- Step 2: Summarize total benefit allowance using open claim data based on data groupings.
- Step 3: Divide the total benefit paid by the total benefit allowance for each grouping to obtain the salvage factors.

Mortality

Since CalPERS LTC Program does not have a sufficiently large population to develop its own mortality rates, SOA 2012 Individual Annuitant Mortality (IAM) table was used as a baseline. Adjustment factors are then applied based on CalPERS plan experience. The First Principles Model uses two separate sets of adjustments to the IAM table, one for active mortality and one for disabled mortality.

The following steps are used to develop the mortality assumption:

- Step 1: Obtain death counts and develop active and disabled life exposures.
    - Death and exposure data are divided into several categories: active and disabled , age, gender, policy duration, and marital status. If there is a death, a full year exposure is credited to the individual at the age of death.
- Step 2: Develop duration selection factors.
    - Duration selection factors are developed by comparing actual mortality and expected mortality based on IAM table at each policy duration.
- Step 3: Develop marriage factors.
    - Marriage factors for active mortality vary by gender and attained age. They are derived by taking the ratio of A/E mortality for single and married active policies (split by attained age and gender), and calculating factors that will get those ratios close to 100%
    - There is only one factor for disabled mortality, and it does not vary by policy characteristics. This factor is derived by taking the ratio of A/E mortality for disabled policies, and calculating a factor that gets that ratio close to 100%.
- Step 4: Develop attained age factors.
    - Attained age factors are developed by comparing actual mortality and expected mortality based on IAM table at each attained age groupings. Age grouping intervals are determined so that each group has sufficient data credibility. The attained age factors are developed separately by gender, and by active and disabled status.
- Step 5: Apply mortality improvement factors.
    - 90% of SOA Mortality Improvement Scale MP-2016 is used for mortality improvement factors, with a 15-year mortality improvement projection period. A link to SOA's table and report can be found at: https://www.soa.org/experience-studies/2016/mortality-improvement-scale-mp-2016/

Lapse

Lapse rates are calculated as the number of voluntary lapses divided by the total active life exposures. Policy terminations due to death or expiration of benefit are not included in this study. When a policy lapses, it receives a full year credit of exposure at the duration of lapse.

Lapse rates are broken out by the following categories: issue age group, and policy duration.

The following assumed voluntary lapse rates were used for all projection cells:

Policy Year	Age Group					
	<40	40-49	50-59	60-69	70-79	80+
1	4.66%	3.37%	2.77%	2.47%	2.51%	3.47%
2	4.05%	2.77%	2.22%	1.42%	1.46%	2.32%
3	3.53%	2.03%	1.64%	1.11%	0.88%	1.88%
4	3.18%	1.83%	1.35%	0.83%	0.75%	0.95%
5	2.64%	1.61%	1.16%	0.76%	0.66%	1.06%
6	2.76%	1.71%	1.19%	0.69%	0.81%	1.55%
7	2.94%	1.64%	1.08%	0.68%	0.73%	1.40%
8	2.77%	1.60%	1.12%	0.68%	0.85%	1.04%
9	2.73%	1.67%	1.09%	0.60%	0.98%	1.87%
10	2.34%	1.57%	0.98%	0.70%	0.80%	1.35%
11+	2.22%	1.29%	0.80%	0.85%	1.14%	1.84%

Expenses

We used the following expense assumptions:

- The Third Party Administration (TPA) cost assumptions reflect the new five-year contract with LTCG which is effective in 2018. Expenses after the five-year contract, are assumed to increase at an annual inflation rate of 2.75 percent.
- CalPERS non-TPA expenses are assumed to be $532,538 per month through December of 2018 and assumed to increase by 2.75 percent for inflation each January thereafter.
- Projected inflated fixed dollar fees are assumed to decrease in January 2024 by the ratio of current inforce count to the prior year inforce count. The intent of this is to adjust for the fact that if the Program volume declines, expenses would need to decline as well.
- An option for participants allowing one-time premium payments using credit cards has been available in 2014. The credit card fee assumes that each year 1.54 percent of premiums will be paid with credit card at a cost of 3 percent of premium resulting in a total 0.046 percent of premium annual expense fee for credit cards.

Discount Rate

A 5.25 percent discount rate was approved in February 2018 by the Finance and Administration Committee. The new discount rate of 5.25 percent reflects the revised investment mix that was approved by the April 2012 Investment Committee and the revised set of Capital market Assumption that was adopted by the June 2018 Investment Committee.

The new discount rate calculation method considered both short-term and long-term expectations as well as the expected cash flows for the LTC fund. The short-term and long-term expected geometric returns were blended to create a level discount rate such that the present value of expected cash flows were close. Finally, the derived level discount rate was rounded down to the nearest quarter percent giving the final rate of 5.25 percent.

Rate Increase Related Assumptions:

During the 85 percent rate increase implementation starting in 2013, plan conversion options were given to policyholders to either avoid the rate increase or minimize its financial impact. The model assumptions include anti-selection factors related to this increase.

A rate increase may prompt healthier participants to lapse or reduce benefits to lower the impact of a rate increase. Therefore, the total risk pool will be less healthy after a rate increase. A higher risk will be assumed for policyholders that did not convert to less rich benefit plans.

Anti-selection is difficult to measure, and we have not attempted to determine the actual anti-selection experienced by CalPERS. As a result, the suggested anti-selection factor is an estimate. The anti-selection factors are two times the shock lapse and grade down to 0 percent over 10 years.

Anti-selection factors vary by benefit plan and are applied to the 2013, 2014, 2015, and 2016 conversions. See the table below for the groups that received or will receive the anti-selection factors.

For those policies accepting the rate increase, the following anti-selection factors are applied to increase the future morbidity risk.

