

THREE: APPENDICES

MISCELLANEOUS ASSUMPTIONS

continued

Catastrophic Disability

What are the Catastrophic Disability Assumptions and How Do We Use them?

LEOFF 2 has a more complex disability benefit structure than most public plans in Washington. Disabilities are classified as either duty-related or non-duty related. Duty-related disabilities are further differentiated as either catastrophic or non-catastrophic. The type of disability designation results in access to different levels of benefits. In this section, we focus on assumptions related to duty-related catastrophic disabilities.

If a LEOFF Plan 2 member is deemed unable to perform any substantial gainful activity due to a physical or mental condition incurred in the line of duty, that member qualifies for catastrophic disability benefits under the plan. Catastrophic disabilities benefits include a minimum retirement benefit and reimbursement of medical insurance premiums.

We set the following assumptions for catastrophic disability:

Percent Catastrophic

The Percent Catastrophic assumption represents the likelihood a duty-related disability is also catastrophic. To determine the likelihood, we first model members moving from active to disabled status using our (total) **Disability Rates**. We then multiply our **Duty Disability Probability Assumption** by the number of total disabilities to calculate the number of duty-related disabilities. Finally, we multiply the Percent Catastrophic assumption by the number of duty-related disabilities to determine the number of catastrophic disabilities. The example below illustrates the calculation for the number of catastrophic disabilities for 100 LEOFF 2 active members age 45.

$(100 \text{ active members}) \times (0.002 \text{ Total Disability Rate}) \times (0.90 \text{ Duty Disability Probability}) \times (0.12 \text{ Percent Catastrophic}) = 0.02 \text{ Catastrophic Disabilities}$

Minimum Catastrophic Benefit

Individuals with catastrophic disabilities are eligible for a minimum retirement benefit based on their Final Average Salary (FAS). These members receive the minimum benefit if it is greater than their accrued retirement benefit. The accrued retirement benefit percent of FAS equals 2 percent multiplied by years of service. The minimum benefit starts at 70 percent FAS and is adjusted so that the total of all disability benefits received does not exceed 100 percent of FAS. Members may be eligible for additional disability benefits from sources such as Social Security and Washington State Labor and Industries wage replacement under Title 51. We set an assumption for the expected percent of FAS of the minimum catastrophic benefit after reductions.

Medical Insurance Premium Reimbursement

Retirees with catastrophic disabilities receive premium reimbursement for medical insurance offered through a prior employer, temporary COBRA¹ coverage, or Medicare Parts A and B. Members may also receive reimbursement for extending coverage to spouses and dependent children. After 29 months of retirement, retirees with disabilities become eligible for reimbursement of Medicare Parts A and B premiums. Once eligible for Medicare, members must maintain enrollment in both Parts A and B to continue receiving premium reimbursement. We set assumptions for the expected premium reimbursements members will receive.

High Level Takeaways

Data limitations in the 2012 study constrained how we studied catastrophic disability assumptions. The limitations included the relatively new plan provisions and infrequent occurrences of catastrophic disabilities. Catastrophic disability became a retirement designation in 2005. The additional data available in this study provided us enough plan experience to review our assumptions and identify practical modeling changes.

¹*Consolidated Omnibus Budget Reconciliation Act of 1985. It includes a provision allowing separated employees to purchase insurance through the former employer's risk pool. Please see the Department of Labor website for more information.*

THREE: APPENDICES

MISCELLANEOUS ASSUMPTIONS

continued

After reviewing our methodology and reflecting current data, we increased the Percent Catastrophic assumption and decreased the Minimum Catastrophic Benefit and Medical Insurance Premium Reimbursement assumptions. In general, we observed more members experiencing catastrophic disabilities than expected and members typically earned a smaller retirement benefit and less premium reimbursement than expected under old assumptions.

Data and Assumptions

We analyzed both the number of catastrophic disabilities and the percent of FAS for the minimum catastrophic benefit from 2005 to 2017. Catastrophic disability experience is relatively limited, so we gathered as much data as possible in order to set a long-term assumption. We found that some members that had retired prior to 2005 were retroactively classified as catastrophically disabled retirements. We removed these members when studying the number of catastrophic disabilities to maintain a consistent study period with other LEOFF 2 disability rates assumptions. We set the percent catastrophic assumption looking at the same eligible population as the **Disability Rates** and **Duty Disability Probability Assumption**. Also consistent with these assumptions, we removed retirements occurring in 2007 due to a shortened valuation year. However, we included all member data to analyze the minimum catastrophic benefit. To study medical premium reimbursements, we restricted our study to the most recent six years of data (2012-2017). Healthcare costs and trends have changed significantly over the last decade so we based our assumptions for future premiums on more recent data.

DRS provided data on the minimum catastrophic benefit. Otherwise, we relied on OSA's historical annual valuation files. The data provided by DRS and our valuation files vary slightly as shown in the **Results** section.

We used the new **Disability Rates** and **Duty Disability Probability Assumption** updated in this study to set the **Percent Catastrophic** assumption. We compared the actual number of catastrophic disabilities to what our assumptions produced over our study period. Please see the sections for each of these assumptions for more details.

General Methodology

We began by comparing each assumption set in the prior demographic experience study to the new historical data collected for this study. We then adjusted the old assumptions, if necessary, to more closely reflect the actual experience in our study period. We used our professional judgment regarding future expectations to make further adjustments, including impacts of legislation described in the **Law Changes** section. In addition, for each assumption, we considered simplifications to our current modeling approach based on observations in the historical data.

