



Estimate of EEOICPA Liabilities

Liability Estimate as of September 30, 2022

Report prepared for:

U.S. Department of Labor

Office of Workers' Compensation Programs

Report Date: September 27, 2022



September 27, 2022

Shanti Ananthanayagam
Acting Comptroller, Division of Financial Administration
Office of Workers' Compensation Programs
US Department of Labor
Frances Perkins Building
200 Constitution Ave NW
Washington DC 20210

Re: Estimate of EEOICPA Liabilities as of September 30, 2022

Dear Ms. Ananthanayagam:

Attached is the actuarial report documenting our analysis of the EEOICPA liabilities as of September 30, 2022. If there are any questions regarding this report or the analysis which it documents, I can be reached by telephone at (651) 293-8008 or by email at chris.gross@cognalysis.com.

Sincerely,

Chris Gross, ACAS, MAAA
President and CEO

CG

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Introduction

The Energy Employees Occupational Illness Compensation Program Act (“EEOICPA”) provides compensation and medical benefits to claimants who are (or were) employed in various energy-related activities either directly for the Department of Energy (“DOE”) or through its contractors or subcontractors. Eligible claimants also include survivors of deceased workers who otherwise would have been eligible for benefit payments.

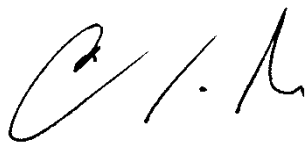
The Office of Workers’ Compensation Programs (“OWCP”) at the U.S. Department of Labor maintains a model to estimate the future liabilities of the EEOICPA program. The OWCP has requested that Cognalysis review the annual data updates to the model, review the reasonableness of the EEOICPA model and assumptions, and recommend enhancements as needed.

Distribution and Use

The valuation has been conducted in accordance with all relevant Actuarial Standards of Practice. The purpose of the actuarial valuation report is to document the Energy Employees’ Occupational Illness Compensation Program (“EEOICP”) actuarial liability estimate and the change in the actuarial liability, and to assess the reasonableness of the related assumptions; to assist the U.S. Department of Labor in preparing the consolidated financial statements, as of and for the fiscal year ended September 30, 2022, in accordance with U.S. generally accepted accounting principles, as promulgated by the Federal Accounting Standards Advisory Board. We understand a copy of this report may be provided to OWCP’s auditors. If this report is shared, we request that the report be shared in its entirety.

Qualification

I, Chris Gross, am a member in good standing of the Casualty Actuarial Society and the American Academy of Actuaries and am qualified to provide this analysis.

A handwritten signature in black ink, appearing to read 'C. Gross', with a stylized flourish at the end.

Chris Gross, ACAS, MAAA

Executive Summary

Part B of EEOICPA, effective July 31, 2001 provides lump sum compensation of \$150,000 and medical expenses to employees of the Department of Energy (“DOE”), or its contractors or subcontractors, who develop cancer, beryllium disease, or chronic silicosis after working at a covered facility. If the employee is no longer living, compensation benefits are available to survivors. Part B also covers employees who are a member of the Special Exposure Cohort (“SEC”). A worker who is included in a designated SEC class of employees, and who is diagnosed with one of 22 specified cancers, may receive a presumption of causation under the EEOICPA. The National Institute for Occupational Safety and Health (“NIOSH”) has responsibility for designating additional facilities to the SEC.

Part E of the Act, effective October 28, 2004, provides wage loss, impairment benefit, and medical expenses to employees of the DOE and its contractors and subcontractors, who develop an illness due to exposure to toxic substances at certain DOE worksites. Part E also pays survivor benefits to certain survivors. Part E pays a maximum compensation amount of \$250,000 per case.

As of 9/30/2022, the discounted liability estimate for future EEOICPA benefit payments is \$48.3 billion. The future compensation payments are projected at \$10.8 billion, and the future medical payments are projected at \$37.5 billion, on a discounted basis. This is a 12.2% increase over the 9/30/2021 liability estimate of \$43.0 billion, driven by increased projection of Part E approvals, increased estimated costs of Part E benefits per case and increased medical costs, with the increase mitigated by increased mortality expectations.

ESTIMATED LIABILITY FOR EEOICPA AS OF SEPTEMBER 30, 2022

SUMMARY OF LIABILITY FOR FUTURE PAYMENTS (\$ Millions)

	Discounted Liability Estimate		YOY Difference
	as of 9/30/2022	as of 9/30/2021	
Compensation: Part B	\$ 2,835	\$ 2,956	\$ (122)
Compensation: Part E	7,927	5,163	2,764
Compensation: Total	10,761	8,119	2,642
Medical Payments	37,529	34,918	2,610
Total Future Payments	\$ 48,290	\$ 43,038	\$ 5,252 12.2%

The discount rates used for the 9/30/2022 estimate were 2.068% for compensation and 2.325% for medical. Totals may differ slightly due to rounding.

Discounted Cash Flow by Year

The following exhibits document the estimated cash flows by year, on a discounted basis. For informational purposes, the cash flows for the Department of Justice Part B RECA payments are displayed in column 4. The RECA compensation liability is included as part of Part B compensation liability in the Executive Summary.

ESTIMATED LIABILITY FOR EEOICPA AS OF SEPTEMBER 30, 2022

SUMMARY OF DISCOUNTED PAYMENTS BY YEAR

Fiscal Year	Compensation Part B Discounted Payments	Compensation Part E Discounted Payments	Compensation DOJ RECA Discounted Payments	Compensation Total Discounted Payments	Medical Total Discounted Payments	Total Discounted Payments
(1)	(2)	(3)	(4)	(4)	(5)	(6)
2023	\$ 227,725,653	\$ 484,027,353	\$ 11,485,167	\$ 723,238,173	\$ 1,238,052,348	\$ 1,961,290,522
2024	212,710,279	492,833,624	10,549,408	716,093,312	1,324,118,117	2,040,211,429
2025	196,004,573	494,381,062	9,689,891	700,075,526	1,391,299,896	2,091,375,422
2026	180,002,966	485,196,018	8,900,403	674,099,387	1,455,339,505	2,129,438,893
2027	165,342,017	467,365,008	8,175,239	640,882,265	1,502,248,042	2,143,130,307
2028	151,907,059	446,228,845	7,509,158	605,645,062	1,507,430,971	2,113,076,033
2029	139,593,390	423,989,362	6,897,347	570,480,099	1,502,990,562	2,073,470,661
2030	128,305,401	401,040,483	6,335,382	535,681,266	1,490,027,610	2,025,708,876
2031	117,955,771	371,328,408	5,819,205	495,103,384	1,469,485,639	1,964,589,023
2032	108,464,745	348,556,835	5,345,082	462,366,663	1,442,204,210	1,904,570,873
2033	99,759,462	323,655,749	4,909,590	428,324,801	1,408,964,924	1,837,289,725
2034	91,773,359	299,963,173	4,509,579	396,246,111	1,370,520,081	1,766,766,192
2035	84,445,612	276,896,466	4,142,159	365,484,237	1,327,616,294	1,693,100,530
2036	77,720,639	254,437,482	3,804,675	335,962,796	1,281,008,687	1,616,971,483
2037	71,547,639	233,218,391	3,494,688	308,260,718	1,231,457,807	1,539,718,525
2038	65,880,176	213,258,877	3,209,956	282,349,009	1,179,716,525	1,462,065,534
2039	60,675,797	195,100,276	2,948,424	258,724,496	1,126,515,434	1,385,239,930
2040	55,895,686	178,643,729	2,708,200	237,247,615	1,072,546,018	1,309,793,634
2041	51,504,349	163,608,011	2,487,548	217,599,908	1,018,450,958	1,236,050,866
2042	47,469,321	149,676,452	2,284,874	199,430,647	964,813,618	1,164,244,265
2043	43,760,906	136,960,248	2,098,713	182,819,868	912,140,194	1,094,960,062
2044	40,351,939	125,229,957	1,927,720	167,509,615	860,847,708	1,028,357,324
2045	37,217,562	114,218,665	1,770,658	153,206,885	811,260,452	964,467,337
2046	34,335,028	104,208,772	1,626,393	140,170,193	763,614,733	903,784,926
2047	31,683,516	94,626,684	1,493,882	127,804,082	718,068,742	845,872,824
After 2047	180,130,579	647,976,159	8,308,390	836,415,128	7,157,800,563	7,994,215,691
Total Future ¹	\$ 2,702,163,425	\$ 7,926,626,090	\$ 132,431,731	\$ 10,761,221,245	\$ 37,528,539,642	\$ 48,289,760,887

¹ Reflects projected cash flow through 2082

Totals may not equal sum of components because of independent rounding

Summary of Changes

The following significant changes in assumptions made in the model this year:

1. Part B

- Slight increase in the estimated percentage of cases that are filed by the employee for Beryllium Disease and Cancer – SEC.
- Slight increase in the percentage of Part B approvals that are already approved for Part E

2. Part E

- Increase in the number of estimated future new cases awarded for Part E
- Benefit amounts were previously uniform, but this year that assumption was revised to a trended benefit. The amount was set to \$120,000 for pre-2014, trended up at 6.1% annually until a cap of \$250,000 per case is hit, at which point it stays at the \$250,000 cap.
- Increase in the estimated percentage of cases that are filed by the employee (from 86% to 90%)

3. Medical Costs

The estimated medical inflation rates were modified based on observed inflation/utilization over time. The starting point for projection was higher as a result of actual cost for 2022. The long-term inflation rates selected are the CPI-Medical inflation rates from the OMB Economic Assumptions.

4. Mortality

The mortality table was updated to the Private Retirement Plans (Pri-2012) published by the Society of Actuaries. The mortality rates have increased from the prior tables, resulting in a decrease in the liability estimate due to mortality assumptions.

Please see Appendix 2 for a listing of the specific values for all assumptions.

Actual vs Projected

Number of Cases Approved

Overall, there were 19% fewer Part B cases and 15% more Part E cases newly approved during 7/1/2021 to 6/30/2022 than what was projected. The reduced number of Part B cases continues a trend that we have seen since the start of the COVID-19 pandemic.

Total Number of Approved Cases 7/1/21 - 6/30/22

	<u>Projected</u>	<u>Actual</u>	<u>Diff</u>	<u>% Diff</u>
B: RECA	125	140	15	12%
B: BD & BS	66	30	(36)	-55%
B: CS	368	342	(26)	-7%
B: CNSEC	830	729	(101)	-12%
B: CN	346	171	(175)	-51%
Part B Total	1,735	1,412	(323)	-19%
Part E	2,484	2,863	379	15%

Cash Flow

Overall, the revised cash flow projection for Fiscal Year 2022 is very similar to the amount projected as of 9/30/2021, but with higher compensation than projected for Part E and less than projected for Part B.

Benefit Payments FY 2022

	<u>Projected @9/2021</u>	<u>Actual 9 month</u> <u>+ Proj 3 mo</u>	<u>\$ Difference</u>	<u>%Diff</u>
Part B Compensation	\$ 252,062,543	\$ 228,145,921	\$ (23,916,622)	-9%
Part E Compensation	375,316,977	446,002,521	70,685,544	19%
Medical Payments	1,174,173,337	1,165,000,000	(9,173,337)	-1%
Total	\$ 1,801,552,856	\$ 1,839,148,441	\$ 37,595,586	2%

The EEOICPA Model

The EEOICPA analysis consists of the following steps:

1. Organize and aggregate the data

Compensation Benefits

2. Estimate the number of future new cases approved
3. Estimate the average compensation payout per approved case
4. Determine the payout patterns to estimate the compensation cash flow by year

Medical Benefits

5. Estimate the percentage of cases eligible for medical benefits
 6. Remove double counting – cases can be approved for both Part B and Part E
 7. Apply mortality assumptions to determine the number eligible for medical benefits
 8. Estimate the number of individuals eligible for medical benefits
 9. Estimate the average medical costs and future inflation rates
 10. Calculate the total expected medical payments
-
11. Discount the future payments to 9/30/2022

These steps are described in detail in the next sections.

1: Organize and Aggregate the Data

The EEOICPA analysis is performed using detailed claim-level data extracts provided by the DOL. Data provided includes information on medical payments by case, compensation payments by claim and case, claim disposition status (e.g., approved, denied, pending decision, etc.), and employee data such as date of birth, sex, date of death (if known), and survivor information.

