

**John Hancock Life Insurance Company (U.S.A.)**  
**Actuarial Memorandum for Inforce Rate Increase – Custom Care Series**  
**April 26, 2023**

<u>Product Name</u>	<u>Form Number</u>	<u>Issue Date Range</u>
Custom Care	LTC-02 MD	May 2002 - Sep 2004
Essential Care	BSC-02 MD	Jul 2002 - Jun 2004

**These policy form rates were originally priced with a margin for moderately adverse experience in accordance with the NAIC model rate stability regulations which were being implemented on a State by State basis during the time of our initial rate filing.**

### **1. Scope & Purpose**

This memorandum consists of materials which support the development of new premium rates for the above captioned policy series forms. The purpose of this memorandum is to demonstrate that the requirements of this State in regards to an in force rate increase request have been met. This rate filing is not intended to be used for any other purpose.

### **2. Justification for Rate Increase**

John Hancock has completed our most recent triennial comprehensive long-term care experience study which examines the usage trends for our insured population. Relative to previous expectations, the new data demonstrates lower mortality for non-claimants, higher utilization of benefits, and lower than expected claim terminations, partly offset by lower claim incidence. Based on that data, we have determined that there is a need to increase premiums on certain policy series. Further detail on assumptions and recent analysis is provided in **Addendum #1 - Assumptions and Analysis Performed.**

### **3. Requested Rate Increase**

The Company is requesting an average rate increase of 139.1%, which varies by inflation option (125.6% for inflation policies and 292.1% for non-inflation policies) due to past approval history. Rate increases were derived as outlined below, ensuring at each step that the proposed rate increases did not result in premium rates that exceed rates for older issue ages:

1. The Company first determined the projected lifetime loss ratio for this form based on nationwide actual experience and projected future experience assuming the prior rate increase request was approved in full and within three months of the original filing date. We then determined the amount of rate increase (61.6%) that would be needed in order to revert to the applicable lifetime loss ratio certified to in our prior filing for this form restated for the removal of waived premiums (90.7%).
2. Rate increases were adjusted to account for the timing of approvals on prior filings and delayed implementation due to a multi-year phase-in of the prior rate increase in your State. Adjustments are proportional to the amounts requested in prior filings and were determined such that the achieved lifetime loss ratio matches that targeted in Step #1 above. After the application of this adjustment, the average rate increase for the forms listed in this memo is 69.1%, ranging from 68.4% to 76.3%.
3. Unapproved rate increases initially requested in our 2016 inforce rate filings (SERFF Tracking No. MULF-132013921) were included in this filing. These rate increases continue to be actuarially justified and are unchanged from our original request with the following exception: to account for the delayed implementation of the originally-requested rate increases, we have adjusted the portion of the current proposed rate increases attributable to the 2016 remainder so that on a present-value basis it is equivalent to implementing our original request all at once. After taking the unapproved amount into

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account and applying this adjustment, the average rate increase for the forms listed in this memo is 139.1%, ranging from 125.6% to 292.1%.

4. We ensured that the resulting overall increase in rates satisfied the rate stability rule ensuring a loss ratio no less than 85% (or the original pricing loss ratio if greater) on the rate increase portion, while applying 58% (or the original pricing loss ratio if greater) on the original rate schedule. This is demonstrated at the bottom of Exhibit 1 where it can be seen that the sum of past and future projected incurred claims excluding past losses is not less than the sum of the original premium times the greater of 58% and the original pricing loss ratio and the rate increase premium times the greater of 85% and the original pricing loss ratio.
5. In accordance with COMAR 31.14.01.04(A)(5), we are willing to phase-in the requested rate increase on an equivalent basis such that the maximum annual rate increase does not exceed 15%.

A summary of proposed rate increases can be found in **Appendix A**.

In the rate schedules by policy form, **Appendix B1** contains the new proposed rate tables for all policy forms included with this filing for those policyholders that *never* elected an inflation reduction or shared cost option as part of the 2013 or 2016 rate increase filings.

In the rate schedules by policy form, **Appendices B2** forward contain the new proposed rate tables for all policy forms included with this filing for those policyholders that *did* elect an inflation reduction or shared cost option as part of the 2013 and/or 2016 rate increase filings.

Please note that the actual rates implemented may vary slightly from those in the Appendices due to implementation rounding algorithms.

**Exhibit 1** contains nationwide past premium and claims experience as well as future premium and claim projections. Waived premiums are not included. It illustrates that the anticipated lifetime loss ratio with the requested rate increase is 90.7%, which exceeds the original pricing loss ratio of 86.0%. Please note that the original pricing loss ratio was not restated for the removal of waived premiums due to immateriality. The lifetime loss ratio as of 12/31/2021 is calculated as the sum of accumulated past and discounted future claims divided by the sum of accumulated past and discounted future earned premium where accumulation and discounting occur at the maximum statutory valuation discount rate.

