

Energy Employees Occupational Illness and Compensation Act (EEOICPA)

Liability Estimate

Liability Estimate as of September 30, 2023

Office of Workers' Compensation Programs

U.S. Department of Labor

Report Date: September 23, 2023

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Introduction

The Energy Employees Occupational Illness Compensation Program Act (“EEOICPA”) provides compensation and medical benefits to claimants 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 payments of the EEOICPA program. The model is updated annually, and is documented, tested, and reviewed internally and externally.

The purpose of this valuation report is to document the Energy Employees’ Occupational Illness Compensation Program (“EEOICP” or “Energy Workers Program”) actuarial liability estimate and the change in the actuarial liability. The U.S. Department of Labor uses this estimate in preparing the consolidated financial statements, as of and for the fiscal year ended September 30, 2023, in accordance with U.S. generally accepted accounting principles, as promulgated by the Federal Accounting Standards Advisory Board and all relevant Actuarial Standards of Practice.

OWCP additionally contracts an external consulting actuarial firm, Cognalysis, (“the external actuary”) to review the reasonableness of the actuarial liability model’s inputs and assumptions, ensure that the calculations in the model are mathematically correct, and opine on a reasonable range of actuarial estimates. A copy of that review is included in Appendix 5.

As is true with any actuarial estimate, actual future payments may differ significantly from the estimates presented herein. The level of difference between the actual results and these projections could potentially be substantial and could be in either direction.

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, among others, who develop cancer, beryllium disease, or chronic silicosis after working at a covered facility. If the employee is no longer living, compensation benefits may be available to survivors. Part B also covers certain classes of employees under a Special Exposure Cohort (“SEC”). A worker who is diagnosed with one of 22 specified cancers and worked for a specified period of time at one of the SEC work sites may receive a presumption of causation under the EEOICPA. The National Institute for Occupational Safety and Health (“NIOSH”) has responsibility for designating additional classes to the SEC.

Part E of the Act, effective October 28, 2004, provides wage loss, impairment benefit, and medical expenses to DOE contractors, subcontractors, and uranium miners, millers, and ore transporters as defined by the Radiation Exposure Compensation Act (“RECA”) Section 5, 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 9/30/2023, the discounted liability estimate for future EEOICPA benefit payments is \$67.8 billion. The future compensation payments are projected at \$11.5 billion, and the future medical payments are projected at \$56.3 billion, on a discounted basis. This is a 40.4% increase over the 9/30/2022 liability estimate of \$48.3 billion, driven by an increase in home health care costs in fiscal year 2023 as well as an increased projection of future Part E initial awards.

TABLE 1
ESTIMATED LIABILITY FOR EEOICPA
AS OF 2023

SUMMARY OF LIABILITY FOR FUTURE PAYMENTS
(\$ Millions)

	Discounted Liability Estimate		Difference	
	as of 9/30/2023	as of 9/30/2022	\$	%
Compensation: Part B	\$ 2,583	\$ 2,835	\$ (251)	-8.9%
Compensation: Part E	8,931	7,927	1,004	12.7%
Compensation: Total	11,514	10,761	752	7.0%
Medical Payments	56,277	37,529	18,749	50.0%
Total Future Payments	\$ 67,791	\$ 48,290	\$ 19,501	40.4%

The discount rates used for the 9/30/2023 estimate were 2.209% for compensation and 2.571% for medical. The totals may not equal the sum of the components, due to independent rounding.

Uncertainty around the actuarial estimates

The Energy Workers Program is a unique program and has wider range of uncertainty around the liability estimate than may be observed with other workers' compensation programs.

The liability estimate of \$67.8 billion represents our best professional judgment of the valuation of future payments given the information currently known. We would like to include, for context, that our external actuary has estimated a range of \$45 billion to \$95 billion (see Appendix 5) as the range of reasonable estimates. The range of reasonable estimates indicates potential liability estimate amounts that other actuaries analyzing the same set of data may be likely to produce.

In other workers' compensation programs, the universe of potential claimants (i.e., the number of employees covered by the program) is generally known and the covered employees are generally aware that a workers' compensation system exists should the employee become injured or contract a disease. For the Energy Workers Program, although the program itself was enacted in 2001, the exposure period for the program begins in the 1930s and continues to present day. The employees covered by the program encompass a broad range of employers and participants including DOE employees, DOE contractors, subcontractors of DOE contractors, beryllium vendors, atomic weapons employers, uranium miners and millers and iron ore transporters. We do not have full employment statistics available to estimate the total number of employees covered. Additionally, it is not clear what percent of the employees and survivors of the employees are aware of the existence of the program. The Energy Workers Program continues to conduct in-person outreach sessions to provide awareness of the program to former workers. To date, applications have been filed representing over 139,000 individual workers.

That being said, we do have 20 years of available data for these individual workers, including dates of award and payments made, along with guidance from the EEOICPA program, that we utilize to inform our judgment about likely trends in the future.