The data provided for this analysis consists of a series of text data files that were imported into a database for further analysis and manipulation. The source data includes the following tables:

Table Name	Description
Bp_history	History of medical payments by case
Case_main	Employee information by case, includes RECA indicator
Causation	All causation records, includes SEC identifier
Claimant	Claim information included type of claim and filing dates
Employment	Employment information for employees, including worksite ID
FD	Final decision table by case, identifies acceptance/denial of filed claims
Medical	Medical information by case, includes disease type
Payment_mart	History of compensation payments by claim
RECA_eft	Additional RECA payments (electronic funds transfer)
RECA_paper_check	Additional RECA payments (paper check)

The data was then organized through a series of database queries to create summarized tables of new entrants, compensation payments, medical payments, and claims filed by living employees. These summarized tables are checked against the EEOICP Program Statistics² (as shown in the table below), and then brought into the EEOICPA model to begin the analysis.

Comparison to EEOICP Program Statistics

Website: <https://www.dol.gov/owcp/energy/regs/compliance/weeklystats.htm>

The data on this website is updated weekly, and shows cumulative data since the inception of the program.

	Raw Data @		7/1/2022	DOL website as of 7/4/2022		Difference between raw data and 7/4/2022 website data	
	# Cases			# Cases		# Cases	
	<u>Approved</u>	<u>Payments</u>		<u>Approved</u>	<u>Payments</u>	<u>Approved</u>	<u>Payments</u>
Part B Compensation	59,232	\$ 7,484,539,367		59,170	\$ 7,484,539,367	0.105%	0.000%
Part E Compensation	55,044	6,000,968,835		54,900	6,001,091,335	0.262%	-0.002%
Medical		8,103,347,153			8,124,188,974		-0.257%
Total		\$ 21,588,855,355			\$ 21,609,819,676		-0.097%

² The expectation is not that the results will match exactly to the website, but that they will be reasonably close. Due to the fact that the data may reported a few days apart, and that there may be slightly differing methodologies for determining the number of approved cases, a small amount of variance is expected.

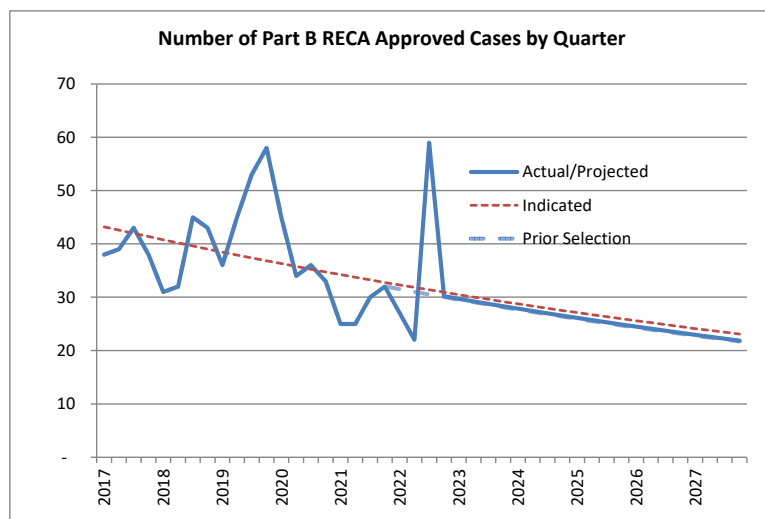
2: Estimate the number of Future Approved Cases

To estimate the number of cases that will be newly approved in the future, the historical number of newly-approved cases by quarter is determined in total for Part E and by governing disease for Part B. Part B is split out by governing disease because the compensation payment amounts are different by governing disease for Part B.

For Part B, an exponential decay model is then fit to the recent history, minimizing the sum of squared errors between the actual data and the fitted data, to determine the parameters with the best fit. Judgment is used to determine how many quarters of recent history should be incorporated into the fit model, as the rate of decay differs somewhat over time. For Part E, cases have been generally increasing, so significant actuarial judgment is required to estimate the timing and amount of future decreases in reporting.

The exhibits on the following pages show a graph of the quarterly history of newly-approved cases, the modeled fit line, as well as the assumed projections (current and prior). Significant actuarial judgment was used in making these projections, in light of what was believed to be temporarily depressed approval levels as a result of COVID-19 impacts. Hence the projection will not always coincide with the modeled fit line. We find the selected projections to be reasonable and appropriate.

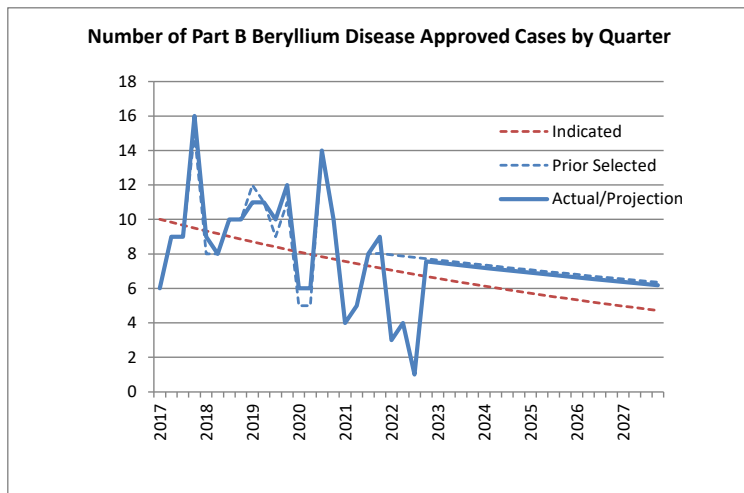
Part B: RECA



Selected Decay Rates:

	<u>2022</u>	<u>2021</u>
Quarterly	1.6%	1.6%
Annual	6.2%	6.3%

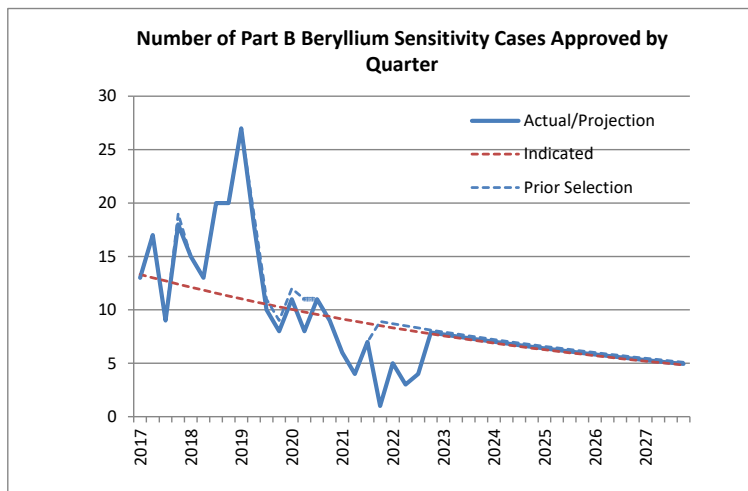
Part B: Beryllium Disease



Selected Decay Rates:

	<u>2022</u>	<u>2021</u>
Quarterly	1.0%	1.0%
Annual	3.9%	3.8%

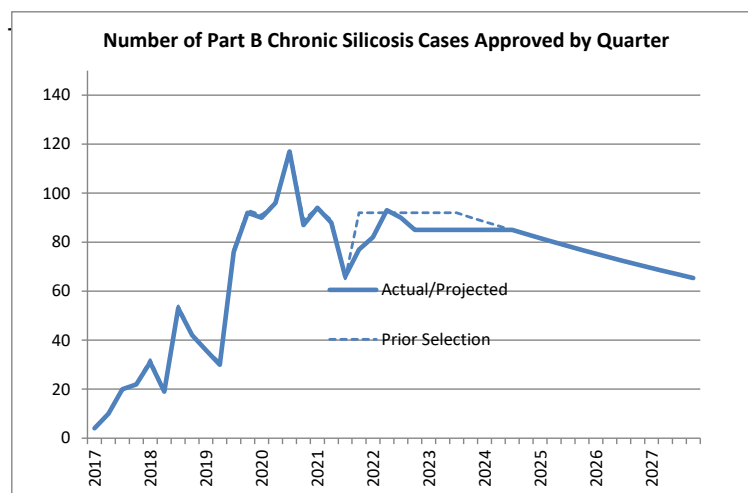
Part B: Beryllium Sensitivity



Selected Decay Rates:

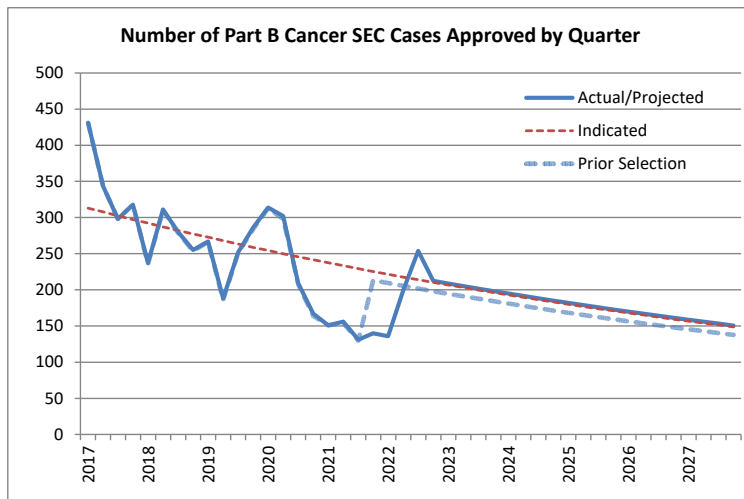
	<u>2022</u>	<u>2021</u>
Quarterly	2.3%	2.3%
Annual	8.9%	8.9%

Part B: Chronic Silicosis



Due to the recent increase in approved cases, a curve was not fit to the historical data for Part B Chronic Silicosis. Instead, 85 new cases per quarter is projected for the next eight quarters, with a 2% quarterly decay going forward at that point.

Part B: Cancer SEC

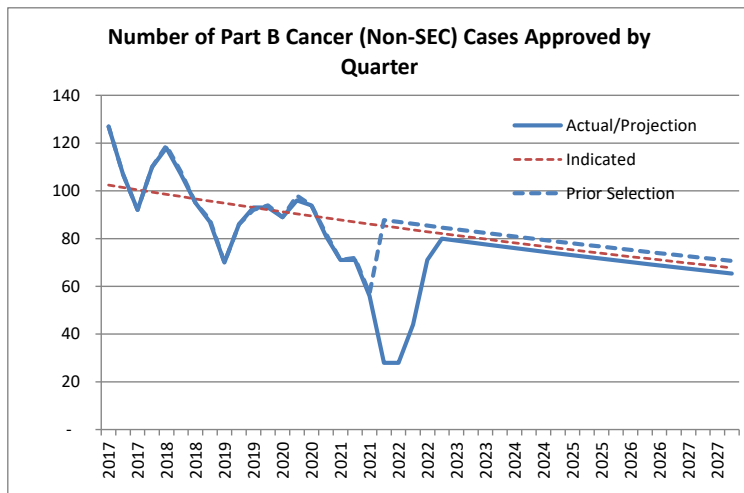


Selected Decay Rates:

	<u>2022</u>	<u>2021</u>
Quarterly	1.7%	1.8%
Annual	6.6%	7.0%

For Cancer SEC, a decay model is fit to history, excluding 2020 and 2021, to estimate future decay rates. This method does not explicitly assume any future new SEC class designations.

Part B: Cancer Non-SEC

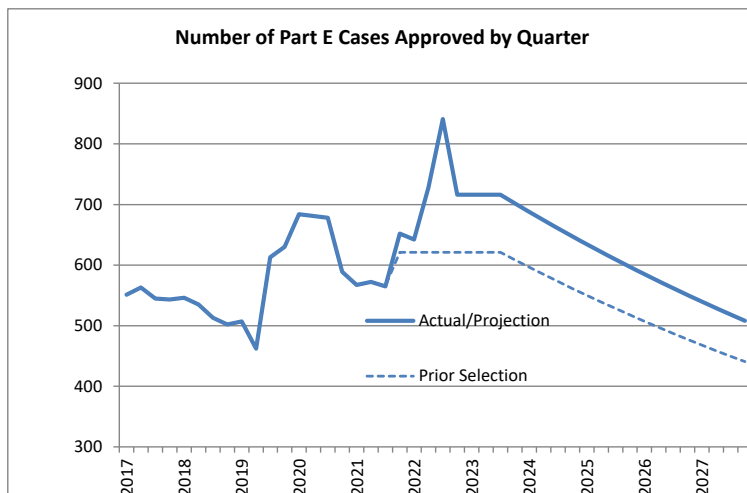


Selected Decay Rates:

	<u>2022</u>	<u>2021</u>
Quarterly	1.0%	0.9%
Annual	3.9%	3.6%

The trendline was based on pre-covid data only.

Part E



Due to the recent dramatic shifts in approved cases, a curve was not fit to the historical data for Part E. Instead, 716 new cases per quarter is projected for the next four quarters with a 2% quarterly decay subsequent to that point.