**Exhibit 1** also contains the original expected loss ratio projections, adjusted for the actual mix of business issued, with the lifetime loss ratio also calculated as stated above.

Furthermore, **Exhibit 1** demonstrates that the calculated loss ratio respects the applicable pre and post rate stability requirements:

Post-stability form requirements:

The sum of the accumulated value of incurred claims without the inclusion of active life reserves, and the present value of future projected incurred claims, without the inclusion of active life reserves, will not be less than the sum of the following:

1. Accumulated value of the initial earned premium times the greater of the original assumed lifetime loss ratio and 58%,
2. Accumulated value of prior premium rate schedule increases times the greater of the original assumed lifetime loss ratio and 85%,

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3. Present value of future projected initial earned premium times the greater of the original assumed lifetime loss ratio and 58%, and
4. Present value of future projected premium in excess of the projected initial earned premium times the greater of the original assumed lifetime loss ratio and 85%.

Pre-stability form requirements:

The sum of the accumulated value of incurred claims without the inclusion of active life reserves, and the present value of future projected incurred claims, without the inclusion of active life reserves, will not be less than the sum of the following:

1. Accumulated value of the initial earned premium times the greater of the original assumed lifetime loss ratio and 60%,
2. Accumulated value of prior premium rate schedule increases times the greater of the original assumed lifetime loss ratio and 80%,
3. Present value of future projected initial earned premium times the greater of the original assumed lifetime loss ratio and 60%, and
4. Present value of future projected premium in excess of the projected initial earned premium times the greater of the original assumed lifetime loss ratio and 80%.

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**4. Nationwide Loss Ratio Exhibit (Exhibit 1)**