Law Changes

The laws listed below expanded access to catastrophic disability benefits for LEOFF 2 members. We considered their potential impact when setting assumptions.

- ❖ **ESHB 1833 (2007)** – This law expanded the duty-related presumption to strenuous physical exertion and heart problems experienced within seventy-two hours of firefighting activities. The law also added four cancers to a list presumed to be from firefighting.
- ❖ **SSB 6214 (2018)** – This law expanded the duty-related presumption to cover Post-Traumatic Stress Disorder (PTSD).

THREE: APPENDICES

MISCELLANEOUS ASSUMPTIONS

continued

Analysis and Results

Analysis

Methods and Format of Assumptions

We considered alternate formats for the catastrophic disability assumptions and, ultimately, decided not to make any changes. For reference, we considered, but did not select:

❖ **Separate assumptions for law enforcement officers and firefighters.**

Given the limited catastrophic disability experience and similar numbers of historical disabilities between police and firefighters, we do not believe a separate assumption for each population is necessary.

❖ **Assumptions that vary by age.**

The small amount of catastrophic disability experience limited our ability to set credible assumptions that vary by age. We will consider assumption changes by age in future demographic experience studies.

Results

Percent Catastrophic

The following tables shows the actual percent catastrophic as well as our old and new assumptions.

Percent Catastrophic from 2005-2017				
Expected Duty Disabilities*	Actual Catastrophic Disabilities**	Percent Catastrophic	Old Assumption	New Assumption
319	43	13.5%	12.0%	14.0%

*Expected duty disabilities from 2005-2017 data using updated **Disability Rates** and **Duty Disability Probability Assumption** developed in this report.

**Actual number of catastrophic disabilities from 2005-2017 excluding members that retired prior to 2005 and were retroactively classified as having a catastrophic disability.

We increased our assumption to better reflect the historical experience from our study period and to account for the additional catastrophic disabilities we expect from 2018 Legislation that expanded duty-related disability presumptions to include PTSD.

THREE: APPENDICES

MISCELLANEOUS ASSUMPTIONS

continued

Minimum Catastrophic Benefit

The following table shows the average annual percent of FAS for the minimum catastrophic benefit.

Minimum Catastrophic Benefit		
Year	Number of Members*	Percent of Final Average Salary
2005	2	35%
2006	6	33%
2007	7	30%
2008	9	33%
2009	11	33%
2010	16	39%
2011	20	38%
2012	26	35%
2013	30	35%
2014	36	37%
2015	39	39%
2016	44	39%
2017	46	41%
	292	38%

Totals may not agree due to rounding.

**Members eligible for a minimum catastrophic benefit from DRS records.*

The average percent of FAS from the total historical experience of 38 percent is close to our old assumption of 44 percent. We also observed an upward trend in the percent of FAS in more recent experience. Considering these factors, we made a modest reduction in our assumption from 44 to 42 percent of FAS to more closely reflect historical experience and the recent trend.

Medical Insurance Premium Reimbursement

The following table details the average premium amounts for pre-Medicare and Medicare eligible members.

Medical Insurance Premium Amounts				
Year	Pre-Medicare		Medicare Eligible	
	Members*	Premiums**	Members*	Premiums**
2012	9	\$16,300	9	\$3,100
2013	18	\$15,900	10	\$3,200
2014	18	\$12,400	13	\$3,800
2015	19	\$12,400	15	\$7,000
2016	19	\$11,300	21	\$6,400
2017	23	\$11,700	20	\$7,600
Total/Weighted Average	106	\$13,000	88	\$5,700

Totals may not agree due to rounding.

**Members receiving premium reimbursement from OSA annual valuation files.*

***The premium amounts for 2012-2016 were adjusted to reflect premiums equal to 2017 levels using a 4.6 percent annual medical inflation trend.*

THREE: APPENDICES

MISCELLANEOUS ASSUMPTIONS

continued

We made significant changes to the modeling and assumptions of this benefit. Our old approach included premium assumptions for COBRA or prior employer insurance, the probability of spouse coverage, and the number and age of dependent children. After reviewing historical experience, we found that Medicare eligibility had the greatest impact on the cost of premiums. Covered dependents also impacted premiums, however, we don't believe we have sufficient data to set credible assumptions for these groups.

We simplified our model by removing assumptions related to dependents or type of coverage (COBRA or prior employer). Our new modeling approach splits members between two benefits: pre-Medicare and Medicare eligible. We set the assumption for each benefit equal to the observed weighted average premium amounts from the previous table. We retained our method of moving members from pre-Medicare to Medicare benefits 29 months after retirement consistent with Medicare eligibility rules. In general, the new assumptions and modeling reduced the expected cost of these benefits.

For modeling future members with catastrophic disabilities, we combined the premium amounts into a single assumption using a liability-weighted average. We observed this simplification produced the same overall plan liability. To project premiums into the future, we developed a long-term average premium growth assumption based on medical growth trends in our Other Post-Employment Benefits (OPEB) actuarial valuation. We believe this represents a reasonable approximation for the growth in premium reimbursement for catastrophic disability health insurance. We will monitor and update the premium growth assumption as future OPEB valuations become available. Please see the most recent OPEB valuation report on [our website](#) for more details.

We considered guidance in the Actuarial Standards of Practice (ASOPs) No. 6 on measuring retiree group benefits regarding this simplified modeling approach. The ASOPs allow approximations when the actuary expects the result to represent a minor part of the overall actuarially determined contribution. Based on the 2017 AVR, we found that these benefits constitute about 0.1 percent of the overall plan liabilities and believe a simplified model is reasonable.