ESTIMATED LIABILITY FOR EEOICPA AS OF SEPTEMBER 30, 2022

NUMBER OF CASES APPROVED BY YEAR

Number of Cases Newly Approved								
Fiscal Yr	Part B							Part E
	RECA	BD	BS	CS	CN SEC	CN Non SEC	Part B Total	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Prior	5,365	2,239	625	94	6,523	4,779	19,625	13,901
2008	645	216	102	12	2,105	1,016	4,096	5,028
2009	456	145	82	17	1,775	814	3,289	3,966
2010	326	126	72	13	2,227	787	3,551	3,412
2011	267	113	76	21	2,802	767	4,046	2,904
2012	295	97	58	13	2,563	739	3,765	2,956
2013	303	61	45	2	2,764	572	3,747	3,243
2014	242	54	39	2	1,790	437	2,564	2,300
2015	242	49	47	11	1,354	387	2,090	1,803
2016	188	43	57	19	1,303	466	2,076	1,822
2017	158	40	57	56	1,390	436	2,137	2,202
2018	151	37	68	145	1,083	407	1,891	2,096
2019	192	44	63	234	993	342	1,868	2,212
2020	148	36	39	390	992	360	1,965	2,632
2021	112	26	18	325	578	226	1,285	2,356
2022	138	16	20	350	801	223	1,548	2,927
Through 2022							59,543	55,760

ESTIMATED LIABILITY FOR EEOICPA AS OF SEPTEMBER 30, 2022

PROJECTED NUMBER OF CASES APPROVED BY YEAR

Projected Number of Cases Newly Approved								
Fiscal Yr	Part B						Part B Total	Part E
	RECA	BD	BS	CS	CN SEC	CN Non SEC		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
2023	116	30	30	340	814	312	1,641	2,850
2024	109	28	27	338	760	300	1,562	2,669
2025	102	27	25	317	709	288	1,468	2,462
2026	96	26	22	292	662	277	1,375	2,271
2027	90	25	20	270	618	266	1,289	2,095
2028	84	24	19	249	577	255	1,208	1,932
2029	79	23	17	229	539	245	1,133	1,782
2030	74	22	15	212	503	235	1,062	1,644
2031	69	21	14	195	470	226	996	1,516
2032	65	21	13	180	439	217	934	1,398
2033	61	20	12	166	410	209	877	1,290
2034	57	19	11	153	383	200	823	1,190
2035	53	18	10	141	357	193	773	1,097
2036	50	17	9	130	334	185	725	1,012
2037	47	17	8	120	311	178	681	934
2038	44	16	7	111	291	171	640	861
2039	41	16	7	102	272	164	601	794
2040	39	15	6	94	254	157	565	733
2041	36	14	6	87	237	151	531	676
2042	34	14	5	80	221	145	499	623
2043	32	13	5	74	206	140	470	575
2044	30	13	4	68	193	134	442	530
2045	28	12	4	63	180	129	416	489
2046	26	12	3	58	168	124	391	451
2047	25	11	3	54	157	119	368	416
2048	23	11	3	49	146	114	347	384
2049	22	10	3	46	137	110	327	354
2050	20	10	2	42	128	105	308	327
2051	19	10	2	39	119	101	290	301
2052	18	9	2	36	111	97	273	278
2053	17	9	2	33	104	93	258	256
2054	16	8	2	30	97	90	243	236
2055	15	8	2	28	91	86	229	218
Total Future	1,636	550	319	4,427	10,998	5,816	23,746	34,642

3: Estimate the average compensation payment per case

Part B Compensation

For Part B, the compensation benefit is paid out as a lump sum. The amount of the benefit varies by governing disease as follows:

RECA (Non-DOJ portion)	\$50,000
RECA (DOJ portion)	\$100,000
Beryllium Disease, Cancer, Chronic Silicosis	\$150,000
Beryllium Sensitivity (Part B)	\$0

Under Part B, Beryllium Sensitivity cases are approved for medical benefits only. They do not receive compensation benefits. If the condition develops into Beryllium Disease, the case would then be eligible for compensation benefits.

Part E Compensation

Part E cases are eligible for wage loss benefits, impairment benefits and survivor benefits subject to a maximum payment of \$250,000 total compensation for the employee and survivor combined.

For Part E, historically less than 30% of the ultimate compensation benefits are paid within one fiscal year of approval. This is due to the nature of the benefit payments. Employee claimants can file for additional wage or impairment payments subsequent to the initial case approval, and the survivors of the employee may be eligible to receive a lump sum benefit upon the death of the employee years after the initial case approval.

A cradle-to-grave cost estimate is needed, to apply to future new entrants. Because of the development of payments over time, a triangle squaring approach is employed where the compensation payments are organized into a triangle by first approval quarter and subsequent payment quarters. Historical relationships between quarters were then measured and projected forward to indicate ultimate payments by approval quarter from 2005 to the present. An increase in ultimate payments has been observed starting with cases approved in FY 2014. The selected ultimate is being modeled as a flat amount prior to that point, with a 6.1% trend following that point. The projections include this trend until the maximum of \$250,000 is reached.

Part E Average Compensation per case

Cases approved prior to FY 2014: \$120,000

Cases approved FY 2014 - 2025: $\$120,000 * (1.061)^{(FY - 2013)}$

Cases approved FY 2026 or later: \$250,000 (maximum benefit)

For more detail on the triangle development analysis, see Appendix 3.

4: Payout patterns

Multiplying the number of cases from Step 2 times the average compensation benefit payment per case will determine the total amount of compensation benefit for new cases.

The next step is to estimate cash flow by fiscal year. To estimate the cash flow, it is necessary to know the timing of the benefit payments.

The historical data shows that the majority of the Part B cases pay the full amount of the compensation benefit within the same fiscal year as the case approval.

Part B Compensation Payout Pattern

Year 1	100%
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The compensation payment triangle analysis was used to estimate the payout pattern for Part E benefits:

Part E Compensation Payout Pattern

<u>Year</u>	<u>% Paid</u>
Year 1	27.0%
Year 2	25.6%
Year 3	6.6%
Year 4	6.4%
Year 5	4.5%
Year 6	4.2%
Year 7	3.6%
Year 8	3.1%
Year 9	3.0%
Year 10	2.6%
Year 11	2.3%
Year 12	2.4%
Year 13	2.2%
Year 14	1.2%
Year 15-25	0.5%

For more detail on the payment pattern analysis, please see Appendix 3.

5: Estimate the number of cases eligible for medical benefits

The next step in the process is to estimate the future medical payments.

Only the cases in which an approved claim was filed by an employee are eligible for medical benefits. The pool of individuals eligible to receive medical benefits includes both existing and newly approved cases that were filed by an employee (as long as the employee is still alive).

Historical ratios were used to select the percentage of future cases expected to contain an approved claim filed by an employee (and thus eligible for medical benefits).

% of Newly Approved Cases that were filed by an Employee

	RECA	BD	BS	CS	CN SEC	CN Non SEC	Part E
Prior	51%	63%	100%	80%	33%	39%	52%
2008	59%	64%	99%	83%	28%	46%	56%
2009	59%	64%	100%	59%	26%	54%	58%
2010	59%	73%	100%	69%	33%	57%	60%
2011	61%	69%	100%	67%	28%	61%	62%
2012	64%	68%	100%	69%	34%	59%	60%
2013	73%	67%	100%	100%	41%	60%	65%
2014	63%	78%	100%	100%	42%	69%	69%
2015	66%	78%	100%	82%	47%	65%	71%
2016	59%	70%	100%	84%	51%	63%	75%
2017	60%	80%	100%	89%	52%	66%	76%
2018	64%	76%	99%	93%	57%	72%	79%
2019	52%	70%	100%	95%	61%	73%	82%
2020	66%	81%	100%	94%	59%	82%	85%
2021	53%	77%	100%	94%	66%	83%	89%
Selected	59%	86%	100%	94%	66%	80%	90%

The selected ratios are then applied to future approved cases in all future years, to estimate the number of future cases that will be eligible for medical benefits.

6: Remove double counting

Cases can be approved for Part B alone, Part E alone, or for both Part B and Part E. Cases approved for either Part are eligible to receive medical benefits. The number of approved cases is being projected separately by Part, so the total count of approved cases will count many, but not all, of the individuals twice (once for Part B and once for Part E). Historical ratios are used to determine how the approved cases need to be reduced in order to convert the number of approved cases to the number of individuals eligible for medical benefits.

Because the approval decisions are made separately for each Part (for example, a case could receive approval for Part B and then months or years later receive approval for Part E), a reduction in the case count is made for the assumption that some of the newly approved cases will have already been approved for the other Part and thus are already included in the count of individuals eligible for medical benefits.

It is assumed that 12% of newly-approved Part B cases have already been approved for Part E, and that 0.5% of newly-approved Part E cases have already been approved for Part B.

Fiscal Year	Part B Cases Filed by an employee that had already been accepted as Part E	Part E Cases Filed by an employee that had already been accepted as Part B
2008	2.5%	16.1%
2009	5.9%	6.1%
2010	10.2%	1.3%
2011	9.0%	1.4%
2012	10.5%	1.5%
2013	7.8%	0.8%
2014	8.8%	0.7%
2015	8.9%	0.8%
2016	8.6%	0.8%
2017	9.7%	0.6%
2018	12.3%	0.7%
2019	12.2%	0.4%
2020	11.8%	0.3%
2021	13.1%	0.5%
Selected for 2022 and Subsequent	12.0%	0.5%

Additionally, some cases will receive an approval for both Part B and Part E at the same time, or in the same fiscal year. A reduction must be made so that these two approved case parts are not treated as two separate individuals eligible for medical benefits. Historically, approximately 80% of the employee-filed Part B cases also are approved for Part E at the same time. It is assumed that this ratio will continue into the future.

Fiscal Year	Part B Cases Filed by an employee where Part E is approved in the same year
2008	82.2%
2009	80.5%
2010	79.6%
2011	69.3%
2012	73.5%
2013	81.3%
2014	78.0%
2015	78.9%
2016	78.5%
2017	77.9%
2018	77.3%
2019	80.5%
2020	82.1%
2021	80.8%
Selected for 2022 and Subsequent	80.0%

To convert the number of approved employee-filed cases into the number of employee-filed cases eligible for medical benefits, the number of newly-approved employee-filed Part B cases is reduced by 12%, the number of newly-approved employee-filed Part E cases is reduced by 0.5% (as shown on the previous page) and then the newly-approved employee-filed Part B cases is further reduced by 80% to estimate the total number of cases eligible for medical benefits by year.

7: Mortality

Because the EEOICPA program is not always notified when a participant is deceased, the number of individuals that are still alive and eligible for medical benefits must be estimated, using mortality assumptions. The mortality assumptions in the model are reviewed every three years. The 2022 liability estimate uses the Private Retirement Plans (Pri-2012) Male Disabled Retiree mortality table, published by the Society of Actuaries in October 2019. The previous mortality table was the Society of Actuaries Retirement Plan (RP-2014) Male Disabled Retiree table, published in 2014. This resulted in an increase in the mortality rates.

For purposes of mortality, the model assumes that employees are age 72 at the time that an employee-filed case is first approved³.

Average Age of Employee at First Approval Date

Part B			Part E		
<u>FY</u>	<u>Count</u>	<u>Avg Age at Award</u>	<u>FY</u>	<u>Count</u>	<u>Avg Age at Award</u>
2013	1,783	70.8	2013	2,100	70.2
2014	1,291	72.7	2014	1,580	71.3
2015	1,137	72.8	2015	1,274	72.2
2016	1,176	73.7	2016	1,373	72.4
2017	1,255	73.2	2017	1,683	72.4
2018	1,246	72.2	2018	1,658	71.5
2019	1,286	72.4	2019	1,817	71.2
2020	1,421	71.9	2020	2,243	70.3
2021	986	71.3	2021	2,089	69.4
2022	837	71.8	2022	2,004	68.8
Average 2013-2022		72.3	Average 2013-2022		71.0

³ The exception to this assumption is for employees for which the first case approval date was more than 15 years ago. For these employees, the model uses a weighted average of the actual age at approval.