**Custom Care (LTC-02) and Essential Care (BSC-02)**

Calendar Year	Original Assumptions (with Waived Premiums)			Historical & Projected Experience (without Waived Premiums)					
	Incurred Claims	Earned Premium	Incurred Loss Ratio	Before Proposed Increase			With Proposed Rate Increase		
				Incurred Claims	Earned Premium	Incurred Loss Ratio	Incurred Claims	Earned Premium	Incurred Loss Ratio
1988	-	-	0%	-	1,333	0%	-	1,333	0%
1989	-	-	0%	-	1,777	0%	-	1,777	0%
1990	-	-	0%	-	1,777	0%	-	1,777	0%
1991	-	-	0%	-	1,777	0%	-	1,777	0%
1992	-	-	0%	-	11,542	0%	-	11,542	0%
1993	-	-	0%	-	19,371	0%	-	19,371	0%
1994	-	-	0%	-	21,457	0%	-	21,457	0%
1995	-	-	0%	-	35,659	0%	-	35,659	0%
1996	-	-	0%	-	73,346	0%	-	73,346	0%
1997	-	-	0%	-	99,678	0%	-	99,678	0%
1998	-	-	0%	-	187,151	0%	-	187,151	0%
1999	-	-	0%	-	317,190	0%	-	317,190	0%
2000	-	-	0%	-	626,623	0%	-	626,623	0%
2001	-	-	0%	-	1,181,896	0%	-	1,181,896	0%
2002	530,322	12,698,284	4%	444,586	42,876,666	1%	444,586	42,876,666	1%
2003	5,487,901	132,209,102	4%	3,285,613	185,033,471	2%	3,285,613	185,033,471	2%
2004	12,277,508	234,720,102	5%	11,194,879	241,035,501	5%	11,194,879	241,035,501	5%
2005	20,299,610	230,898,672	9%	14,002,004	237,095,901	6%	14,002,004	237,095,901	6%
2006	28,140,074	220,845,859	13%	26,549,017	232,359,776	11%	26,549,017	232,359,776	11%
2007	33,039,150	213,029,569	16%	49,111,451	227,827,938	22%	49,111,451	227,827,938	22%
2008	38,955,824	206,503,759	19%	40,624,649	222,820,401	18%	40,624,649	222,820,401	18%
2009	48,970,112	200,673,230	24%	52,969,023	218,034,778	24%	52,969,023	218,034,778	24%
2010	58,262,436	194,904,782	30%	67,428,507	212,921,613	32%	67,428,507	212,921,613	32%
2011	65,013,451	188,814,100	34%	78,877,864	206,260,298	38%	78,877,864	206,260,298	38%
2012	72,397,279	182,414,152	40%	101,823,574	172,944,103	59%	101,823,574	172,944,103	59%
2013	80,014,444	175,720,840	46%	107,792,681	172,397,189	63%	107,792,681	172,397,189	63%
2014	87,500,748	168,806,836	52%	117,168,392	183,553,938	64%	117,168,392	183,553,938	64%
2015	95,657,227	161,789,916	59%	150,833,424	189,188,873	80%	150,833,424	189,188,873	80%
2016	104,540,237	154,735,212	68%	158,835,115	203,024,375	78%	158,835,115	203,024,375	78%
2017	113,954,945	147,665,819	77%	179,275,676	205,513,599	87%	179,275,676	205,513,599	87%
2018	123,948,315	140,599,224	88%	200,949,642	219,419,884	92%	200,949,642	219,419,884	92%
2019	134,309,647	133,546,718	101%	225,712,992	234,918,922	96%	225,712,992	234,918,922	96%
2020	144,975,775	126,515,069	115%	212,936,012	227,489,255	94%	212,936,012	227,489,255	94%
2021	155,907,667	119,513,629	130%	307,649,543	236,051,979	130%	307,649,543	236,051,979	130%
Projected Future Experience									
2022	167,789,973	112,559,728	149%	317,838,503	256,882,007	124%	317,838,503	256,882,007	124%
2023	179,649,593	105,668,334	170%	350,449,271	269,832,410	130%	350,449,271	269,832,410	130%
2024	190,480,927	98,857,577	193%	380,488,727	256,219,857	149%	380,277,345	302,512,033	126%
2025	200,692,859	92,144,940	218%	410,978,959	240,292,445	171%	400,247,842	525,803,781	76%
2026	209,843,085	85,547,583	245%	436,512,813	224,204,120	195%	419,052,301	508,180,117	82%
2027	217,968,151	79,099,489	276%	460,671,524	208,123,325	221%	442,244,663	470,472,761	94%
2028	225,223,405	72,837,995	309%	488,721,900	192,066,774	254%	469,173,024	433,084,444	108%
2029	231,402,094	66,795,422	346%	513,225,416	176,117,476	291%	492,696,400	396,179,748	124%
2030	236,317,862	60,994,934	387%	533,817,893	160,423,407	333%	512,465,178	360,075,835	142%
2031	239,043,625	55,452,618	431%	549,715,366	145,103,155	379%	527,726,751	325,015,749	162%
2032	239,951,577	50,195,331	478%	559,778,944	130,282,750	430%	537,387,786	291,257,931	185%
2033	239,412,773	45,251,862	529%	562,933,268	116,023,137	485%	540,415,937	258,912,502	209%
2034	235,727,762	40,644,802	580%	558,270,165	102,477,526	545%	535,939,359	228,300,168	235%
2035	228,945,808	36,382,390	629%	548,623,312	89,909,226	610%	526,678,379	199,991,715	263%
2036	220,732,683	32,455,981	680%	534,078,300	78,351,308	682%	512,715,168	174,037,326	295%
2037	212,730,375	28,862,706	737%	514,024,741	67,802,102	758%	493,463,752	150,411,012	328%
2038	204,915,341	25,605,445	800%	488,055,335	58,254,444	838%	468,533,121	129,078,457	363%
2039	195,506,230	22,683,506	862%	458,771,955	49,698,656	923%	440,421,077	110,002,007	400%
2040	185,228,216	20,084,232	922%	427,667,705	42,101,209	1016%	410,560,997	93,093,409	441%

Note: Please refer to the Actuarial Memorandum, section "Ensuring No Cross-Subsidization Between States", for adjustments made to experience exhibits

Values as of 12/31/2021 (discounted at maximum statutory valuation rates)									
Past :	1,870,306,822	5,404,882,161	34.6%	2,734,031,756	6,422,133,522	42.6%	2,734,031,756	6,422,133,522	42.6%
Future :	3,549,916,449	898,965,991	394.9%	7,081,852,374	2,238,972,385	316.3%	6,842,474,709	4,140,479,923	165.3%
Lifetime :	5,420,223,271	6,303,848,153	86.0%	9,815,884,131	8,661,105,906	113.3%	9,576,506,465	10,562,613,445	90.7%

**Total Incurred Claims exceed Total Initial Premiums x max(58%, Original Pricing Loss Ratio) + Increased Premiums x max(85%, Original Pricing Loss Ratio)**

Minimum (Accum Value of Past Incurred Claims,	Accum Value of Past Initial Prm x 86.0% =	4,731,374,328
Future	Present Value of Future Initial Prm x 86.0% =	557,487,342
Accum Value of Adjusted Expected Incurred Claims) =	Accum Value of Prior Increases x 86.0% =	790,553,980
Present Value of Future Incurred Claims =	Present Value of Future Increases x 86.0% =	3,002,611,996
Total =	Total =	9,082,027,646

**Total Incurred Claims exceed Total Initial Premiums x max(60%, Original Pricing Loss Ratio) + Increased Premiums x max(80%, Original Pricing Loss Ratio)**