LTC1 & LTC2, Lifetime, Inflation Receiving the 85% Premium Rate Increase Anti-Selection Factors Related to Shock Lapse and Conversions		
Calendar Year	LTC1	LTC2
2018	1.1543	1.1369
2019	1.1270	1.1152
2020	1.1000	1.0936
2021	1.0731	1.0722
2022	1.0464	1.0510
2023	1.0199	1.0298
2024	1.0083	1.0109
2025	1.0016	1.0014
2026+	1.0000	1.0000

All Other Plans Receiving the 85% Premium Rate Increase Anti-Selection Factors Related to Shock Lapse and Conversions	
Calendar Year	LTC1 & LTC2
2018	1.022
2019	1.018
2020	1.014
2021	1.010
2022	1.006
2023	1.002
2024+	1.000

For those policies converting to a 10-year Benefit Increase Option, the following anti-selection factors are applied to decrease the future morbidity risk because it is assumed healthier participants are more likely to lower their benefits to pay lower premiums when there is a rate increase.

LTC1 & LTC2, 10-Year Benefit Increase Option Selection Factors		
Calendar Year	LTC1	LTC2
2018	0.8839	0.8671
2019	0.9039	0.8871
2020	0.9239	0.9071
2021	0.9439	0.9271
2022	0.9639	0.9471
2023	0.9839	0.9671
2024	0.9925	0.9871
2025	0.9986	0.9983
2026+	1.0000	1.0000

LIFT Wellness Program Assumptions:

The LIFT Wellness Program is LTCG's proactive pre-claim intervention program that focuses on a major cause of LTC claims – falls and fractures – and is designed to prevent falls and keep CalPERS LTC Program participants functionally independent, while lowering future LTCP claim costs.

The LIFT Program was developed in 2004, through a collaboration between the U.S. Department of Health and Human Services and LTCG. It was guided by an appointed technical advisory group comprised of falls prevention experts and was based upon extensive literature review and founded upon best practices; creating procedures, protocols and instruments for conducting an in-person assessment, and designing a telephone-based coaching model that includes individually-tailored wellness interventions focused on fall prevention. Today, the LIFT Wellness Program consists of the following major components:

- Member engagement that includes active member outreach to encourage LTCP participants to join the program,
- A comprehensive in-home falls risk and home safety evaluation conducted by specially trained nurses,
- The development and delivery of a customized action plan that is sent both to the member and their physician to align wellness goals and efforts,
- Educational health promotion materials and a LIFT Wellness Tool-Kit (including wellness items such as a pedometer, medicine bottle opener, exercise book and health and home safety tips), and

- On-going 12-month telephonic based health coaching, education and support.

The original pilot program sponsored by the Department of Health and Human Services produced an 18% reduction in injurious falls and an 11% reduction in falls overall for seniors 75 years of age and older. These results were again supported through the recent US Prevention Services Task Force literature review which indicated multifactorial fall prevention programs were associated with a reduction in falls. Today, through longitudinal studies and refined actuarial analysis by LTCG's actuaries, it is thought that the program will reveal lower LTC claim incidence rates for up to five years after the implementation of the LIFT Wellness Program. After this period, the credibility of the data and experience is reduced. Anecdotal evidence suggests a mild pickup in incidence rates.

Based on the information from LTCG, the following participating rate, savings and cost assumptions have been made in the sensitivity testing related to LIFT Wellness Program:

- All members who are 75 and older on January 1, 2020 not on claim;

- Years 1-5: Fewer new claims lead to lower claim payments, higher premium collection and lower administration; Years 6-10: More healthy policies at year 5 lead to slightly higher claim experience;

Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Incidence Savings	40.00%	30.00%	25.00%	20.00%	5.00%	-5.00%	-10.00%	-15.00%	-10.00%	-5.00%

- An upfront setup fee $550 per enrollee.

To date, this program has yet to produce an unintended risk or outcomes but theoretically, the following risks could include but are not limited to:

- The detection of unrecognized functional deterioration producing additional LTCP claims
- A mounting number of fall related LTCP claims costs associated with increased morbidity
- Poor engagement and lack of realized LTCP claims savings