8: Estimate the Number of Individuals eligible for medical benefits

The total number of individuals eligible to receive medical benefits each year is then the number of individuals with prior case approvals, assumed to be still alive, plus the number of newly-approved cases (adjusted to remove double counting of cases approved for both Parts) minus the number of expected deaths, as shown below:

ESTIMATED LIABILITY FOR EEOICPA AS OF SEPTEMBER 30, 2022

ESTIMATED NUMBER OF INDIVIDUALS ELIGIBLE FOR MEDICAL EXPENSES

Fiscal Year	New Cases Eligible for Medical Expenses							Remove double counting:			Net new Individuals	Assumed # Deaths	Total # Individuals Eligible	Average # Individuals Eligible
	RECA	BD	BS	CS	CN SEC	CN Non SEC	Part E	Part B already in	Part E already in	EB concurrent				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Prior	2,752	1,415	625	75	2,125	1,887	7,270	(33)	(3,113)	(2,835)	10,168	(1,241)	8,927	
2008	380	139	101	10	599	466	2,836	(42)	(458)	(1,394)	2,637	(528)	11,036	9,982
2009	271	93	82	10	470	436	2,301	(80)	(141)	(1,097)	2,345	(652)	12,729	11,883
2010	193	92	72	9	743	447	2,053	(159)	(27)	(1,238)	2,185	(771)	14,143	13,436
2011	162	78	76	14	774	467	1,792	(142)	(25)	(1,088)	2,108	(890)	15,361	14,752
2012	188	66	58	9	870	439	1,777	(171)	(26)	(1,198)	2,012	(1,005)	16,369	15,865
2013	222	41	45	2	1,122	346	2,100	(138)	(16)	(1,445)	2,279	(1,132)	17,515	16,942
2014	153	42	39	2	752	303	1,580	(114)	(11)	(1,007)	1,739	(1,235)	18,020	17,768
2015	160	38	47	9	632	250	1,274	(101)	(10)	(896)	1,403	(1,319)	18,104	18,062
2016	111	30	57	16	664	293	1,373	(101)	(11)	(919)	1,513	(1,405)	18,212	18,158
2017	95	32	57	50	728	289	1,683	(121)	(10)	(975)	1,828	(1,499)	18,541	18,376
2018	97	28	67	135	616	292	1,658	(152)	(11)	(955)	1,775	(1,584)	18,731	18,636
2019	100	31	63	223	608	250	1,817	(155)	(7)	(1,026)	1,904	(1,667)	18,968	18,850
2020	97	29	39	368	582	295	2,243	(166)	(7)	(1,157)	2,323	(1,759)	19,533	19,251
2021	59	20	18	306	381	188	2,089	(127)	(10)	(785)	2,139	(1,833)	19,839	19,686
2022	82	13	20	330	529	178	2,634	(138)	(13)	(922)	2,713	(1,922)	20,630	20,234

Notes:

(2)-(8) = Number of approved cases * percent of cases filed by employee

(12) = Sum of (2) through (11)

(13) = Mortality tables applied to the average number of individuals eligible

(14) = (14) from previous year + (12) + (13)

(15) = Average of (14) from previous year and (14) from current year

**ESTIMATED LIABILITY FOR EEOICPA
AS OF SEPTEMBER 30, 2022**

ESTIMATED NUMBER OF INDIVIDUALS ELIGIBLE FOR MEDICAL EXPENSES

Fiscal Year	New Cases Eligible for Medical Expenses							Remove double counting:				Assumed # Deaths	Total # Individuals Eligible	Average # Individuals Eligible
	RECA	BD	BS	CS	CN		Part E	Part B already in	Part E already in	EB concurrent	Net new Individuals			
					CN SEC	Non SEC								
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
2023	68	25	30	321	537	249	2,565	(148)	(13)	(985)	2,650	(1,999)	21,281	20,955
2024	64	24	27	319	501	239	2,402	(141)	(12)	(941)	2,484	(2,060)	21,705	21,493
2025	60	23	25	299	468	230	2,216	(133)	(11)	(884)	2,293	(2,103)	21,896	21,801
2026	56	22	22	276	437	221	2,044	(124)	(10)	(828)	2,116	(2,129)	21,883	21,890
2027	53	22	20	254	408	212	1,885	(116)	(9)	(776)	1,953	(2,137)	21,699	21,791
2028	50	21	19	235	381	204	1,739	(109)	(9)	(727)	1,803	(2,131)	21,371	21,535
2029	46	20	17	217	356	196	1,604	(102)	(8)	(681)	1,664	(2,113)	20,921	21,146
2030	44	19	15	200	332	188	1,479	(96)	(7)	(639)	1,536	(2,087)	20,370	20,646
2031	41	18	14	184	310	181	1,364	(90)	(7)	(599)	1,417	(2,053)	19,735	20,053
2032	38	18	13	170	290	174	1,258	(84)	(6)	(562)	1,308	(2,014)	19,029	19,382
2033	36	17	12	157	270	167	1,161	(79)	(6)	(527)	1,208	(1,970)	18,267	18,648
2034	34	16	11	145	253	160	1,071	(74)	(5)	(494)	1,115	(1,920)	17,462	17,864
2035	32	16	10	133	236	154	988	(70)	(5)	(464)	1,029	(1,866)	16,624	17,043
2036	30	15	9	123	220	148	911	(65)	(5)	(436)	950	(1,808)	15,766	16,195
2037	28	14	8	113	206	142	840	(61)	(4)	(409)	877	(1,744)	14,899	15,333
2038	26	14	7	105	192	136	775	(58)	(4)	(384)	809	(1,676)	14,033	14,466
2039	24	13	7	96	179	131	715	(54)	(4)	(361)	747	(1,604)	13,176	13,604
2040	23	13	6	89	167	126	659	(51)	(3)	(339)	690	(1,529)	12,336	12,756
2041	21	12	6	82	156	121	608	(48)	(3)	(319)	637	(1,452)	11,522	11,929
2042	20	12	5	76	146	116	561	(45)	(3)	(300)	588	(1,373)	10,737	11,130
2043	19	11	5	70	136	112	517	(42)	(3)	(282)	543	(1,293)	9,988	10,362
2044	18	11	4	64	127	107	477	(40)	(2)	(265)	501	(1,213)	9,275	9,631
2045	17	10	4	59	119	103	440	(37)	(2)	(250)	463	(1,136)	8,603	8,939
2046	16	10	3	55	111	99	406	(35)	(2)	(235)	427	(1,060)	7,970	8,287
2047	15	10	3	51	104	95	374	(33)	(2)	(221)	395	(987)	7,378	7,674
2048	14	9	3	47	97	91	345	(31)	(2)	(208)	365	(917)	6,825	7,102
2049	13	9	3	43	90	88	319	(29)	(2)	(196)	337	(851)	6,310	6,568
2050	12	9	2	40	84	84	294	(28)	(1)	(185)	311	(789)	5,832	6,071
2051	11	8	2	37	79	81	271	(26)	(1)	(174)	287	(731)	5,388	5,610
2052	11	8	2	34	73	78	250	(25)	(1)	(164)	265	(676)	4,977	5,183
2053	10	8	2	31	69	75	231	(23)	(1)	(155)	245	(625)	4,597	4,787
2054	9	7	2	29	64	72	213	(22)	(1)	(146)	226	(578)	4,246	4,421
2055	9	7	2	26	60	69	196	(21)	(1)	(138)	209	(534)	3,921	4,083
2056	-	-	-	-	-	-	-	-	-	-	-	(484)	3,437	3,679
2057	-	-	-	-	-	-	-	-	-	-	-	(438)	2,998	3,218
2058	-	-	-	-	-	-	-	-	-	-	-	(395)	2,603	2,801
2059	-	-	-	-	-	-	-	-	-	-	-	(355)	2,248	2,426
2060	-	-	-	-	-	-	-	-	-	-	-	(318)	1,930	2,089
2061	-	-	-	-	-	-	-	-	-	-	-	(284)	1,646	1,788
2062	-	-	-	-	-	-	-	-	-	-	-	(252)	1,394	1,520
2063	-	-	-	-	-	-	-	-	-	-	-	(222)	1,172	1,283
2064	-	-	-	-	-	-	-	-	-	-	-	(195)	977	1,074
2065	-	-	-	-	-	-	-	-	-	-	-	(170)	807	892
2066	-	-	-	-	-	-	-	-	-	-	-	(147)	660	733
2067	-	-	-	-	-	-	-	-	-	-	-	(126)	534	597
2068	-	-	-	-	-	-	-	-	-	-	-	(107)	428	481
2069	-	-	-	-	-	-	-	-	-	-	-	(89)	339	383
2070	-	-	-	-	-	-	-	-	-	-	-	(74)	264	302
2071	-	-	-	-	-	-	-	-	-	-	-	(61)	204	234
2072	-	-	-	-	-	-	-	-	-	-	-	(49)	155	179
2073	-	-	-	-	-	-	-	-	-	-	-	(39)	116	135
2074	-	-	-	-	-	-	-	-	-	-	-	(30)	86	101
2075	-	-	-	-	-	-	-	-	-	-	-	(23)	62	74
2076	-	-	-	-	-	-	-	-	-	-	-	(18)	45	53
2077	-	-	-	-	-	-	-	-	-	-	-	(13)	32	38
2078	-	-	-	-	-	-	-	-	-	-	-	(10)	22	27
2079	-	-	-	-	-	-	-	-	-	-	-	(7)	15	18
2080	-	-	-	-	-	-	-	-	-	-	-	(5)	10	13
2081	-	-	-	-	-	-	-	-	-	-	-	(3)	7	8
2082	-	-	-	-	-	-	-	-	-	-	-	(2)	4	5

Notes:

- (2)-(8) = Number of approved cases * percent of cases filed by employee
 (12) = Sum of (2) through (11)
 (13) = Mortality tables applied to the average number of individuals eligible
 (14) = (14) from previous year + (12) + (13)
 (15) = Average of (14) from previous year and (14) from current year

9: Estimate Average Medical Payments and Inflation Rates

The total medical payments each year are divided by the average number of eligible individuals to determine the average medical payment per eligible individual for each year.

Estimated Average Medical Payment in FY 2022	\$57,575
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Medical inflation rates are then selected for future years.

The average medical inflation rates for future years 1-5 were selected based on guidance from OWCP management regarding expected cost increases in the short term. Medical inflation rates for 6 years and later are the CPI-Medical inflation rates from the OMB Economic Assumptions for the FY 2023 Mid-session Review.

Annual Medical Inflation, Future Year 1	3.8%
Annual Medical Inflation, Future Year 2	6.7%
Annual Medical Inflation, Future Year 3	6.0%
Annual Medical Inflation, Future Year 4	6.6%
Annual Medical Inflation, Future Year 5	6.1%
Annual Medical Inflation, Future Year 6+	3.9%

10: Calculate the total expected Medical Payment by year

The total number of individuals eligible is multiplied by the average medical cost per eligible individual to determine the expected medical payments by fiscal year, as shown below.

<u>FY</u>	<u>Average # Individuals Eligible</u>	<u>Average Medical Cost per Eligible Individual</u>	<u>Total Undiscounted Medical Payments</u>
	(1)	(2)	(3)
2023	20,955	\$ 59,763	\$ 1,252,362,010
2024	21,493	63,767	1,370,564,119
2025	21,801	67,593	1,473,584,810
2026	21,890	72,055	1,577,249,706
2027	21,791	76,450	1,665,940,693
2028	21,535	79,431	1,710,555,135
2029	21,146	82,529	1,745,169,643
2030	20,646	85,748	1,770,343,195
2031	20,053	89,092	1,786,529,736
2032	19,382	92,567	1,794,127,965
2033	18,648	96,177	1,793,529,777
2034	17,864	99,928	1,785,153,502
2035	17,043	103,825	1,769,475,241
2036	16,195	107,874	1,747,051,650
2037	15,333	112,081	1,718,521,459
2038	14,466	116,452	1,684,592,409
2039	13,604	120,994	1,646,023,669
2040	12,756	125,713	1,603,602,106
2041	11,929	130,615	1,558,125,939
2042	11,130	135,709	1,510,384,828
2043	10,362	141,002	1,461,125,556
2044	9,631	146,501	1,411,022,776
2045	8,939	152,215	1,360,660,429
2046	8,287	158,151	1,310,525,580
2047	7,674	164,319	1,261,011,300
After 2047			15,244,918,443
Total future undiscounted			\$ 55,012,151,677

11: Discount the cash flows to 9/30/2022

The projected cash flows by fiscal year for 2023 through 2082 are then discounted back to 9/30/2022.

The discount rates for compensation and medical payments are determined based on the duration of the liabilities. The rate used for discounting corresponds to the point on the Treasury yield curve for that duration. The Treasury curve being used is based on a five-year averaging of the U.S. Department of Treasury's Yield Curve for Treasury Nominal Coupon Issues.

Discount rate for compensation payments	2.068%
Discount rate for medical payments	2.325%

Hindsight Opinion

The hindsight opinion adjusts the current liability estimate to be consistent with the liability estimate as of 9/30/2021, removing periods that were not contemplated at that time, and adding back payments made between the previous date and the current date. This is a more valid indication of revisions in the liability estimate than comparing the year-over-year average.