Minimum (Accum Value of Past Incurred Claims,	Accum Value of Past Initial Prm x 86.0% =	4,731,374,328
Future	Present Value of Future Initial Prm x 86.0% =	557,487,342
Accum Value of Adjusted Expected Incurred Claims) =	Accum Value of Prior Increases x 86.0% =	790,553,980
Present Value of Future Incurred Claims =	Present Value of Future Increases x 86.0% =	3,002,611,996
Total =	Total =	9,082,027,646

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**5. Proposed Effective Date**

New rates will not be effective until after the completion of prior rate increases for all policyholders with product forms listed in this memo. These rates will be effective on the next policy anniversary date after completion, following at least a 90 day policyholder notification period. The assumed effective date used to calculate the rate increase is 11/01/2024.

**6. History of Previous Rate Revisions**

A 15.0% rate increase on these policy forms was accepted by your state on September 13, 2012.

A 15.0% rate increase on these policy forms was accepted by your state on September 11, 2013.

A 15.0% rate increase on these policy forms was accepted by your state on September 29, 2014.

A 15.0% rate increase on these policy forms was accepted by your state on October 23, 2015.

A multi-year rate increase phase-in of 15% annually for two years on these policy forms was accepted by your state August 01, 2017.

A multi-year rate increase phase-in of 15% annually for three years for inflation policies only was accepted by your state April 01, 2020.

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**7. Reduced Benefit Options (RBOs)**

Although this is a closed block of business, we are filing the following option which will provide policyholders an alternative to the rate increase:

- ***LTC Buy-Out Offer and Policy Termination Option***

We will be making an offer to buy-out policies which are active and paying premium. Policyholders who accept this offer will agree to receive a one-time, lump sum payment in exchange for the immediate termination of their policy and any riders.

The LTC Buy-Out Offer Amount will be based on the best estimate value of the policy, determined by an actuarial calculation which takes into account several factors including morbidity, mortality, and interest rate assumptions. This offer will be available to policies issued prior to age 70. Additional details have been provided in **Addendum #3 – LTC Buy-Out Offer and Policy Termination Option Details**.

If the full or substantial portion of the rate increase request is approved and per the state's agreement, we will file the following additional options which would provide policyholders alternatives to the rate increase:

- ***Inflation Landing Spots***

Future inflation options (also referred to as "landing spots") allow policyholders that have Compound or Simple inflation coverage the option to offset the rate increase. Under these options, the policyholders get to keep their current accumulated Daily benefit and their current remaining Lifetime Maximum Benefit, but the future indexation rate will be reduced to a level which is actuarially equivalent to the requested rate increase in aggregate. These options are not available to limited pay policies or policyholders who have elected three prior inflation reductions.

- ***Shared Cost Option***

Shared Cost option is an actuarially equivalent option that allows policyholders the option to offset the rate increase. The Shared Cost option would:

- Reduce the policyholder's current policy benefit amounts by their Shared Cost percentage. The daily/monthly benefit and the policy limit will be reduced by the Shared Cost percentage
- Apply a percentage factor to any future claim payments equal to the Shared Cost percentage. John Hancock will pay our portion (1 minus the Shared Cost percent) of any covered services, but will not pay more than the new reduced daily/monthly benefit amount and the policyholder will be responsible for the remainder.

Shared Cost Percentages are calculated using seriatim, nationwide data for each benefit period, inflation type and issue age band combination. All Shared Cost percentages are determined to be actuarially equivalent to the requested rate increases by combination of 5-year issue age band, benefit period and inflation type. The Shared Cost option is not available to limited pay policies or policyholders who have elected two prior Shared Cost options.

- ***Voluntary Enhanced Paid-Up Policy Option***

For those who choose to stop paying premiums, this option will be a paid-up policy with a policy limit equal to the lesser of the current policy limit and 150% of premiums paid less any benefits received.

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The premium rate tables reflecting these options will be filed upon request following a full or substantial approval.

**8. State Policyholder Counts & Average Annual Premium**

The table below summarizes the number of policies inforce that could be affected by the rate increase in your state and their annualized premiums, as well as the average annual premium per policy before and after the requested increase.

Counts and premiums are based on policies inforce as of 12/31/2021. Premium-paying policies as well as policies on claim are included, since although the premium for policies on claim is currently waived, they could be subject to the rate increase upon recovery. Paid-up policies and policies which have exercised the nonforfeiture benefit option are excluded.