APPENDIX D

Summary of Model Cells

CalPERS LTC Program

Summary of Model Cells Included in 6/30/2018 Projection

Product Series	Plan Type	HHC	ALF	Benefit Period	Elimination Period	Inflation	Underwriting Type	Policy Count	Expected Annual Premium
LTC1	Comprehensive	50% HHC	50% ALF	3 Year	90	Inflation	LF	1,567	5,003,171
LTC1	Comprehensive	50% HHC	50% ALF	3 Year	90	Inflation	MGI	683	1,670,363
LTC1	Comprehensive	50% HHC	50% ALF	3 Year	90	Inflation	SF	565	1,468,637
LTC1	Comprehensive	50% HHC	50% ALF	3 Year	90	No Inflation	LF	7,750	13,643,732
LTC1	Comprehensive	50% HHC	50% ALF	3 Year	90	No Inflation	MGI	2,483	3,213,228
LTC1	Comprehensive	50% HHC	50% ALF	3 Year	90	No Inflation	SF	2,210	2,917,984
LTC1	Comprehensive	50% HHC	50% ALF	6 Year	90	Inflation	LF	929	3,429,941
LTC1	Comprehensive	50% HHC	50% ALF	6 Year	90	Inflation	MGI	583	1,633,020
LTC1	Comprehensive	50% HHC	50% ALF	6 Year	90	Inflation	SF	506	1,610,912
LTC1	Comprehensive	50% HHC	50% ALF	6 Year	90	No Inflation	LF	8,726	15,435,788
LTC1	Comprehensive	50% HHC	50% ALF	6 Year	90	No Inflation	MGI	4,561	6,354,171
LTC1	Comprehensive	50% HHC	50% ALF	6 Year	90	No Inflation	SF	3,995	5,555,089
LTC1	Comprehensive	50% HHC	50% ALF	10 Year	90	No Inflation	LF	9,831	26,941,275
LTC1	Comprehensive	50% HHC	50% ALF	10 Year	90	No Inflation	MGI	4,607	11,303,690
LTC1	Comprehensive	50% HHC	50% ALF	10 Year	90	No Inflation	SF	4,000	9,564,269
LTC1	Comprehensive	50% HHC	50% ALF	Lifetime	90	Inflation	LF	7,703	42,875,981
LTC1	Comprehensive	50% HHC	50% ALF	Lifetime	90	Inflation	MGI	6,652	28,596,994
LTC1	Comprehensive	50% HHC	50% ALF	Lifetime	90	Inflation	SF	4,403	20,167,556
LTC1	Comprehensive	50% HHC	50% ALF	Lifetime	90	No Inflation	LF	2,191	8,544,811
LTC1	Comprehensive	50% HHC	50% ALF	Lifetime	90	No Inflation	MGI	1,862	5,020,404
LTC1	Comprehensive	50% HHC	50% ALF	Lifetime	90	No Inflation	SF	1,250	3,401,753
LTC1	Facilities Only		50% ALF	3 Year	90	Inflation	LF	583	1,574,300
LTC1	Facilities Only		50% ALF	3 Year	90	Inflation	MGI	231	457,954
LTC1	Facilities Only		50% ALF	3 Year	90	Inflation	SF	208	448,022
LTC1	Facilities Only		50% ALF	3 Year	90	No Inflation	LF	3,852	5,435,896
LTC1	Facilities Only		50% ALF	3 Year	90	No Inflation	MGI	812	807,770
LTC1	Facilities Only		50% ALF	3 Year	90	No Inflation	SF	804	830,848
LTC1	Facilities Only		50% ALF	6 Year	90	Inflation	LF	163	565,222
LTC1	Facilities Only		50% ALF	6 Year	90	Inflation	MGI	64	164,786
LTC1	Facilities Only		50% ALF	6 Year	90	Inflation	SF	112	308,448
LTC1	Facilities Only		50% ALF	6 Year	90	No Inflation	LF	3,092	4,973,080
LTC1	Facilities Only		50% ALF	6 Year	90	No Inflation	MGI	699	832,227
LTC1	Facilities Only		50% ALF	6 Year	90	No Inflation	SF	811	951,609
LTC1	Facilities Only		50% ALF	10 Year	90	No Inflation	LF	2,698	6,559,339
LTC1	Facilities Only		50% ALF	10 Year	90	No Inflation	MGI	712	1,349,236
LTC1	Facilities Only		50% ALF	10 Year	90	No Inflation	SF	846	1,548,306
LTC1	Facilities Only		50% ALF	Lifetime	90	Inflation	LF	1,380	6,616,515
LTC1	Facilities Only		50% ALF	Lifetime	90	Inflation	MGI	590	2,143,156
LTC1	Facilities Only		50% ALF	Lifetime	90	Inflation	SF	604	2,189,611
LTC1	Facilities Only		50% ALF	Lifetime	90	No Inflation	LF	709	2,344,921
LTC1	Facilities Only		50% ALF	Lifetime	90	No Inflation	MGI	211	448,723
LTC1	Facilities Only		50% ALF	Lifetime	90	No Inflation	SF	179	390,209
LTC1	Partnership	50% HHC	50% ALF	6 Mo	30	Inflation	LF	73	62,377
LTC1	Partnership	50% HHC	50% ALF	6 Mo	30	Inflation	MGI	16	8,039
LTC1	Partnership	50% HHC	50% ALF	6 Mo	30	Inflation	SF	8	4,395
LTC1	Partnership	50% HHC	50% ALF	1 Year	30	Inflation	LF	880	972,279
LTC1	Partnership	50% HHC	50% ALF	1 Year	30	Inflation	MGI	272	192,257
LTC1	Partnership	50% HHC	50% ALF	1 Year	30	Inflation	SF	239	163,408
LTC1	Partnership	50% HHC	50% ALF	2 Year	30	Inflation	LF	1,519	2,491,303
LTC1	Partnership	50% HHC	50% ALF	2 Year	30	Inflation	MGI	508	564,637
LTC1	Partnership	50% HHC	50% ALF	2 Year	30	Inflation	SF	538	573,624
LTC1	**Subtotal**							**100,470**	**264,325,265**

Abbreviation	Description
ALF	Assisted Living Facility
HHC	Home Health Care
LF U/W	Long Form Underwriting
MGI U/W	Modified Guaranteed Issue Underwriting
SF U/W	Short Form Underwriting

Note:

1- Model cells include all inforce data as of June 30, 2018. All benefits including selected optional benefits are valued in the projection except Benefit Increase Options.