The current hindsight estimate of liability as of 9/30/2021 is \$49.5 billion, compared with a liability estimate of \$43.0 billion in the 9/30/2021 actuarial report. This increase is mainly driven by an increase in the number of part E cases and an increase to the expectation of average Part E compensation benefit per case.

Calculation of 9/30/2021 Hindsight Liability Opinion

(\$millions)

Current Estimated Liability as of 9/30/2022	\$ 48,290
Minus liability for additional exposure from 10/1/2021-9/30/1022	483
Plus payments in FY 2022 (excluding payment for current exposures)	1,839
Discount back to 9/30/2021	<u>(1,149)</u>
Hindsight Liability Estimate as of 9/30/2021	\$ 49,462

To arrive at the hindsight estimate, the liability for additional exposure was estimated at 1% of the total liability. The total estimate is not calculated at the employment year level.

Appendix 1: Reconciliation of Change in Liability Estimate

Liability Estimate as of 9/30/21 (\$millions, discounted to 9/30/21).....	\$43,038
1. FY 2022 roll off of estimate	(1,781)
2. FY 2082 roll on to estimate	1
3. Discount to 9/30/22 instead of 9/30/21	1,005
4. Revised number of Part E Approvals	3,826
5. Change in Part E compensation benefit per case	2,045
6. Change to mortality table	(1,552)
7. Revised percent filed by employee	930
8. Revised medical cost estimate	330
9. Revised percentage approval for both Part B and Part E	(265)
10. Discount rates as of 2022	233
11. Revised number of Part B Approvals	66
12. Combination/other	414
Total Change	5,252
Liability Estimate as of 9/30/2022 (\$millions, discounted to 9/30/22).....	\$48,290

Appendix 2: Summary of EEOICPA Model Assumptions

	<u>as of 9/30/2022</u>	<u>as of 9/30/2021</u>
Compensation Benefit Amounts		
RECA Benefit (Non DOJ)	\$ 50,000	\$ 50,000
RECA Benefit (on behalf of DOJ)	\$ 100,000	\$ 100,000
Part B Benefit (lump sum)	\$ 150,000	\$ 150,000
Part E Benefit, piecewise:		
Through 2013	\$ 120,000	\$ 157,000
post-2013 annual trend	6.1%	-
cap	\$ 250,000	\$ 250,000
Discount Rates		
Discount Factor for Compensation	2.068%	2.120%
Discount Factor for Medical	2.325%	2.384%
Discount Period	60 Future Years 2023 - 2082	60 Future Years 2022 - 2081
Duration		
Average Compensation Duration (years)	12.7	12.3
Average Medical Duration (years)	18.6	19.3
Inflation Rates		
Annual Inflation for Part B Compensation	0.0%	0.0%
Annual Inflation for Medical, Future Year 1	3.8%	6.0%
Annual Inflation for Medical, Future Year 2	6.7%	5.8%
Annual Inflation for Medical, Future Year 3	6.0%	5.6%
Annual Inflation for Medical, Future Year 4	6.6%	5.5%
Annual Inflation for Medical, Future Year 5	6.1%	3.9%
Annual Inflation for Medical, Future Years 6+	3.9%	3.9%
Mortality		
Mortality Table	PRI-2012 Male Disabled Retiree	RP-2014 Male Disabled Retiree
Projection Scale	No projection	No projection
New Cases		
Eligible for medical benefits if filed by employee	100%	100%
Average age of employee when case approved ⁴	72	72

⁴ The exception to this assumption is for employees for which the first case approval date was more than 15 years ago. For these employees, the model uses a weighted average of the actual age at approval.

	<u>as of 9/30/2022</u>	<u>as of 9/30/2021</u>
Percent of new cases filed by employee		
RECA (Part B)	59%	58%
BD (Part B)	86%	73%
BS (Part B)	100%	100%
CS (Part B)	94%	95%
CN SEC (Part B)	66%	61%
CN Non SEC (Part B)	80%	80%
Part E	90%	86%
Probability that the newly-approved case is already eligible for medical benefits		
Part B	12.0%	10.9%
Part E	0.5%	0.7%
Part B cases where Part E approved same year	80.0%	79.0%
Quarterly Decay in new case approval		
RECA (Part B)	1.6%	1.6%
BD (Part B)	1.0%	1.0%
BS (Part B)	2.3%	2.3%
CS (Part B)	2.0%	2.0%
CN SEC (Part B)	1.7%	1.8%
CN Non SEC (Part B)	1.0%	0.9%
Part E	2.0%	2.0%
Payment Pattern: Part B Compensation		
<u>Year</u>	<u>% Paid</u>	<u>% Paid</u>
Year 1	100%	100%
Payment Pattern: Part E Compensation		
<u>Year</u>	<u>% Paid</u>	<u>% Paid</u>
Year 1	27.0%	28.5%
Year 2	25.6%	25.3%
Year 3	6.6%	6.4%
Year 4	6.4%	5.9%
Year 5	4.5%	4.3%
Year 6	4.2%	4.4%
Year 7	3.6%	3.8%
Year 8	3.1%	3.1%
Year 9	3.0%	2.9%
Year 10	2.6%	2.7%
Year 11	2.3%	2.3%
Year 12	2.4%	2.2%
Year 13	2.2%	1.9%
Year 14	1.2%	1.1%
Year 15-25	0.5%	0.5%
Prior Year Cohort		
Average Age at Award	69	68
Average Age at Start of FY 2008	72	71
Average Part E pmt yr for FY2023	18	17

Appendix 3: Part E Compensation Payments

A triangle approach is employed to estimate the Part E compensation payout patterns. The compensation payments are organized into a paid triangle by first approval quarter and payment quarter. Historical relationships between quarters were then measured and projected forward to estimate the ultimate payments by approval quarter from 2005 to the present.

The exhibits in the following pages show the triangle of payment amounts, the age-to-age factors and the selection of ultimate payments.

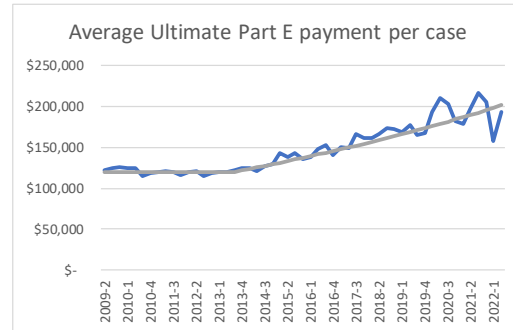
Loss Development Factor (LDF) Method

The LDF method applies a loss development factor to paid cases by period (in this case, approval quarter) to arrive at an estimate of the ultimate losses incurred in that period. The loss development factor varies by the maturity of the period. Loss development factors are selected based on review of historical development and actuarial judgment to consider items such as credibility of observed data and changing patterns within the aggregated data.

Part E Compensation

Summary of Results: Paid Compensation

	Current Paid	Paid LDF	Selected Ultimate Payments	Ultimate Count	Ultimate Average Payment	Selected Ultimate Average Payment
2009-2	\$ 106,382,571	1.055	\$ 112,233,612	922	\$ 121,728	\$ 120,000
2009-3	101,738,689	1.060	107,843,011	865	124,674	120,000
2009-4	86,271,561	1.066	91,965,484	729	126,153	120,000
2010-1	96,920,819	1.072	103,899,118	830	125,180	120,000
2010-2	90,687,598	1.078	97,761,231	785	124,537	120,000
2010-3	113,593,519	1.084	123,135,374	1,068	115,295	120,000
2010-4	96,708,612	1.092	105,605,804	894	118,127	120,000
2011-1	79,331,507	1.098	87,105,994	725	120,146	120,000
2011-2	73,403,320	1.105	81,110,669	673	120,521	120,000
2011-3	65,512,241	1.113	72,915,124	612	119,142	120,000
2011-4	57,301,018	1.121	64,234,442	556	115,530	120,000
2012-1	70,996,519	1.128	80,084,074	668	119,886	120,000
2012-2	102,216,077	1.134	115,913,032	963	120,367	120,000
2012-3	76,917,155	1.142	87,839,391	769	114,225	120,000
2012-4	89,108,764	1.150	102,475,078	865	118,468	120,000
2013-1	91,638,305	1.158	106,117,157	883	120,178	120,000
2013-2	86,266,405	1.168	100,759,161	839	120,094	120,000
2013-3	67,745,554	1.177	79,736,517	656	121,550	120,000
2013-4	61,846,007	1.186	73,349,364	589	124,532	121,790
2014-1	55,228,349	1.195	65,997,877	529	124,760	123,606
2014-2	67,712,920	1.205	81,594,068	673	121,239	125,449
2014-3	53,064,193	1.217	64,579,123	509	126,875	127,320
2014-4	50,776,333	1.228	62,353,337	482	129,364	129,219
2015-1	54,025,487	1.240	66,991,604	469	142,839	131,146
2015-2	48,237,458	1.253	60,441,535	438	137,994	133,102
2015-3	46,742,581	1.264	59,082,622	414	142,712	135,087
2015-4	48,104,046	1.278	61,476,971	455	135,114	137,101
2016-1	49,138,678	1.291	63,438,033	459	138,209	139,146
2016-2	49,904,756	1.303	65,025,897	439	148,123	141,221
2016-3	54,215,024	1.321	71,618,046	469	152,704	143,327
2016-4	57,943,727	1.338	77,528,707	551	140,705	145,464
2017-1	62,241,123	1.355	84,336,721	563	149,799	147,634
2017-2	59,414,749	1.373	81,576,451	545	149,682	149,835
2017-3	64,627,422	1.394	90,090,626	543	165,913	152,070
2017-4	62,004,320	1.417	87,860,121	546	160,916	154,338
2018-1	60,149,196	1.440	86,614,842	535	161,897	156,639
2018-2	58,568,152	1.458	85,392,366	513	166,457	158,975
2018-3	59,003,493	1.480	87,325,170	502	173,955	161,346
2018-4	57,973,311	1.507	87,365,779	507	172,319	163,752
2019-1	50,747,830	1.539	78,100,910	462	169,050	166,194
2019-2	69,116,230	1.575	108,858,062	613	177,582	168,673
2019-3	64,297,464	1.623	104,354,785	630	165,643	171,188
2019-4	68,670,539	1.671	114,748,470	684	167,761	173,741
2020-1	76,702,869	1.713	131,392,014	681	192,940	176,332
2020-2	81,282,271	1.754	142,569,103	678	210,279	178,962
2020-3	66,555,353	1.803	119,999,302	589	203,734	181,631
2020-4	55,594,644	1.864	103,628,416	567	182,766	184,339
2021-1	52,940,407	1.927	102,016,164	572	178,350	187,088
2021-2	55,075,287	2.023	111,417,306	565	197,199	189,878
2021-3	64,207,778	2.199	141,192,904	652	216,554	192,710
2021-4	48,476,813	2.729	132,293,224	642	206,064	195,584
2022-1	21,796,767	5.274	114,956,150	728	157,907	198,501
2022-2	11,212,500	14.464	162,177,600	841	192,839	201,461
Total	\$ 3,520,338,312		\$4,952,477,947	33,936	\$ 145,936	