Form	Number of Policies	2021 Annualized Premium*	2021 Average Annual Premium Before the rate increase*	2021 Average Annual Premium After the rate increase
LTC-02 MD	4,516	21,439,384	4,750	11,355
BSC-02 MD	110	444,566	4,040	9,658

\*Premiums reflect the rate increases approved in prior filing(s), including approvals where implementation is not yet complete

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**9. State and Nationwide Distribution of Business as of December 31, 2021**

The state-specific and nationwide distribution of business for policyholders impacted by the rate increase is shown below by inflation type, benefit period, and issue age. The breakdown of business by Premium Payment Option is also included to show the number of policyholders no longer paying premiums due to nonforfeiture election or paid-up status.

**Inflation Type**

State	GPO	Simple	Compound	Total
NW	10%	26%	64%	100%
MD	5%	21%	74%	100%
NW	8,769	21,861	54,800	85,430
MD	251	966	3,409	4,626

**Benefit Period**

State	1 yr	2 yr	3 yr	4 yr	5 yr	6 yr	10 yr	Lifetime	Total
NW	0%	5%	20%	21%	13%	9%	4%	28%	100%
MD	0%	6%	23%	21%	14%	8%	4%	23%	100%
NW	6	4,474	17,354	17,695	10,957	7,388	3,406	24,150	85,430
MD	0	289	1,068	952	670	385	180	1,082	4,626

**Issue Age**

State	< 40	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80+	Total
NW	1%	2%	6%	17%	30%	26%	13%	4%	1%	0%	100%
MD	1%	2%	7%	20%	33%	24%	10%	2%	1%	0%	100%
NW	792	1,843	5,382	14,900	25,221	22,570	10,961	3,117	603	41	85,430
MD	37	103	329	906	1,518	1,116	479	111	26	1	4,626

**Premium Payment Option**

State	Lifetime Pay	On Claim	Limited Pay	NFO*	Limited Pay, Paid Up*	Survivorship Waiver of Premium*	Total
NW	84%	4%	0%	6%	5%	1%	100%
MD	86%	3%	0%	4%	6%	1%	100%
NW	81,085	4,180	165	6,121	4,568	907	97,026
MD	4,446	175	5	224	309	31	5,190

\*Policies not included in distributions by count shown above as they are not impacted by the rate increase.



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**10. Benefit Description(s)**

A brief policy description for each of the policy forms:

LTC-02 MD

Individually underwritten long-term care policies that provide comprehensive long-term care coverage for care received in a nursing home or assisted care living facility, home health care, hospice care, respite care, or attendance at an Adult Day Care Center providing Adult Day Care.

Provides reimbursement of covered long-term care expenses incurred after an elected elimination period is met, up to the maximum daily/monthly amount. The benefit eligibility is determined based on the insured's cognitive impairment or their requiring physical assistance to perform two out of six activities of daily living (ADLs) of bathing, dressing, eating, toileting, transferring and maintaining continence.

Premiums are waived after the insured has met the elimination period and is receiving benefits and will continue to be waived until the insured stops receiving such benefits.

BSC-02 MD

Individually underwritten long-term care policies that provide comprehensive long-term care coverage for care received in a nursing home or assisted care living facility, home health care, hospice care, respite care, or attendance at an Adult Day Care Center providing Adult Day Care.

Provides reimbursement of covered long-term care expenses incurred after an elected elimination period is met.

For care received in an assisted living facility, benefits are paid up to 80% of the maximum daily/monthly amount. For all other care, benefits are paid up to 100% of the maximum daily/monthly amount. The benefit eligibility is determined based on the insured's cognitive impairment or their requiring physical assistance to perform two out of six activities of daily living (ADLs) of bathing, dressing, eating, toileting, transferring and maintaining continence.

Premiums are waived after the insured has met the elimination period and is receiving Nursing Home or Assisted Living Facility benefits and will continue to be waived until the insured stops receiving such benefits.

**11. Renewability**

All policy forms are guaranteed renewable.

**12. Applicability**

This filing is applicable to in force policies only, as these policy forms are no longer being sold in the market. The premium changes will apply to the base forms as well as all applicable riders.

**13. Trend Assumptions**

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

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**14. Marketing Method**

This product was typically marketed through our traditional agency system and brokers involving a personal contact with each applicant.

**15. Underwriting**

These policy forms were underwritten using a medical and risk questionnaire. We also utilized Attending Physician Statement and personal interviews depending on the age of the applicant and medical conditions.

**16. Premium Classes**

The base policy premium rates vary by issue age, benefit period, inflation option, home health care maximum benefit percentage, and underwriting class, as in the initial rate filing.

All premium factors related to the insured elected benefit design options or any eligible discount remain unchanged from the initial rate filing.

**17. Premium Modalization Rules**

<b>Frequency</b>	<b>Multiple of Annual Premium</b>
Semiannual	.52
Quarterly	.27
Monthly	.09

**18. Issue Age Range**

The issue age range is 18-84 for all policy forms.

**19. Area Factors**

Area factors are not applicable to any of the policy forms or riders.