CalPERS LTC Program
Summary of Model Cells Included in 6/30/2018 Projection

Product Series	Plan Type	HHC	ALF	Benefit Period	Elimination Period	Inflation	Underwriting Type	Policy Count	Expected Annual Premium
LTC2	Comprehensive	50% HHC	70% ALF	3 Year	90	Inflation	LF	223	823,106
LTC2	Comprehensive	50% HHC	70% ALF	3 Year	90	Inflation	MGI	2	7,667
LTC2	Comprehensive	50% HHC	70% ALF	3 Year	90	Inflation	SF	3	15,850
LTC2	Comprehensive	50% HHC	70% ALF	3 Year	90	No Inflation	LF	1,397	2,206,169
LTC2	Comprehensive	50% HHC	70% ALF	3 Year	90	No Inflation	MGI	9	17,528
LTC2	Comprehensive	50% HHC	70% ALF	3 Year	90	No Inflation	SF	9	13,746
LTC2	Comprehensive	50% HHC	70% ALF	6 Year	90	Inflation	LF	18	87,589
LTC2	Comprehensive	50% HHC	70% ALF	6 Year	90	Inflation	SF	1	5,680
LTC2	Comprehensive	50% HHC	70% ALF	6 Year	90	No Inflation	LF	1,438	2,451,164
LTC2	Comprehensive	50% HHC	70% ALF	6 Year	90	No Inflation	MGI	20	39,996
LTC2	Comprehensive	50% HHC	70% ALF	6 Year	90	No Inflation	SF	18	36,708
LTC2	Comprehensive	50% HHC	70% ALF	10 Year	90	No Inflation	LF	1,626	3,888,585
LTC2	Comprehensive	50% HHC	70% ALF	10 Year	90	No Inflation	MGI	10	24,249
LTC2	Comprehensive	50% HHC	70% ALF	10 Year	90	No Inflation	SF	11	29,009
LTC2	Comprehensive	50% HHC	70% ALF	Lifetime	90	Inflation	LF	1,061	5,931,883
LTC2	Comprehensive	50% HHC	70% ALF	Lifetime	90	Inflation	MGI	9	67,856
LTC2	Comprehensive	50% HHC	70% ALF	Lifetime	90	Inflation	SF	9	51,713
LTC2	Comprehensive	50% HHC	70% ALF	Lifetime	90	No Inflation	LF	616	1,959,206
LTC2	Comprehensive	50% HHC	70% ALF	Lifetime	90	No Inflation	MGI	5	12,774
LTC2	Comprehensive	50% HHC	70% ALF	Lifetime	90	No Inflation	SF	3	8,980
LTC2	Facilities Only		70% ALF	3 Year	90	Inflation	LF	34	110,698
LTC2	Facilities Only		70% ALF	3 Year	90	No Inflation	LF	294	349,100
LTC2	Facilities Only		70% ALF	6 Year	90	Inflation	LF	9	29,942
LTC2	Facilities Only		70% ALF	6 Year	90	No Inflation	LF	256	344,437
LTC2	Facilities Only		70% ALF	10 Year	90	No Inflation	LF	252	440,936
LTC2	Facilities Only		70% ALF	10 Year	90	No Inflation	MGI	1	3,277
LTC2	Facilities Only		70% ALF	10 Year	90	No Inflation	SF	1	1,542
LTC2	Facilities Only		70% ALF	Lifetime	90	Inflation	LF	119	468,556
LTC2	Facilities Only		70% ALF	Lifetime	90	Inflation	MGI	1	8,989
LTC2	Facilities Only		70% ALF	Lifetime	90	No Inflation	LF	53	151,608
LTC2	Partnership	50% HHC	70% ALF	6 Mo	30	Inflation	LF	9	8,189
LTC2	Partnership	50% HHC	70% ALF	1 Year	30	Inflation	LF	76	90,227
LTC2	Partnership	50% HHC	70% ALF	2 Year	30	Inflation	LF	149	287,513
LTC2	**Subtotal**							**7,742**	**19,974,472**

Abbreviation	Description
ALF	Assisted Living Facility
HHC	Home Health Care
LF U/W	Long Form Underwriting
MGI U/W	Modified Guaranteed Issue Underwriting
SF U/W	Short Form Underwriting

Note:

1- Model cells include all inforce data as of June 30, 2018. All benefits including selected optional benefits are valued in the projection except Benefit Increase Options.