Part E Compensation
Cumulative Payments by Approval Quarter

Approval Quarter	1	2	3	4	5	6	7	8	9	10
Prior	\$617,583,365	\$866,463,242	\$979,575,607	\$1,090,086,660	\$1,186,872,574	\$1,264,591,254	\$1,321,197,587	\$1,368,291,592	\$1,411,337,299	\$1,445,313,942
20092	30,433,663	43,565,550	57,611,183	63,145,649	68,611,437	71,143,229	72,431,620	74,177,870	75,092,870	75,837,870
20093	22,563,488	39,535,214	51,381,077	56,675,312	61,389,811	63,092,738	64,987,181	66,782,454	67,247,454	67,922,454
20094	19,399,524	28,968,448	42,530,198	49,466,020	51,632,963	53,575,463	55,062,963	56,455,463	57,014,610	57,307,110
20101	22,033,279	39,047,894	49,677,745	54,505,686	59,557,578	61,829,961	64,044,961	65,693,711	66,325,198	66,731,448
20102	21,794,665	37,682,243	46,322,243	55,205,735	58,405,735	60,758,235	61,918,235	62,320,735	63,283,235	63,702,298
20103	39,254,046	55,520,859	67,756,476	73,595,067	76,657,567	78,455,067	79,970,067	81,510,508	81,789,943	82,934,943
20104	29,942,582	41,379,604	52,661,619	59,395,899	62,262,081	64,263,331	65,157,081	66,124,581	67,539,581	68,737,168
20111	21,660,543	33,267,894	40,920,203	46,556,557	48,881,866	50,385,933	51,763,599	52,415,670	53,822,258	54,264,758
20112	23,840,751	32,734,782	40,288,250	43,164,500	45,094,500	46,908,250	48,160,280	48,875,875	49,985,875	50,890,875
20113	18,564,711	26,740,180	35,110,569	37,968,752	39,254,344	41,620,347	42,755,347	43,590,347	44,545,347	46,056,197
20114	16,217,366	24,988,889	32,137,071	34,396,960	36,536,060	37,385,231	38,457,731	38,990,231	39,561,481	40,121,981
20121	16,975,439	28,180,231	35,463,703	42,049,721	45,509,721	46,744,721	47,854,721	48,402,221	48,949,721	49,764,721
20122	34,940,761	49,547,664	56,652,483	60,745,251	64,582,946	66,665,446	68,632,849	69,761,183	70,817,103	71,807,103
20123	23,167,472	34,108,254	42,162,981	46,480,736	48,459,864	50,827,364	51,795,768	52,675,768	54,066,435	54,683,935
20124	21,110,000	36,045,000	45,266,937	51,672,340	55,657,479	58,119,384	59,260,217	60,275,217	61,770,217	63,932,717
20131	27,144,159	40,356,481	48,992,365	54,594,664	58,035,498	59,547,998	60,785,498	62,050,498	63,896,748	65,441,748
20132	25,768,833	34,871,290	45,108,051	50,764,064	53,794,514	56,264,514	56,962,014	58,054,514	58,927,302	59,669,802
20133	15,134,167	22,265,217	29,797,828	33,761,043	37,150,482	39,174,170	41,589,420	42,865,284	44,457,420	45,222,420
20134	13,450,000	21,484,834	28,824,423	34,380,811	36,644,477	38,953,733	40,564,734	41,639,834	42,335,251	42,825,251
20141	11,230,016	19,599,253	27,915,885	31,901,743	34,229,243	35,052,993	35,852,993	36,465,926	37,057,176	38,033,426
20142	17,404,402	27,116,306	34,372,627	38,455,127	42,250,886	43,983,386	45,434,402	46,046,902	46,969,402	48,050,652
20143	14,052,500	21,043,080	27,139,532	30,305,859	32,677,987	34,554,653	35,612,153	36,369,653	36,759,186	37,246,249
20144	13,659,968	20,711,122	26,680,651	29,134,064	31,629,586	33,478,776	34,681,276	35,543,776	36,234,326	37,221,826
20151	12,524,645	20,189,006	25,241,643	30,355,135	31,825,135	33,167,635	34,585,135	35,487,635	36,092,635	37,220,135
20152	13,043,750	19,757,500	25,716,195	28,764,623	30,545,873	31,931,065	33,633,624	34,219,874	35,577,708	36,567,708
20153	12,774,544	18,457,044	23,451,338	27,636,407	29,861,195	31,033,695	32,106,695	32,651,695	33,021,695	33,734,195
20154	10,412,500	17,463,540	24,260,779	28,400,714	30,968,214	33,005,714	34,130,714	35,008,214	36,240,744	37,028,244
20161	13,225,000	19,137,500	24,776,921	29,247,285	31,647,285	33,109,785	34,913,435	37,008,435	37,855,935	38,120,935
20162	10,932,500	19,001,272	25,584,678	30,798,906	32,946,225	34,493,725	35,348,725	35,754,975	37,034,975	38,074,975
20163	10,050,000	19,173,750	26,609,762	31,795,125	34,300,125	37,187,625	38,607,921	39,902,088	40,992,088	41,975,838
20164	14,800,000	23,947,322	34,411,081	38,593,581	41,565,094	43,520,094	44,870,094	46,027,594	46,655,094	47,420,094
20171	13,945,000	24,438,511	34,195,192	40,740,661	44,228,161	46,073,161	47,763,161	48,930,661	49,598,161	50,973,161
20172	10,715,000	21,922,348	31,015,218	37,888,512	40,591,012	42,498,512	43,416,012	44,176,012	45,756,012	47,285,512
20173	10,873,333	21,142,724	33,359,307	39,999,457	43,072,790	45,645,290	48,829,457	50,086,957	50,816,957	51,559,457
20174	12,340,197	23,785,349	37,479,107	42,090,012	45,696,543	47,040,476	48,587,976	49,670,476	51,157,976	52,502,351
20181	12,067,500	21,547,154	35,802,967	41,151,207	44,271,207	47,079,212	48,136,696	49,204,196	50,259,196	51,736,696
20182	9,512,500	19,927,500	31,167,500	38,465,000	42,494,402	43,942,319	45,173,152	46,865,652	47,850,652	49,048,152
20183	9,999,718	18,176,381	32,616,625	40,147,835	43,342,997	45,795,497	46,989,247	47,784,247	48,837,581	49,736,038
20184	8,918,750	16,407,500	32,523,278	39,718,278	42,878,695	45,407,445	47,668,695	49,402,466	50,282,398	51,382,398
20191	8,127,500	15,682,500	27,361,633	33,449,133	36,079,133	38,710,830	39,668,330	41,573,330	43,290,830	44,345,830
20192	10,303,001	24,185,449	40,419,040	48,657,768	52,031,680	54,381,680	56,505,813	58,943,313	60,812,063	62,494,563
20193	10,730,000	23,837,042	39,948,350	48,027,032	50,479,532	52,834,532	54,419,532	57,389,532	59,587,464	61,154,964
20194	11,402,500	24,682,500	44,455,987	52,921,789	56,939,289	59,394,289	61,281,789	63,556,789	65,804,289	67,319,289
20201	8,553,750	26,140,003	44,258,291	55,826,056	63,621,056	67,588,636	70,391,136	72,326,863	75,241,863	76,702,869
20202	7,755,000	20,216,915	46,687,007	63,973,209	71,426,485	75,276,009	77,694,771	79,562,271	81,282,271	
20203	7,997,500	22,857,853	37,177,853	51,770,353	59,370,353	61,942,853	64,422,853	66,555,353		
20204	5,429,167	18,371,667	39,039,644	47,977,144	51,402,144	53,534,644	55,594,644			
20211	7,900,000	19,219,167	40,777,500	48,087,907	50,815,407	52,940,407				
20212	6,356,764	20,904,264	41,954,705	51,114,705	55,075,287					
20213	7,709,602	24,233,504	53,381,877	64,207,778						
20214	7,829,167	21,894,167	48,476,813							
20221	8,358,886	21,796,767								
20222	11,212,500									
	1 to 2	2 to 3	3 to 4	4 to 5	5 to 6	6 to 7	7 to 8	8 to 9	9 to 10	10 to 11
Average	1.882	1.490	1.166	1.075	1.046	1.032	1.025	1.022	1.020	1.021
Wtd Avg	1.582	1.323	1.147	1.079	1.051	1.036	1.028	1.025	1.021	1.020
20 Qtr	2.415	1.808	1.218	1.085	1.051	1.036	1.031	1.027	1.023	1.024
12 Qtr	2.742	1.933	1.241	1.087	1.050	1.034	1.034	1.028	1.024	1.025
Selected	2.742	1.933	1.241	1.087	1.050	1.034	1.034	1.028	1.024	1.025
Prior Select	2.395	1.804	1.233	1.086	1.052	1.034	1.031	1.024	1.024	1.023
Age-to-Ultimate	14.464	5.274	2.729	2.199	2.023	1.927	1.864	1.803	1.754	1.713

Part E Compensation
Cumulative Payments by Approval Quarter

Approval Quarter	11	12	13	14	15	16	17	18	19	20
Prior	\$1,474,354,431	\$1,504,284,278	\$1,530,671,387	\$1,553,376,709	\$1,577,683,034	\$1,604,244,463	\$1,626,060,093	\$1,643,754,041	\$1,661,549,570	\$1,680,192,831
20092	77,404,171	78,604,911	79,568,404	80,671,518	81,271,518	81,664,018	83,097,435	84,009,387	84,439,387	85,118,250
20093	68,650,684	70,303,184	71,984,184	73,181,952	73,704,452	74,517,941	75,887,094	76,467,094	76,840,165	77,443,200
20094	58,318,614	59,168,614	60,042,026	61,137,859	62,465,350	62,822,850	63,468,062	63,978,062	64,903,062	65,385,562
20101	67,543,948	69,680,688	70,756,938	72,031,938	72,707,706	74,083,385	74,912,186	75,527,186	76,042,186	76,836,666
20102	64,381,441	65,596,441	66,228,898	67,308,898	68,395,898	68,643,398	69,243,398	70,026,914	70,611,914	71,314,414
20103	83,664,943	84,604,275	85,214,275	86,258,886	87,041,386	88,171,283	88,600,033	89,141,283	89,499,313	90,419,313
20104	69,679,668	70,712,305	71,939,805	73,273,868	73,657,360	73,944,860	74,797,360	75,734,860	76,252,360	76,774,860
20111	54,824,758	55,704,758	56,797,258	57,669,758	58,757,749	59,661,635	61,124,135	61,529,135	61,759,135	62,239,135
20112	52,030,601	52,983,101	53,450,601	54,683,101	55,305,601	55,785,601	56,620,601	57,063,101	57,848,101	59,348,101
20113	46,531,284	47,076,284	47,566,284	48,263,784	49,156,284	49,902,648	50,187,648	50,490,148	50,767,648	51,532,648
20114	40,499,481	41,459,033	42,206,533	42,874,033	43,654,969	44,024,969	44,552,195	45,283,839	46,033,839	46,443,839
20121	50,184,721	50,834,721	51,723,627	52,866,127	53,733,627	54,363,627	55,378,627	56,251,127	56,891,127	57,611,127
20122	72,617,790	74,250,290	75,847,790	77,220,290	78,417,541	79,802,541	80,506,291	81,890,932	83,129,997	84,789,997
20123	55,791,435	56,362,450	57,642,450	58,292,450	58,784,950	59,488,950	60,353,950	61,721,450	62,210,584	63,213,084
20124	64,817,717	66,812,539	67,775,039	68,806,102	70,088,432	71,332,182	72,378,432	73,510,932	74,600,932	75,633,432
20131	66,677,998	67,802,998	69,366,434	70,106,434	71,121,434	71,916,434	73,617,684	75,352,684	76,040,184	76,845,184
20132	61,602,302	62,809,662	63,819,662	65,599,662	66,762,162	67,624,662	69,084,662	70,146,266	71,746,347	72,448,847
20133	46,479,920	47,798,504	49,186,004	50,293,504	51,518,504	52,545,624	53,713,564	54,606,064	55,303,564	56,504,814
20134	44,196,501	45,042,751	46,367,713	47,031,463	48,486,463	49,141,463	49,967,532	50,792,404	51,419,904	51,957,404
20141	39,030,926	40,373,426	41,570,042	42,692,966	43,295,466	44,287,966	44,613,966	45,738,966	46,278,966	47,226,466
20142	48,690,652	50,510,652	51,730,652	52,505,652	53,958,152	54,850,652	55,290,652	55,998,152	56,813,270	57,735,770
20143	38,043,749	38,786,249	39,543,749	40,686,249	41,367,499	42,317,499	42,832,499	43,459,999	44,582,499	45,414,999
20144	38,166,826	39,031,826	39,829,326	41,309,326	42,116,826	42,551,826	43,081,826	44,191,826	44,806,826	45,646,826
20151	38,400,135	39,730,135	41,656,888	42,711,888	43,574,388	44,556,888	44,881,888	45,386,888	46,744,388	47,254,388
20152	37,065,208	38,020,208	39,165,208	39,731,458	39,848,958	40,595,208	41,272,708	41,770,208	42,010,208	42,532,708
20153	34,681,695	36,331,695	37,114,195	37,688,361	38,513,361	39,084,931	39,532,502	40,092,502	40,777,502	41,370,002
20154	37,895,744	38,440,744	39,258,524	40,366,024	41,173,524	41,528,809	41,958,809	42,708,809	43,779,046	44,489,046
20161	38,858,435	39,841,178	40,618,678	41,491,178	42,518,678	43,376,178	44,406,178	44,826,178	45,271,178	45,888,678
20162	39,199,975	40,354,975	41,714,934	42,669,599	43,684,599	44,417,256	44,839,756	45,309,756	46,677,256	47,572,256
20163	42,835,838	43,923,338	45,415,838	46,918,338	48,045,838	48,963,338	49,460,838	49,943,338	50,635,838	51,525,838
20164	48,200,094	49,389,835	50,459,835	51,134,835	51,987,335	52,809,835	53,642,335	54,079,835	54,653,585	56,166,085
20171	51,820,661	53,338,161	54,109,661	55,519,661	56,339,661	57,219,661	58,165,911	59,107,161	59,774,661	60,374,661
20172	48,297,512	49,995,012	51,722,512	52,402,512	53,575,895	54,453,395	55,135,895	56,395,895	57,268,499	58,892,249
20173	52,986,957	54,706,957	56,526,957	57,742,422	59,517,422	60,652,422	62,259,922	63,029,922	63,864,922	64,627,422
20174	53,477,351	54,518,710	56,066,210	57,231,210	58,559,960	59,879,960	60,489,960	61,129,960	62,004,320	
20181	53,054,196	54,231,696	55,731,696	56,804,196	58,126,696	58,886,696	59,636,696	60,149,196		
20182	50,555,652	52,483,152	54,020,652	55,585,652	56,463,152	57,543,152	58,568,152			
20183	51,236,038	52,558,538	54,761,038	56,118,538	57,376,038	59,003,493				
20184	52,477,398	54,188,311	55,803,311	56,915,811	57,973,311					
20191	45,743,330	47,360,830	49,083,330	50,747,830						
20192	64,602,063	66,518,730	69,116,230							
20193	62,817,464	64,297,464								
20194	68,670,539									
20201										
20202										
20203										
20204										
20211										
20212										
20213										
20214										
20221										
20222										
	11 to 12	12 to 13	13 to 14	14 to 15	15 to 16	16 to 17	17 to 18	18 to 19	19 to 20	20 to 21
Average	1.024	1.024	1.020	1.018	1.015	1.014	1.013	1.013	1.014	1.013
Wtd Avg	1.022	1.021	1.018	1.017	1.016	1.014	1.012	1.012	1.013	1.011
20 Qtr	1.029	1.029	1.023	1.020	1.018	1.014	1.015	1.016	1.016	1.015
12 Qtr	1.029	1.031	1.023	1.022	1.018	1.015	1.013	1.016	1.017	1.015
Selected	1.029	1.031	1.023	1.022	1.018	1.015	1.013	1.016	1.017	1.015
Prior Select	1.027	1.027	1.021	1.020	1.016	1.013	1.014	1.017	1.016	1.016
Age-to-Ultimate	1.671	1.623	1.575	1.539	1.507	1.480	1.458	1.440	1.417	1.394