**20. Reserves**

Active Life Reserves have not been used in this rate increase demonstration. Minimum Statutory Claim reserves as of 12/31/2021 have been discounted to the date of incurral of each respective claim and included in the historical incurred claims. Incurred But Not Reported claim reserves as of 12/31/2021 have also been allocated to the calendar year of incurral and included in historic incurred claims.

**21. Ensuring No Cross-Subsidization Between States**

We have ensured no state's rate increase approvals will subsidize other states' rate increases. Rate increases will vary by state, but only to reflect the timing and amount of prior rate increases approved by that state. This is accomplished by first backing-out all prior approved rate increases from our nationwide premium data. We then re-introduce actual prior rate increases with the amount and timing based on your state's prior approvals (as detailed in the section entitled **History of Previous Rate Revisions**). The current proposed rate increases are

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then determined based on the amounts needed in order to achieve our target lifetime loss ratios certified to in our prior filing.

Although some states may have capped our previous inforce rate increase filings, in each case this was done with the understanding that the full amount of the proposed rate increases were justified and that John Hancock would be refile for the remainder at a later date. In instances where the remainder remains unapproved, it has been included in the current filings.

## **22. Past Losses Testing**

Preventing companies from recouping past losses was the subject of a discussion by the NAIC in late 2013. The accepted methodology which was incorporated into the 2014 Long Term Care Model Regulation defines past losses as actual past claims less expected past claims when determining loss ratio compliance. Expected past claims are defined as the following:

“Expected claims shall be calculated based on the original filing assumptions assumed until new assumptions are filed as part of a rate increase. New assumptions shall be used for all periods beyond each requested effective date of a rate increase [regardless of whether or not the rate increase is approved]. Expected claims are calculated for each calendar year based on the in-force at the beginning of the calendar year. Expected claims shall include margins for moderately adverse experience; either amounts included in the claims that were used to determine the lifetime loss ratio consistent with the original filing or as modified in any rate increase filing.”

We apply this methodology in demonstrating that we are not recouping past losses.

The ‘Adjusted Expected Incurred Claims’ are initially calculated by applying the original pricing durational loss ratio to the actual earned premium in a given calendar year. Later, in years in which and after which we filed for inforce rate increases, expected incurred claims are based on the new assumptions that were filed.

The accumulated value of the Adjusted Expected Incurred Claims is compared to the accumulated value of Actual Incurred Claims. The lesser of the Adjusted Expected Incurred Claims or Actual Incurred Claims is used for past claims when ensuring that the resulting overall increase in rates satisfies the rate stability rule ensuring a loss ratio no less than 85% (or the original pricing loss ratio if greater) on the rate increase portion, while applying 58% (or the original pricing loss ratio if greater) on the original rate schedule. This is demonstrated at the bottom of **Exhibit 1**. The derivation of Adjusted Expected Incurred Claims and comparison to Actual Incurred Claims can be seen in **Addendum #2 – Demonstration of not Recouping Past Losses**.

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**23. Actuarial Certification**

I am a Fellow of the Society of Actuaries and a Member of the American Academy of Actuaries, and I meet the Academy's qualification standards for rendering this opinion and am familiar with the requirements for filing long-term care insurance premiums and filing for increases in long-term care insurance premiums. This memorandum has been prepared in conformity with all applicable Actuarial Standards of Practice, including ASOP No. 8.

The preceding Actuarial Memorandum contains:

- a) the assumptions on which this certification is based;
- b) the adjustments to prior assumptions with an explanation of the reasons previous assumptions were not realized;
- c) a lifetime projection of the prior premium rate schedules and incurred claims plus future expected premiums and claims which demonstrates that the revised premium rate schedule meets the loss ratios standards and necessary details of this state; and
- d) disclosure of the manner, if any, in which reserves have been recognized.

If the requested premium rate schedule increase is implemented and the underlying assumptions which reflect moderately adverse conditions are realized, no further premium rate schedule increases are anticipated.

I have reviewed and taken into consideration the policy design and coverage provided, and our current underwriting and claims adjudication processes.

In forming my opinion, I have used actuarial assumptions and actuarial methods and such tests of the actuarial calculations as I considered necessary. Based on these assumptions or statutory requirements where necessary, the premium rate filing is in compliance with the loss ratio standards of this state.

The basis for contract reserves has been previously filed and there is no anticipation of any changes.



Katherine A Gillis  
Katherine A Gillis, FSA, MAAA  
Actuary, Long Term Care Inforce Management  
John Hancock Life Insurance Company

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**Addendum #1 - Assumptions and Analysis Performed**

As part of the inforce management of the business, the Company monitored the performance of the business by completing periodic analysis for morbidity, voluntary lapse rates, and mortality. The findings from these analyses were used in projecting the inforce business to determine the effect of experience on the projected lifetime loss ratio. The most current studies show unfavorable trends since the study that prompted our 2019 rate increase filings.