CalPERS LTC Program

Summary of Model Cells Included in 6/30/2018 Projection

Product Series	Plan Type	HHC	ALF	Benefit Period	Elimination Period	Inflation	Underwriting Type	Policy Count	Expected Annual Premium
LTC3	Comprehensive	70% HHC	70% ALF	3 Year	90	Inflation	LF	2,011	3,997,960
LTC3	Comprehensive	70% HHC	70% ALF	3 Year	90	Inflation	MGI	320	430,854
LTC3	Comprehensive	70% HHC	70% ALF	3 Year	90	Inflation	SF	354	516,212
LTC3	Comprehensive	70% HHC	70% ALF	3 Year	90	No Inflation	LF	746	1,094,331
LTC3	Comprehensive	70% HHC	70% ALF	3 Year	90	No Inflation	MGI	60	65,213
LTC3	Comprehensive	70% HHC	70% ALF	3 Year	90	No Inflation	SF	45	34,834
LTC3	Comprehensive	70% HHC	70% ALF	6 Year	90	Inflation	LF	2,283	5,981,242
LTC3	Comprehensive	70% HHC	70% ALF	6 Year	90	Inflation	MGI	435	853,521
LTC3	Comprehensive	70% HHC	70% ALF	6 Year	90	Inflation	SF	398	840,210
LTC3	Comprehensive	70% HHC	70% ALF	6 Year	90	No Inflation	LF	2,282	3,914,800
LTC3	Comprehensive	70% HHC	70% ALF	6 Year	90	No Inflation	MGI	556	662,662
LTC3	Comprehensive	70% HHC	70% ALF	6 Year	90	No Inflation	SF	435	534,213
LTC3	Comprehensive	70% HHC	70% ALF	10 Year	90	No Inflation	LF	5	9,908
LTC3	Comprehensive	70% HHC	70% ALF	Lifetime	90	Inflation	LF	1,088	3,967,287
LTC3	Comprehensive	70% HHC	70% ALF	Lifetime	90	Inflation	MGI	8	45,812
LTC3	Comprehensive	70% HHC	70% ALF	Lifetime	90	Inflation	SF	6	21,633
LTC3	Comprehensive	70% HHC	70% ALF	Lifetime	90	No Inflation	LF	1,004	2,163,125
LTC3	Comprehensive	70% HHC	70% ALF	Lifetime	90	No Inflation	MGI	20	49,767
LTC3	Comprehensive	70% HHC	70% ALF	Lifetime	90	No Inflation	SF	15	30,454
LTC3	Facilities Only		70% ALF	3 Year	90	Inflation	LF	454	787,084
LTC3	Facilities Only		70% ALF	3 Year	90	Inflation	MGI	57	67,612
LTC3	Facilities Only		70% ALF	3 Year	90	Inflation	SF	111	147,391
LTC3	Facilities Only		70% ALF	3 Year	90	No Inflation	LF	214	272,601
LTC3	Facilities Only		70% ALF	3 Year	90	No Inflation	MGI	14	10,210
LTC3	Facilities Only		70% ALF	3 Year	90	No Inflation	SF	17	10,102
LTC3	Facilities Only		70% ALF	6 Year	90	Inflation	LF	167	381,706
LTC3	Facilities Only		70% ALF	6 Year	90	Inflation	MGI	15	30,440
LTC3	Facilities Only		70% ALF	6 Year	90	Inflation	SF	22	42,538
LTC3	Facilities Only		70% ALF	6 Year	90	No Inflation	LF	585	873,533
LTC3	Facilities Only		70% ALF	6 Year	90	No Inflation	MGI	61	57,248
LTC3	Facilities Only		70% ALF	6 Year	90	No Inflation	SF	85	82,028
LTC3	Facilities Only		70% ALF	Lifetime	90	Inflation	LF	171	431,111
LTC3	Facilities Only		70% ALF	Lifetime	90	Inflation	MGI	1	1,521
LTC3	Facilities Only		70% ALF	Lifetime	90	No Inflation	LF	141	243,044
LTC3	Facilities Only		70% ALF	Lifetime	90	No Inflation	MGI	1	4,259
LTC3	Partnership		70% ALF	6 Mo	30	Inflation	LF	1	2,065
LTC3	Partnership		70% ALF	1 Year	30	Inflation	LF	33	48,663
LTC3	Partnership		70% ALF	2 Year	30	Inflation	LF	63	141,942
LTC3	**Subtotal**							**14,284**	**28,849,135**
LTC4	Comprehensive		70% ALF	3 Year	90	Inflation	LF	834	2,090,481
LTC4	Comprehensive		70% ALF	3 Year	90	No Inflation	LF	89	175,536
LTC4	Comprehensive		70% ALF	6 Year	90	Inflation	LF	588	1,853,944
LTC4	Comprehensive		70% ALF	6 Year	90	No Inflation	LF	60	185,372
LTC4	Comprehensive		70% ALF	10 Year	90	Inflation	LF	317	1,137,538
LTC4	Comprehensive		70% ALF	10 Year	90	No Inflation	LF	54	180,594
LTC4	Partnership		70% ALF	1 Year	30	Inflation	LF	7	19,419
LTC4	Partnership		70% ALF	2 Year	30	Inflation	LF	27	108,080
LTC4	**Subtotal**							**1,976**	**5,750,964**
	Grand Total							**124,472**	**318,899,836**

Abbreviation	Description
ALF	Assisted Living Facility
HHC	Home Health Care
LF U/W	Long Form Underwriting
MGI U/W	Modified Guaranteed Issue Underwriting
SF U/W	Short Form Underwriting

Note:

1- Model cells include all inforce data as of June 30, 2018. All benefits including selected optional benefits are valued in the projection except Benefit Increase Options.

APPENDIX E

Demographic Information

Data

We relied on the inforce data and claim information supplied by the third party administrator LTCG. We have evaluated that data for reasonableness and consistency. The principal materials upon which we relied were provided by LTCG and internal financial reports include:

1. Data extracts from LTCG administrative system
2. Financial statements
3. Plan descriptions

The Actuarial Valuation considers the number and demographic characteristics of covered participants, including active participants and on-claim participants. This section presents a summary of significant statistical data on these participant groups.

Future plan costs are affected by attained age, years in plan and benefits chosen. In this year's valuation, there were 124,472 inforce participants with an average attained age of 73.8 and an average duration of 20.

Inforce Participants as of 6/30/2018 - Demographics and Selected Benefit Options

The following distributions for all inforce participants as of June 30, 2018 are included in Appendix E:

- By benefit period and elimination period
- By issue-age and attained-age
- By coverage
- By inflation option
- By gender
- By premium mode
- By underwriting type
- By product series

CalPERS LTC Program
Distributions of Business Inforce as of 6/30/2018

By Benefit Period and Elimination Period

Benefit Period	Elimination Period	Policy Count	Percent	Expected Annual Premium	Percent
6 Month	30 Day	107	0%	85,065	0%
1 Year	30 Day	1,507	1%	1,486,252	0%
2 Year	30 Day	2,804	2%	4,167,100	1%
3 Year	90 Day	29,045	23%	50,716,190	16%
6 Year	90 Day	33,973	27%	61,103,264	19%
10 Year	90 Day	24,971	20%	62,981,751	20%
Lifetime	90 Day	32,065	26%	138,360,212	43%
Total		**124,472**	**100%**	**318,899,836**	**100%**