Part E Compensation

Cumulative Payments by Approval Quarter

Approval Quarter	21	22	23	24	25	26	27	28	29	30
Prior	\$1,695,849,173	\$1,714,648,534	\$1,729,353,150	\$1,744,653,072	\$1,760,418,443	\$1,774,600,031	\$1,789,662,015	\$1,803,519,051	\$1,815,750,153	\$1,829,660,814
20092	85,910,750	86,743,250	87,357,536	88,867,286	89,554,786	90,137,286	90,722,286	91,739,786	92,468,263	93,282,013
20093	78,118,832	78,861,332	79,614,970	81,237,470	81,514,970	82,527,054	83,022,054	84,327,054	85,277,054	86,612,432
20094	65,893,062	67,489,305	68,196,805	68,641,572	69,476,572	70,010,322	71,215,624	71,858,124	72,488,124	73,309,469
20101	77,550,416	78,375,351	79,529,248	80,316,748	81,101,138	81,698,397	82,668,132	82,947,849	83,452,849	84,233,990
20102	71,804,184	73,181,198	74,181,212	74,666,212	75,342,752	75,742,752	76,077,752	76,697,752	77,518,896	78,011,453
20103	91,318,456	92,037,206	93,132,206	93,571,103	94,103,603	95,178,353	96,155,853	97,168,095	98,265,595	99,053,095
20104	77,942,480	78,709,564	79,847,470	80,870,375	82,147,875	83,250,375	83,989,067	84,819,067	85,606,567	86,156,567
20111	62,799,135	63,396,635	64,344,217	65,404,217	66,074,217	66,796,897	67,476,897	68,004,397	68,687,156	69,379,675
20112	59,918,101	60,340,601	61,250,601	62,118,101	63,035,878	63,948,378	64,443,378	65,417,602	66,057,602	66,432,410
20113	51,797,648	52,997,648	54,217,775	54,848,553	55,278,553	55,896,053	56,153,553	56,746,053	57,013,553	58,021,053
20114	47,261,339	48,031,339	48,583,839	48,856,339	49,411,339	49,653,839	50,358,839	51,293,839	51,728,839	52,233,839
20121	58,603,627	59,218,627	60,200,794	60,825,794	61,465,794	62,273,294	63,283,294	63,650,794	64,758,294	65,232,044
20122	85,499,997	85,842,497	87,553,747	87,871,247	88,871,247	89,308,747	90,766,247	91,318,747	92,302,497	93,672,497
20123	63,943,084	64,325,584	64,917,708	65,762,708	66,757,708	67,037,708	67,750,208	68,542,683	69,255,183	69,724,655
20124	76,413,432	77,639,212	78,474,212	79,434,212	80,284,212	80,814,212	81,483,764	82,028,764	82,438,764	83,418,764
20131	77,700,184	78,972,302	79,862,302	80,940,079	82,359,517	83,132,017	83,859,517	84,261,017	85,053,517	86,063,517
20132	74,178,698	74,743,698	75,753,698	76,233,698	77,458,904	78,483,904	79,231,404	80,381,404	81,371,404	81,916,404
20133	57,479,814	58,816,448	60,435,596	61,224,479	61,734,479	62,164,479	62,769,479	63,384,479	63,596,979	64,323,229
20134	52,634,904	53,759,904	54,434,516	55,429,441	56,215,780	56,855,780	57,168,280	58,153,280	58,305,780	58,630,780
20141	47,751,466	48,675,441	49,217,941	49,642,941	50,517,941	51,095,441	51,552,941	52,085,441	52,407,941	53,047,941
20142	58,775,770	59,978,270	60,535,770	61,350,770	61,810,770	62,558,270	62,803,270	63,678,270	64,453,270	65,345,420
20143	46,294,999	46,992,499	48,109,999	48,734,999	49,322,499	49,917,499	50,452,499	51,034,999	52,082,499	52,364,193
20144	46,151,826	46,724,326	46,984,326	47,238,804	48,248,804	48,723,804	49,371,304	49,748,804	50,018,804	50,348,833
20151	48,419,388	49,036,737	49,607,987	50,295,487	51,640,487	51,895,487	52,545,487	52,865,487	53,245,487	54,025,487
20152	43,087,708	43,605,208	44,493,958	45,021,458	45,526,458	46,007,458	46,834,958	47,672,458	48,237,458	
20153	42,032,502	42,460,002	43,157,475	44,399,975	45,232,475	45,539,975	46,187,581	46,742,581		
20154	45,681,546	46,284,046	46,476,546	46,879,046	47,202,796	47,612,796	48,104,046			
20161	46,113,678	46,961,178	47,543,678	48,448,678	49,018,678	49,138,678				
20162	48,394,756	48,694,756	49,109,756	49,287,256	49,904,756					
20163	52,505,024	52,935,024	53,807,524	54,215,024						
20164	56,806,227	57,326,227	57,943,727							
20171	61,094,661	62,241,123								
20172	59,414,749									
20173										
20174										
20181										
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20211										
20212										
20213										
20214										
20221										
20222										
	21 to 22	22 to 23	23 to 24	24 to 25	25 to 26	26 to 27	27 to 28	28 to 29	29 to 30	30 to 31
Average	1.013	1.013	1.012	1.012	1.009	1.010	1.011	1.009	1.010	1.010
Wtd Avg	1.012	1.011	1.010	1.011	1.009	1.009	1.009	1.008	1.009	1.008
20 Qtr	1.014	1.014	1.011	1.013	1.009	1.011	1.011	1.009	1.010	1.010
12 Qtr	1.013	1.013	1.013	1.014	1.009	1.010	1.011	1.009	1.010	1.010
Selected	1.013	1.013	1.013	1.014	1.009	1.010	1.011	1.009	1.010	1.010
Prior Select	1.016	1.014	1.013	1.015	1.009	1.010	1.011	1.009	1.010	1.010
Age-to-Ultimate	1.373	1.355	1.338	1.321	1.303	1.291	1.278	1.264	1.253	1.240

Part E Compensation

Cumulative Payments by Approval Quarter

Approval Quarter	31	32	33	34	35	36	37	38	39	40
Prior	\$1,841,432,260	\$1,854,063,702	\$1,868,928,218	\$1,883,862,294	\$1,898,891,150	\$1,915,259,842	\$1,931,039,502	\$1,945,967,348	\$1,960,750,568	\$1,974,446,939
20092	93,782,017	94,667,017	95,581,642	96,016,642	96,999,142	97,514,142	98,264,142	98,664,142	99,135,329	99,937,187
20093	87,147,432	87,525,265	88,596,090	89,459,412	90,146,912	91,081,912	92,038,027	93,840,989	94,458,489	95,020,801
20094	73,968,019	74,380,519	75,158,583	75,918,583	77,308,583	78,311,083	78,911,083	79,570,947	80,283,596	80,928,333
20101	85,232,565	85,696,873	86,766,994	87,457,520	88,347,520	88,507,520	88,812,520	89,117,520	89,692,520	90,080,020
20102	79,424,594	79,844,594	80,425,469	81,065,469	81,737,819	82,624,069	83,459,823	84,095,054	84,752,177	85,694,677
20103	99,158,095	99,950,595	101,375,040	102,350,040	103,175,040	103,855,040	104,510,040	105,640,040	107,077,540	107,690,040
20104	86,721,567	87,433,779	87,883,779	88,303,779	88,951,279	89,826,279	90,570,453	91,100,453	92,042,721	92,757,721
20111	69,977,175	70,765,925	71,265,925	71,568,425	72,623,425	73,024,675	73,599,675	74,494,675	75,169,675	75,672,175
20112	66,832,410	67,386,160	67,773,660	68,343,660	68,678,660	69,301,160	69,660,327	70,025,327	70,340,327	70,590,327
20113	58,806,053	59,563,553	60,233,553	60,931,053	61,556,053	61,833,553	62,321,053	62,959,741	63,342,241	64,074,741
20114	53,023,691	53,588,191	54,210,691	54,532,980	55,032,980	55,747,980	56,072,268	56,282,268	56,387,268	56,504,768
20121	65,799,544	66,544,544	67,059,544	67,307,044	67,546,519	68,196,519	68,619,019	69,254,019	69,771,519	70,294,019
20122	94,604,997	95,402,497	96,353,497	96,895,997	97,728,497	98,508,497	99,410,997	100,078,497	100,860,997	101,318,497
20123	70,714,655	71,482,155	72,157,155	72,979,655	73,607,155	73,812,155	74,529,655	75,242,155	75,977,155	76,917,155
20124	83,991,264	84,853,764	85,168,764	85,551,264	86,338,764	86,948,764	87,826,264	88,733,764	89,108,764	
20131	86,605,805	87,225,805	87,928,305	89,030,805	89,950,805	90,370,805	90,993,305	91,638,305		
20132	82,513,904	83,196,404	83,908,904	84,751,405	85,368,905	85,741,405	86,266,405			
20133	64,868,229	65,178,229	66,280,729	66,698,229	66,858,229	67,745,554				
20134	59,778,280	60,280,780	60,746,007	61,583,507	61,846,007					
20141	53,735,849	54,023,349	54,640,849	55,228,349						
20142	66,257,920	66,825,420	67,712,920							
20143	52,631,693	53,064,193								
20144	50,776,333									
20151										
20152										
20153										
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20204										
20211										
20212										
20213										
20214										
20221										
20222										
	31 to 32	32 to 33	33 to 34	34 to 35	35 to 36	36 to 37	37 to 38	38 to 39	39 to 40	40 to 41
Average	1.008	1.010	1.008	1.009	1.008	1.008	1.008	1.007	1.007	1.006
Wtd Avg	1.007	1.009	1.008	1.008	1.008	1.008	1.008	1.008	1.007	1.007
20 Qtr	1.008	1.010	1.008	1.009	1.008	1.008	1.008	1.007	1.007	1.006
12 Qtr	1.009	1.010	1.009	1.008	1.008	1.007	1.008	1.007	1.007	1.006
Selected	1.009	1.010	1.009	1.008	1.008	1.007	1.008	1.007	1.007	1.006
Prior Select	1.009	1.009	1.008	1.009	1.008	1.007	1.008	1.007	1.007	1.007
Age-to-Ultimate	1.228	1.217	1.205	1.195	1.186	1.177	1.168	1.158	1.150	1.142