Relative to previous expectations, the new data demonstrates lower mortality for non-claimants, higher utilization of benefits, and lower than expected claim terminations, partly offset by lower claim incidence.

[REDACTED]

**A. Current & Prior Assumptions**

**Morbidity**

[REDACTED]

***Incidence***

[REDACTED]

After updating assumptions to reflect the generally favorable experience, the overall A/E ratio is 101%.

<b>Incidence (Count)</b>		
<b>Duration</b>	<b>A/E Before Assumption Update</b>	<b>A/E After Assumption Update</b>
10-11	93%	99%
12-14	95%	101%
15+	94%	102%
<b>Total</b>	<b>94%</b>	<b>101%</b>

***Claim Terminations***

[REDACTED]

After updating assumptions to reflect termination experience, the A/E is 99% for the first 5 months on claim and 97% overall.

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Terminations (Count)						
Benefit Period	All Months		Months 1-5		Months 6+	
	A/E Before Assumption Update	A/E After Assumption Update	A/E Before Assumption Update	A/E After Assumption Update	A/E Before Assumption Update	A/E After Assumption Update
<10 years	97%	98%	95%	99%	98%	97%
10+ years	91%	96%	91%	102%	92%	93%
<b>Total</b>	<b>96%</b>	<b>97%</b>	<b>94%</b>	<b>99%</b>	<b>97%</b>	<b>96%</b>

**Utilization**

[REDACTED]

After updating our assumption based on experience, the total A/E is 102%.

Utilization (Amount)		
Inflation Type	A/E Before Assumption Update	A/E After Assumption Update
None/GPO	101%	101%
Simple	102%	101%
Compound	112%	104%
<b>Total</b>	<b>106%</b>	<b>102%</b>

**Voluntary Lapses**

[REDACTED]

Actual to Expected ratios by amount for this block (John Hancock individual business) summarized by inflation and duration groups before and after the assumption update are shown below.

Lapse (Amount)						
Duration	No Inflation		With Inflation		Total	
	A/E Before Assumption Update	A/E After Assumption Update	A/E Before Assumption Update	A/E After Assumption Update	A/E Before Assumption Update	A/E After Assumption Update
1-5	120%	72%	91%	100%	91%	99%
6-10	104%	87%	105%	107%	105%	104%
11-15	88%	95%	96%	100%	95%	99%
16-20	125%	93%	128%	103%	128%	101%
21-25	126%	119%	127%	123%	127%	121%
26+	109%	100%	88%	92%	104%	98%
<b>Total</b>	<b>107%</b>	<b>96%</b>	<b>105%</b>	<b>104%</b>	<b>105%</b>	<b>102%</b>

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The changes to the expected lapse assumption improved the fit across cohorts and resulted in a total A/E of 102%.

**Mortality**

[REDACTED]

The below table shows the healthy life A/E ratios by amount before and after the assumption update for our Retail Individual business.

<b>Mortality (Amount)</b>		
<b>Duration</b>	<b>A/E Before Assumption Update</b>	<b>A/E After Assumption Update</b>
1-5	100%	105%
6-10	99%	99%
11-15	96%	99%
16-20	94%	102%
21-25	97%	101%
26+	76%	84%
<b>Total</b>	<b>95%</b>	<b>100%</b>

**Expenses**

[REDACTED]

**Original Pricing Assumptions**

[REDACTED]

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**Addendum #2 – Demonstration of not Recouping Past Losses**  
**Custom Care (LTC-02) and Essential Care (BSC-02)**

	Calendar Year	Original Incurred Loss Ratio	Historic Data Earned Premium	Adjusted Expected Incurred Claims	Historic Data Incurred Claims
Original Pricing	1988	0%	1,261	-	-
	1989	0%	1,777	-	-
	1990	0%	1,777	-	-
	1991	0%	1,777	-	-
	1992	0%	11,259	-	-
	1993	0%	18,596	-	-
	1994	0%	21,392	-	-
	1995	0%	34,643	-	-
	1996	0%	72,163	-	-
	1997	0%	99,166	-	-
	1998	0%	184,733	-	-
	1999	0%	309,793	-	-
	2000	0%	608,877	-	-
	2001	0%	1,151,326	-	-
	2002	4%	40,241,175	<b>1,673,189</b>	444,586
	2003	4%	179,281,433	<b>7,306,631</b>	3,285,613
	2004	5%	240,329,531	<b>12,239,061</b>	11,194,879
	2005	9%	237,539,223	<b>20,226,905</b>	14,002,004
	2006	12%	232,785,822	<b>28,477,286</b>	26,549,017
	2007	15%	228,257,301	<b>33,627,145</b>	49,111,451
	2008	18%	223,314,426	<b>39,805,473</b>	40,624,649
	2009	23%	218,442,976	<b>50,440,658</b>	52,969,023
2010 RI	2010			<b>67,383,718</b>	67,428,507
	2011			<b>76,620,269</b>	78,877,864
	2012			<b>88,889,554</b>	101,823,574
2013 RI	2013			<b>109,141,406</b>	107,792,681
	2014			<b>124,811,861</b>	117,168,392
	2015			<b>135,392,023</b>	150,833,424
2016 RI	2016			<b>157,598,845</b>	158,835,115
	2017			<b>178,539,244</b>	179,275,676
	2018			<b>200,519,220</b>	200,949,642
2019 RI	2019			<b>247,374,838</b>	225,712,992
	2020			<b>270,357,724</b>	212,936,012
	2021			<b>294,540,080</b>	307,649,543
<b>Values as of 12/31/2021 (discounted at maximum statutory valuation rates)</b>					
	Past :			<b>2,767,643,775</b>	> 2,734,031,756