By Issue-Age Band and Gender

	Policy Count				Expected Annual Premium			
Issue-Age Band	**Females**	**Males**	**Total**	**Percent**	**Females**	**Males**	**Total**	**Percent**
< 30	418	233	651	1%	487,706	285,281	772,987	0%
30-39	4,012	2,397	6,409	5%	5,900,193	3,520,037	9,420,229	3%
40-44	5,559	3,019	8,578	7%	9,773,702	5,296,831	15,070,533	5%
45-49	10,572	5,711	16,283	13%	21,528,661	11,716,753	33,245,414	10%
50-54	15,909	9,307	25,216	20%	36,539,590	21,374,682	57,914,272	18%
55-59	17,110	11,004	28,114	23%	45,053,473	29,370,214	74,423,687	23%
60-64	12,832	9,382	22,214	18%	38,043,898	28,355,271	66,399,169	21%
65-69	6,964	4,824	11,788	9%	23,698,742	16,612,128	40,310,870	13%
70-74	2,785	1,400	4,185	3%	10,775,253	5,564,687	16,339,940	5%
75-79	703	233	936	1%	3,232,403	1,166,844	4,399,247	1%
80-84	78	16	94	0%	478,834	102,019	580,853	0%
85-89	4	0	4	0%	22,635	0	22,635	0%
90-94	0	0	0	0%	0	0	0	0%
95+	0	0	0	0%	0	0	0	0%
Total	**76,946**	**47,526**	**124,472**	**100%**	**195,535,089**	**123,364,746**	**318,899,836**	**100%**

By Attained Age and Gender

			Policy Count			Expected Annual Premium		
Attained Age	**Females**	**Males**	**Total**	**Percent**	**Females**	**Males**	**Total**	**Percent**
<30	20	15	35	0%	15,626	11,243	26,869	0%
30	2	1	3	0%	1,239	408	1,646	0%
31	3	1	4	0%	2,058	770	2,828	0%
32	4	4	8	0%	5,397	5,252	10,650	0%
33	3	3	6	0%	2,972	2,854	5,826	0%
34	9	4	13	0%	7,255	4,886	12,140	0%
35	10	5	15	0%	17,245	5,419	22,665	0%
36	8	7	15	0%	14,253	6,447	20,700	0%
37	10	10	20	0%	11,913	14,996	26,909	0%
38	22	10	32	0%	28,252	9,518	37,771	0%
39	16	5	21	0%	19,945	6,163	26,108	0%
40	29	22	51	0%	40,306	27,416	67,723	0%
41	39	20	59	0%	41,953	23,967	65,919	0%
42	40	20	60	0%	52,945	23,118	76,063	0%
43	54	32	86	0%	64,653	47,787	112,440	0%
44	64	22	86	0%	90,732	28,345	119,077	0%
45	82	51	133	0%	96,875	67,893	164,769	0%
46	91	66	157	0%	121,385	95,083	216,469	0%
47	145	64	209	0%	207,286	88,954	296,240	0%
48	171	94	265	0%	241,593	120,519	362,112	0%
49	189	129	318	0%	260,905	178,652	439,557	0%
50	163	142	305	0%	236,845	226,679	463,524	0%
51	279	146	425	0%	398,505	204,509	603,014	0%
52	299	194	493	0%	442,238	282,151	724,389	0%
53	362	224	586	0%	526,434	340,166	866,599	0%
54	471	276	747	1%	737,520	438,373	1,175,893	0%
55	520	359	879	1%	863,166	565,112	1,428,279	0%
56	608	355	963	1%	971,322	600,244	1,571,566	0%
57	711	370	1,081	1%	1,165,029	593,884	1,758,913	1%
58	764	458	1,222	1%	1,265,520	726,378	1,991,898	1%
59	883	493	1,376	1%	1,435,274	847,505	2,282,779	1%
60	1,015	587	1,602	1%	1,707,333	1,036,961	2,744,293	1%
61	1,196	675	1,871	2%	2,185,585	1,245,574	3,431,158	1%
62	1,278	710	1,988	2%	2,270,560	1,204,980	3,475,539	1%
63	1,497	808	2,305	2%	2,792,809	1,492,997	4,285,806	1%
64	1,749	878	2,627	2%	3,421,302	1,756,354	5,177,656	2%
65	1,901	1,053	2,954	2%	3,773,221	2,074,137	5,847,358	2%
66	2,107	1,065	3,172	3%	4,218,514	2,332,476	6,550,990	2%
67	2,281	1,308	3,589	3%	4,693,621	2,694,309	7,387,929	2%
68	2,568	1,512	4,080	3%	5,379,502	3,131,138	8,510,640	3%
69	2,819	1,676	4,495	4%	6,202,674	3,677,749	9,880,423	3%
70	3,168	1,928	5,096	4%	7,164,410	4,421,147	11,585,557	4%
71	3,666	2,194	5,860	5%	8,624,035	5,252,491	13,876,527	4%
72	2,988	1,839	4,827	4%	7,308,426	4,366,502	11,674,928	4%
73	3,151	1,882	5,033	4%	7,891,311	4,672,747	12,564,058	4%
74	3,226	2,041	5,267	4%	8,124,496	5,263,550	13,388,046	4%
75	3,383	2,242	5,625	5%	8,659,171	6,023,885	14,683,056	5%
76	3,068	1,973	5,041	4%	8,182,201	5,332,245	13,514,446	4%
77	2,722	1,809	4,531	4%	7,562,061	5,139,072	12,701,133	4%
78	2,712	1,794	4,506	4%	7,534,310	5,153,316	12,687,626	4%
79	2,727	1,789	4,516	4%	7,707,000	5,221,010	12,928,010	4%
80	2,490	1,751	4,241	3%	7,063,356	5,237,512	12,300,868	4%
81	2,330	1,620	3,950	3%	6,855,052	4,786,141	11,641,194	4%
82	2,098	1,499	3,597	3%	6,332,272	4,493,231	10,825,503	3%
83	2,004	1,412	3,416	3%	6,188,658	4,381,878	10,570,536	3%
84	1,862	1,245	3,107	2%	5,765,886	3,955,572	9,721,458	3%
85	1,639	1,219	2,858	2%	5,115,389	3,912,241	9,027,630	3%
86	1,602	1,117	2,719	2%	5,275,225	3,705,665	8,980,890	3%
87	1,385	961	2,346	2%	4,710,891	3,306,820	8,017,711	3%
88	1,189	810	1,999	2%	4,149,956	2,815,753	6,965,709	2%
89	1,069	657	1,726	1%	3,792,980	2,377,310	6,170,289	2%
90	887	481	1,368	1%	3,202,307	1,743,603	4,945,910	2%
91	814	417	1,231	1%	3,092,999	1,617,174	4,710,173	1%
92	608	305	913	1%	2,372,860	1,153,409	3,526,269	1%
93	519	222	741	1%	2,006,035	906,829	2,912,863	1%
94	390	177	567	0%	1,531,786	742,035	2,273,821	1%
95	273	98	371	0%	1,103,460	366,251	1,469,711	0%
96	176	83	259	0%	744,487	369,484	1,113,970	0%
97	143	43	186	0%	581,397	194,099	775,496	0%
98	69	23	92	0%	339,723	92,710	432,434	0%
99+	106	21	127	0%	521,190	119,700	640,890	0%
Total	**76,946**	**47,526**	**124,472**	**100%**	**195,535,089**	**123,364,746**	**318,899,836**	**100%**