Part E Compensation

Cumulative Payments by Approval Quarter

Approval Quarter	41	42	43	44	45	46	47	48	49	50	51	52	53	54
Prior	\$1,989,917,740	\$2,002,968,512	\$2,018,237,271	\$2,033,319,068	\$2,046,540,897	\$2,059,938,087	\$2,072,985,793	\$2,086,933,589	\$2,099,259,154	\$2,111,099,727	\$2,122,709,136	\$2,134,619,276	\$2,145,109,133	\$2,155,615,236
20092	100,522,187	101,144,687	101,684,687	102,605,021	103,182,521	103,497,521	103,832,521	104,080,021	104,337,521	104,772,521	105,392,521	105,765,071	106,382,571	
20093	95,610,801	96,355,801	97,125,801	97,698,978	98,322,202	98,867,202	99,283,695	100,103,908	100,576,408	101,076,189	101,523,689	101,738,689		
20094	81,325,833	81,919,583	82,156,561	82,659,061	83,036,561	83,931,561	84,296,561	84,914,061	85,231,561	85,691,561	86,271,561			
20101	90,543,773	91,043,773	91,552,523	92,427,523	92,703,773	93,223,773	94,176,273	95,128,773	95,953,773	96,920,819				
20102	86,204,677	86,492,177	87,074,677	87,923,501	88,521,001	89,176,001	89,646,001	90,176,001	90,687,598					
20103	108,397,540	109,070,040	109,644,819	110,214,819	111,457,319	112,164,819	112,751,019	113,593,519						
20104	93,445,221	94,072,721	94,531,721	95,210,873	95,655,039	96,293,612	96,708,612							
20111	76,284,675	76,818,992	77,641,492	78,058,992	78,518,992	79,331,507								
20112	71,015,327	71,748,320	72,178,320	72,840,820	73,403,320									
20113	64,393,491	64,663,491	65,019,741	65,512,241										
20114	57,053,518	57,081,018	57,301,018											
20121	70,496,519	70,996,519												
20122	102,216,077													
20123														
20124														
20131														
20132														
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20213														
20214														
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20222														
	41 to 42	42 to 43	43 to 44	44 to 45	45 to 46	46 to 47	47 to 48	48 to 49	49 to 50	50 to 51	51 to 52	52 to 53	53 to 54	Tail
Average	1.006	1.006	1.007	1.006	1.007	1.005	1.007	1.005	1.006	1.006	1.004	1.005	1.005	
Wtd Avg	1.006	1.007	1.007	1.006	1.007	1.006	1.007	1.006	1.006	1.006	1.005	1.005	1.005	
20 Qtr	1.006	1.006	1.007	1.006	1.007	1.005	1.007	1.005	1.006	1.006	1.004	1.005	1.005	
12 Qtr	1.006	1.006	1.007	1.006	1.007	1.006	1.007	1.006	1.006	1.006	1.005	1.005	1.005	
Selected	1.006	1.006	1.007	1.006	1.007	1.006	1.007	1.006	1.006	1.006	1.005	1.005	1.005	1.050
Prior Select	1.006	1.005	1.007	1.006	1.006	1.006	1.005	1.005	1.005	1.004	1.005	1.004	1.005	1.050
Age-to-Ultimate	1.134	1.128	1.121	1.113	1.105	1.098	1.092	1.084	1.078	1.072	1.066	1.060	1.055	1.050

Appendix 4: Undiscounted Liability Estimate

As of 9/30/2022, the **undiscounted** liability for future EEOICPA benefit payments is projected at \$68.6 billion. The future compensation payments are projected at \$13.6 billion, and the future medical payments are projected at \$55.0 billion, on an undiscounted basis.

ESTIMATED LIABILITY FOR EEOICPA AS OF SEPTEMBER 30, 2022

SUMMARY OF LIABILITY FOR FUTURE PAYMENTS (\$ Millions)

		Undiscounted Estimate as of 9/30/2022
Compensation: Part B	\$	3,514
Compensation: Part E		10,067
Compensation: Total		13,581
Medical Payments		55,012
Total Future Payments	\$	68,593

ESTIMATED LIABILITY FOR EEOICPA AS OF SEPTEMBER 30, 2022

SUMMARY OF UNDISCOUNTED EEOICPA PAYMENTS BY YEAR

Fiscal Year	Compensation Part B Undiscounted Payments	Compensation Part E Undiscounted Payments	Compensation DOJ RECA Undiscounted Payments	Compensation Total Undiscounted Payments	Medical Total Undiscounted Payments	Total Undiscounted Payments
(1)	(2)	(3)	(4)	(4)	(5)	(6)
2023	\$ 230,068,287	\$ 489,006,585	\$ 11,603,316	\$ 730,678,188	\$ 1,252,362,010	\$ 1,983,040,198
2024	219,342,549	508,200,090	10,878,337	738,420,976	1,370,564,119	2,108,985,095
2025	206,295,719	520,338,353	10,198,655	736,832,728	1,473,584,810	2,210,417,538
2026	193,371,862	521,231,730	9,561,440	724,165,032	1,577,249,706	2,301,414,737
2027	181,295,262	512,459,343	8,964,038	702,718,643	1,665,940,693	2,368,659,337
2028	170,008,557	499,402,219	8,403,962	677,814,738	1,710,555,135	2,388,369,873
2029	159,458,358	484,325,564	7,878,880	651,662,801	1,745,169,643	2,396,832,445
2030	149,594,964	467,584,657	7,386,605	624,566,226	1,770,343,195	2,394,909,421
2031	140,372,113	441,895,743	6,925,087	589,192,944	1,786,529,736	2,375,722,680
2032	131,746,730	423,374,650	6,492,406	561,613,786	1,794,127,965	2,355,741,751
2033	123,678,711	401,258,437	6,086,758	531,023,907	1,793,529,777	2,324,553,683
2034	116,130,711	379,575,695	5,706,456	501,412,861	1,785,153,502	2,286,566,364
2035	109,067,950	357,632,908	5,349,914	472,050,772	1,769,475,241	2,241,526,013
2036	102,458,036	335,421,391	5,015,650	442,895,077	1,747,051,650	2,189,946,728
2037	96,270,799	313,806,596	4,702,271	414,779,666	1,718,521,459	2,133,301,125
2038	90,478,132	292,884,234	4,408,471	387,770,837	1,684,592,409	2,072,363,247
2039	85,053,849	273,486,797	4,133,029	362,673,674	1,646,023,669	2,008,697,343
2040	79,973,551	255,597,065	3,874,796	339,445,412	1,603,602,106	1,943,047,518
2041	75,214,504	238,925,364	3,632,697	317,772,564	1,558,125,939	1,875,898,503
2042	70,755,518	223,100,619	3,405,725	297,261,862	1,510,384,828	1,807,646,691
2043	66,576,845	208,368,198	3,192,934	278,137,978	1,461,125,556	1,739,263,533
2044	62,660,076	194,461,995	2,993,439	260,115,510	1,411,022,776	1,671,138,285
2045	58,988,049	181,031,100	2,806,408	242,825,557	1,360,660,429	1,603,485,986
2046	55,544,763	168,581,532	2,631,063	226,757,358	1,310,525,580	1,537,282,937
2047	52,315,296	156,246,012	2,466,673	211,027,982	1,261,011,300	1,472,039,281
After 2047	323,732,196	1,218,735,050	14,922,721	1,557,389,967	15,244,918,443	16,802,308,410
Total Future ⁵	\$ 3,350,453,387	\$ 10,066,931,929	\$ 163,621,731	\$ 13,581,007,046	\$ 55,012,151,677	\$ 68,593,158,723

⁵ Reflects projected cash flow through 2082

Totals may not equal sum of components because of independent rounding

Appendix 5: Ranges

A range of reasonable estimates was developed, to help describe the level of uncertainty surrounding the EEOICPA liability estimate. This range includes Low, High and Estimated values, as shown. *Significant* uncertainty exists around these estimates, and the reader of this report should not confuse any level of reported precision in the estimates contained in this report to be indicative of predictive accuracy. The numbers of new case approvals have been increasing dramatically since 2015, as have the utilization rates for medical services. It is not likely that the increases will continue indefinitely, but estimating the timeframe in which they will level off/decrease, and by how much, is a very subjective exercise.

To determine a range of reasonable liability estimates, key assumptions were varied within reasonable high and low values that another actuary might be likely to select, if they were conducting an independent valuation of the liability. It is important to note that the range shown is one that is considered reasonable (i.e. an estimate from another actuary making reasonable assumptions would fall within this range). The actual outcome could still be outside of this range. The projection goes out 60 years, and there is much that cannot be accurately foreseen.

A range was also calculated around next year's hindsight value and the cash flow for FY 2022, for purposes of monitoring the EEOICPA liability model's performance.

Reasonable Range of Liability, Cash Flow, and Hindsight Estimates

	(\$millions)		
	<u>Low</u>	<u>Estimated</u>	<u>High</u>
<u>Liability Estimate</u>			
Liability estimate as of 9/30/2022	\$ 36,786	\$ 48,290	\$ 87,181
Difference from estimated	-24%		81%
<u>Projections for 2023</u>			
Cash Flow (7/1/2022 - 6/30/2023)	1,632	1,814	1,995
Hindsight Liability Estimate for 9/30/2022 as of 9/30/2023	46,271	48,290	55,113

EEOICPA Liability Report as of 9/30/2022
Reasonable Range of Liability Estimates

		Assumption			Liability Estimate as of 9/30/2022 (\$millions)			Difference from Base (\$ millions)	
		Low ¹	Base	High ¹	Low	Base	High	Diff: Low	Diff: High
<u>Benefit Payments</u>									
1. Medical Inflation ²	Yr1	3.9%	3.8%	10.0%	\$ 45,265	\$ 48,290	\$ 86,613	\$ (3,025)	\$ 38,323
	Yr2	3.9%	6.7%	10.0%					
	Yr3	3.9%	6.0%	10.0%					
	Yr4	3.9%	6.6%	10.0%					
	Yr5	3.9%	6.1%	10.0%					
	Yr6+	3.9%	3.9%	8.0%					
2. Part E avg benefit trend		4.50%	6.1%	6.5%	47,759	48,290	48,386	(530)	97
<u>Quarterly Decay of IBNR claims</u>									
3. B: RECA		4.4%	1.6%	0.1%	48,157	48,290	48,607	(133)	317
4. B: BD		6.0%	1.0%	1.0%	48,214	48,290	48,288	(76)	(2)
5. B: BS		13.2%	2.3%	0.1%	48,272	48,290	48,342	(18)	53
6. B: CS		4.0%	2.0%	1.0%	47,966	48,290	48,675	(324)	385
7. B: CN SEC		5.0%	1.8%	0.7%	47,123	48,290	49,786	(1,166)	1,496
8. B: CN NonSEC		6.2%	1.0%	0.1%	47,495	48,290	48,968	(795)	678
9. Part E ²		3.0%	2.0%	1.6%	38,555	48,290	54,396	(9,735)	6,106
10. Mortality		10% higher	PRI-2012 Male Dis Ret	10% lower	47,350	48,290	49,460	(940)	1,170
<u>Approvals for Both Parts</u>									
11. %B already E		12.3%	12.0%	11.3%	48,245	48,290	48,396	(44)	106
12. %E already B		0.8%	0.5%	0.3%	48,213	48,290	48,341	(77)	51
13. % EB approved in same yr		80.7%	80.0%	79.0%	48,183	48,290	48,484	(107)	194
<u>Percent filed by employee</u>									
14. RECA (Part B)		54%	59%	67%	48,285	48,290	48,299	(5)	9
15. BD (Part B)		72%	86%	100%	48,284	48,290	48,295	(6)	5
16. BS (Part B)		95%	100%	100%	48,289	48,290	48,290	(1)	0
17. CS (Part B)		75%	94%	99%	48,234	48,290	48,302	(56)	12
18. CN SEC (Part B)		48%	66%	71%	48,161	48,290	48,326	(129)	36
19. CN Non SEC (Part B)		66%	80%	86%	48,232	48,290	48,314	(58)	24
20. Part E		73%	90%	95%	43,281	48,290	49,755	(5,009)	1,465
a. Reasonable Range: combination of assumptions ³					\$ 36,786	\$ 48,290	\$ 87,181	\$ (11,504)	\$ 38,891
b. Percent Difference from Base					-24%		81%		

Hindsight Estimate Range Calculation

- 1 - The low and high values of the assumptions represent potential estimates that other actuaries would be likely to provide using different, yet reasonable assumptions than the assumptions used in the EEOICPA 9/30/2022 actuarial report
- 2 - The Medical Cost Inflation (utilization of services and unit cost inflation) and the number of future Part E approvals are the major drivers of the uncertainty around the liability estimate
- 3 - Because it is unlikely that a reasonable actuary would select *every* assumption at the low end or the high end, the combination of assumptions is calculated as the square root of the sum of each of the differences squared.