Minimum (Accum Value of Past Incurred Claims,  
Accum Value of Adjusted Expected Incurred Claims) = 2,734,031,756

The lesser of actual and expected past claims, \$2,734,031,756, is used in demonstrating compliance with the minimum loss ratio in Exhibit 1



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**Addendum #3 - LTC Buy-Out Offer and Policy Termination Option Details**

With this filing a separate disclosure endorsement has been submitted requesting your state to approve an additional rate increase alternative option for policyholders. This new option is an offer for John Hancock to buy-out an insured’s policy by providing a one-time lump-sum payment in exchange for the immediate termination of the policy and any riders. Upon election of this option the insured’s policy will be terminated and the insured will no longer be eligible for any long-term care benefits from John Hancock. The insured will have a 30-day period to change their mind, after which the policy will not be eligible for restoration.

Long Term Care insurance does not provide a cash surrender value and this offer should not be considered as one. It will be made on a one-time basis as part of the rate increase request documented in this actuarial memorandum. We do not anticipate making this LTC Buy-Out Offer and Policy Termination Option available again to these insureds should additional rate action be required at a later time. The intention with this offer is to provide a one-time alternative to insureds who no longer wish to retain their policy. We anticipate that policyholders who expect to use their benefits in the future will not accept this offer.

The LTC Buy-Out Offer Amount to be identified in the disclosure endorsement is scaled to our expectation of a policy’s remaining risk and will be based on the best estimate value of the policy, determined by an actuarial calculation which takes into account several factors including morbidity, mortality, and interest rate assumptions. This offer will be available on policies issued prior to age 70, which are active, premium-paying policies with an approved rate increase.

The actuarial calculation that will determine the LTC Buy-Out Offer Amount for each insured will be a Buy-out Factor (65%) multiplied by the best estimate actuarial present value of expected future benefits payable under their policy. The actuarial present value of expected future benefits represents the value of the remaining risk in the policy from John Hancock’s perspective. While the LTC Buy-Out Offer Amounts will be calculated on a policy-by-policy basis, both the Buy-out Factor and the methodology for calculating the expected future benefits will be consistent for all insureds issued in your state who receive a buy-out offer under the policy forms included in this actuarial memorandum. The expected benefits will be consistent with those used to calculate the Gross Premium Valuation (GPV) reserve, discounted at 5.75% annually. LTC Buy-Out Offer Amounts will be calculated as of September 30, 2022<sup>1</sup>.

Since LTC Buy-Out Offer Amounts are based on expected future benefits, they will vary by both policy and policyholder attributes, including but not limited to: product features and riders, benefit amounts, inflation type, policy duration, age at policy issue, sex, and risk class. Depending on the risk characteristics of the policy, the resulting LTC Buy-Out Offer Amount may be higher or lower than the total premiums that the insured has paid into their policy. Below are two sample policies which demonstrate how the LTC Buy-Out Offer Amount is calculated from the components of the GPV reserve as well as how the value of it can vary from one insured to another. These are not actual policies but are provided for illustrative purposes only.

Sample Policy #	Cumulative Premium	GPV Reserve =	PV Future Benefits (PVFB)	+ PV Future Expenses	- PV Future Premiums	Buy-out Factor	LTC Buy-Out Offer Amount (Buy-out Factor x PVFB)
1	10,000	17,000	18,000	2,000	3,000	65%	11,700
2	10,000	11,000	12,000	2,000	3,000	65%	7,800

<sup>1</sup> For policyholders who are on claim as of or have claims paid after September 30, 2022 and later come off claim for long enough to receive the rate increase requested in this filing, they will receive a LTC Buy-Out Offer and Policy Termination Option at the time of their rate increase reflecting a valuation date after their return to active status.