By Plan Type

Plan Type	Policy Count	Percent	Expected Annual Premium	Percent
Partnership (Comprehensive)	4,418	4%	5,738,417	2%
Comprehensive	97,558	78%	266,869,727	84%
Facilities Only	22,496	18%	46,291,692	15%
Total	**124,472**	**100%**	**318,899,836**	**100%**

By Inflation

Inflation	Policy Count	Percent	Expected Annual Premium	Percent
No Inflation	81,399	65%	161,001,206	50%
Inflation	43,073	35%	157,898,630	50%
Total	**124,472**	**100%**	**318,899,836**	**100%**

By Marital Status at time of Issue

Marital Status	Gender	Policy Count	Percent	Expected Annual Premium	Percent
Married	F	48,021	39%	116,477,683	37%
Married	M	37,945	30%	97,254,125	30%
Divorced	F	10,390	8%	26,357,577	8%
Divorced	M	2,729	2%	7,545,719	2%
Single	F	9,342	8%	23,789,332	7%
Single	M	4,394	4%	11,197,484	4%
Widowed	F	8,659	7%	27,551,322	9%
Widowed	M	1,754	1%	5,652,293	2%
Unknown	F	528	0%	1,349,455	0%
Unknown	M	698	1%	1,706,379	1%
Separated	F	6	0%	9,720	0%
Separated	M	6	0%	8,748	0%
Total		**124,472**	**100%**	**318,899,836**	**100%**

By Marital Status

Marital Status	Policy Count	Percent	Expected Annual Premium	Percent
Married	85,966	69%	213,731,807	67%
Other	38,506	31%	105,168,028	33%
Total	**124,472**	**100%**	**318,899,836**	**100%**

By Premium Mode

Premium Mode	Policy Count	Percent	Expected Annual Premium	Percent
Monthly	94,430	76%	248,195,873	78%
Quarterly	23,191	19%	52,683,566	17%
Semi-Annually	3,969	3%	10,171,544	3%
Annually	2,882	2%	7,848,853	2%
Total	**124,472**	**100%**	**318,899,836**	**100%**

By Underwriting Type

Underwriting Type	Policy Count	Percent	Expected Annual Premium	Percent
LF	74,500	60%	197,160,203	62%
MGI	27,151	22%	67,222,110	21%
SF	22,821	18%	54,517,523	17%
Total	**124,472**	**100%**	**318,899,836**	**100%**

By Product Series

Product Series	Policy Count	Percent	Expected Annual Premium	Percent
LTC 1	100,470	81%	264,325,265	83%
LTC 2	7,742	6%	19,974,472	6%
LTC 3	14,284	11%	28,849,135	9%
LTC 4	1,976	2%	5,750,964	2%
Total	**124,472**	**100%**	**318,899,836**	**100%**

APPENDIX F

Glossary of Terms

Glossary of Terms

Anti-Selection - Individuals who let their policies lapse because of special events (see "Shock Lapses") are usually in better health. Participants do not normally drop their coverage if they anticipate that they will soon have a claim. As a result of this participant decision process, individuals who retain their policies are often, on average, in worse health than those who lapse them. This phenomenon is called Anti-Selection.

Base Case - The results of a projection using the "best estimate" assumptions in the LTC valuation. All sensitivity projections are done relative to this Base Case.

Benefit Period - This is the period of time that an insured would receive benefits if the full maximum daily benefit amount is paid each day an insured is on claim. If less than the maximum daily benefit amount is paid, the length of time that a claimant would receive benefits would be greater than this time period.

Claim Incidence - The probability of a policyholder incurring a claim is referred to as claim incidence.

Claim Termination - The probability that an existing claim will cease is referred to as claim termination.

Comprehensive Plan - A plan that covers home health care in addition to care in a nursing home and/or an assisted living facility.

Claim Continuance - The period of time that a participant continues to be on claim after a claim has begun.

Conversion - The voluntary election to switch/reduce coverage, sometimes as a result of a specific event such as a premium rate increase.

Credible - A statistical measure of the degree to which data is considered reliable for predictive purposes. Credibility increases as a block of business grows and over time as more data accumulates.

Deficit - A calculation that determines the degree to which the current fund value is insufficient to pay future benefits expressed as a percentage of the present value of future premiums. This number is an estimate of what one-time rate increase would be needed to bring the Program back to the target margin level. If the current fund value is more than enough to pay future benefits, a positive number represents a surplus. In formula terms:

{Current Fund Balance + Present Value of Premiums - Present Value of Benefits and Expenses} / Present Value of Premiums

Disabled Life Reserve - The value of future claim payments for those participants currently on claim.

Discount Rate - An interest rate used to determine present values. For CalPERS, the discount rate is set equal to the expected investment earnings rate.

Duration - The amount of time, typically measured in years, since the issue date of the policy. Duration is sometimes referred to as policy year.

Elimination Period - The period of time that the participant pays for care before the benefits are paid from insurance proceeds.

First Principle Model – A model that uses fundamental concepts and assumptions to project cash flows. First principles model calculations tend to use more granular assumptions and track policyholder status and transitions more closely than a comparable claim cost model.

Facility-Only Plan – A type of plan that pays for care in a nursing home or assisted living facility, but not for care at home or in the community.

Funded Ratio - Method of expressing the current financial status of the Program, which is consistent with the CalPERS pension and health plan financial status measurements. In general, the funded ratio is the assets divided by the accrued liability, or reserves. For long-term care insurance, the accrued liability is equal to the present value of future benefits and expenses less the present value of participant premiums. This definition is consistent with a statutory gross premium valuation reserve for LTC insurance. In this context, a breakeven position is a ratio of 100 percent. In formula terms:

Fund Balance / {Present Value of Benefits and Expenses - Present Value of Premiums}

Incidence - The number of participants that start a claim as a percentage of participants that could start a claim over a specified time period (i.e., frequency of claim).

Incurred Claims - Incurred claims are made up of paid claims plus a reserve representing the assumed continuance of claims on known claimants which have yet to be paid as well as claims that have begun on unknown claimants but have not yet been reported. The amount of the latter unpaid claims is referred to as the IBNR (Incurred but Not Reported) Reserve.

Inflation Coverage - An optional feature that increases the amount of available benefits over time in order to protect a participant against rising health care costs. The CalPERS inflation coverage offers four different levels of automatic inflation protection: 3 or 5 percent simple, and 3 or 5 compound.

LTC1, LTC2, LTC3, LTC4 - Four different long-term care insurance plans sold to CalPERS participants. The main differences between the plans are the percentages of daily benefit for the Home Health Care (HHC) and Assisted Living Facility (ALF) care that are available at the time of claim in comparison to the Nursing Home (NH) coverage for comprehensive policies. A summary of those benefits and the initial issue year is shown below.

LTC1 (1995) - NH (100%) / ALF (50%) / 50% HHC
LTC2 (2003) - NH (100%) / ALF (70%) / 50% HHC
LTC3 (2005) - NH (100%) / ALF (70%) / 70% HHC
LTC4 (2014) - NH (100%) / ALF (100%) / 100% HHC

Model - An actuarial tool used to project future cash flows including premiums, claims, investment returns, and expenses.

Morbidity - The overall term for the various assumptions underlying the expected/projected claims of a block of business.

Mortality - The rate of incidence of death.

Partnership Plan - A collaboration or “partnership” between state government, insurance companies, and state residents who buy long-term care Partnership policies. The purpose of the

Partnership Program is to encourage individuals to purchase LTC coverage and save the state money by increasing private funding of LTC services and thereby reducing Medicaid payments for LTC. The advantage of the partnership plan for a participant is that once his/her insurance coverage is exhausted, his/her assets in an amount equal to the amount of insurance coverage used are protected when qualifying for Medicaid payments for LTC.

Persistency - The number of participants that remain active relative to the total number that started from one-time period to another. Historically, LTC persistency has been higher than what was originally expected for CalPERS and the LTC industry as a whole. Because of the stronger than expected persistency, more participants are ultimately expected to submit claims than were originally expected, which puts additional financial strain on a LTC Program.

Present value - A calculation that expresses future cash flows in a current cash equivalent amount based on assumed future interest rates (the Discount Rate).

Restoration of Benefits or (ROB) - Benefit period will be restored if the participant recovers and is not eligible for benefits for at least 180 consecutive days. The maximum amount that can be restored over the life of the coverage is equal to the original total benefit amount purchased. This optional benefit rider is only available to LTC4 policies with a benefit period of 3 years or 6 years.

Return of Premium or (ROP) - Returns some or all of a participant's premiums less any benefits paid to the spouse or estate if the participant dies before age 75. This is a built-in option for some of CalPERS plans.

Selection Factors - Factors used to adjust attained age or ultimate claim costs to levels reflecting recent underwriting/issue, therefore reducing (in general) claim costs associated with those policies. Different selection factors are also used for the mortality assumption.

Shock Lapses - An insurance phenomenon where individuals allow their policies to lapse/terminate at a higher rate than usual due to a specific event such as a premium rate increase.

Survivorship Benefit - If both spouses or partners have this optional benefit, long-term care coverage for a surviving spouse or partner will be paid up if one spouse or partner dies after each have had coverage for a period of 10 years or more. This optional benefit rider is only available to LTC4 policies. Spouses or domestic partners must choose identical coverage sign up for this optional benefit.

Terminations - The policies that are no longer active due to death, voluntary lapse, or any other reason.

Underwriting Type - Underwriting is the process of evaluating and selecting risks to be insured. Three types of underwriting were utilized at various times by CalPERS:

- MGI - Modified Guaranteed Issue; limited underwriting for younger applicants actively at work.
- SF - Short Form; simplified application process with limited medical evaluation for younger applicants.
- LF - Long Form; considered "full underwriting" due to the comprehensive nature of medical questions asked and the associated underwriting process.

Currently, CalPERS only uses the long form of application for underwriting and has done so since 2002.

Voluntary Lapsation - When a participant chooses to terminate his/her policy of his/her own volition - not due to death or other limitation on renewing contained within the policy.

Waiver of Premium or WOP - A benefit provision in a policy that allows the participant to stop making premium payments during the time when they meet specified disabling conditions such as being eligible to be on LTC claim.