Table 2
Projections by Fiscal Year

	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034-2083	Total
Estimated Payments (\$millions)												
Compensation Part B (DOL payments) .	\$ 217	\$ 207	\$ 194	\$ 181	\$ 170	\$ 158	\$ 148	\$ 138	\$ 129	\$ 121	\$ 1,367	\$ 3,032
Compensation RECA (DOJ payments) ...	12	12	11	10	10	9	9	8	8	7	91	188
Compensation Part E	580	604	611	601	588	572	553	533	502	480	5,841	11,465
Medical Payments	1,685	1,861	2,034	2,194	2,338	2,450	2,546	2,626	2,691	2,740	63,695	86,861
Total Payments	\$ 2,494	\$ 2,684	\$ 2,850	\$ 2,987	\$ 3,106	\$ 3,190	\$ 3,256	\$ 3,306	\$ 3,330	\$ 3,349	\$ 70,995	\$ 101,547
Estimated Number of Initial Awards												
Part B	1,557	1,483	1,391	1,300	1,215	1,135	1,062	993	929	869	9,828	21,760
Part E	3,452	3,435	3,217	2,967	2,737	2,525	2,329	2,148	1,981	1,827	18,041	44,659
Discount Factors												
Compensation	0.989	0.968	0.947	0.926	0.906	0.887	0.868	0.849	0.831	0.813	0.663	0.784
Medical	0.987	0.963	0.939	0.915	0.892	0.870	0.848	0.827	0.806	0.786	0.566	0.648
Discounted Payments (\$millions)												
Compensation Part B (DOL payments) .	\$ 215	\$ 200	\$ 184	\$ 168	\$ 154	\$ 141	\$ 128	\$ 118	\$ 108	\$ 98	\$ 921	\$ 2,434
Compensation RECA (DOJ payments) ...	12	11	10	10	9	8	8	7	7	6	61	149
Compensation Part E	573	584	578	557	533	507	480	453	417	390	3,858	8,931
Medical Payments	1,663	1,792	1,909	2,007	2,086	2,131	2,159	2,171	2,169	2,153	36,038	56,277
Total Discounted Payments	\$ 2,464	\$ 2,588	\$ 2,682	\$ 2,742	\$ 2,781	\$ 2,787	\$ 2,775	\$ 2,748	\$ 2,699	\$ 2,647	\$ 40,878	\$ 67,791

Table 3
Reconciliation of Change in Liability Estimate
(\$ millions)

Discounted Liability Estimate as of 9/30/2022	\$48,290
1. Fiscal year 2023 roll off of estimate	(1,983)
2. Discount to 9/30/2023 instead of 9/30/2022	1,203
3. Increase in estimated number of future Part E initial awards	13,754
4. Increased medical costs in 2023	8,332
5. Increased assumptions of the percent of claims filed by the employee	2,479
6. Change in discount rates	(2,334)
7. Updated assumptions for medical inflation and utilization	(1,375)
8. Revised assumptions for Part E compensation payments	(1,050)
9. Combination/other	475
Total Change	19,501
Discounted Liability Estimate as of 9/30/2023	\$67,791

Explanation of changes:

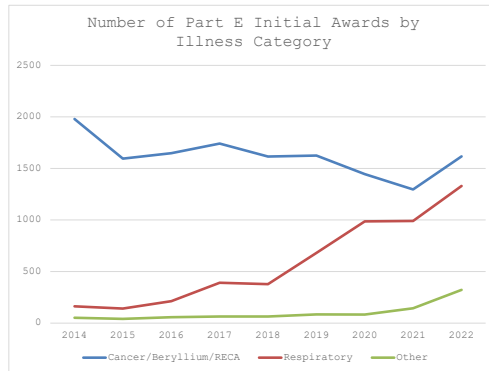
1. Fiscal year 2023 roll off of estimate

Fiscal year 2023 is no longer included in the estimate, since the projection period is as of 9/30/2023.

2. Discount to 9/30/2023 instead of 9/30/2022

The 9/30/2022 estimate was discounted to 9/30/2022 and the 9/30/2023 estimate is discounted to 9/30/2023.

3. Increase in estimated number of future Part E initial awards¹



The number of Part E initial awards was higher than projected for 2023. The number of awards to claimants with cancer and beryllium disease (blue line) is generally decreasing over time. However, the number of Part E initial awards to claimants with respiratory illnesses including COPD, silicosis, asbestosis, pneumoconiosis (red line), and other illnesses (green line) continues to increase each year. Based on these continued increases, we have increased our estimate of the overall number of future Part E initial awards.

4. Increased medical costs in 2023

Medical costs in fiscal year 2023 were higher than projected due to several program changes, including increased home health care reimbursement rates, replacing per-diem authorizations with hourly and 15-minute increment authorizations, and creating more defined cost differentials between licensed practical nurses and registered nurses. Because these changes result in a system-wide permanently higher level of authorized medical care (rather than a one-time increase for 2023 only), this also increases the estimated medical costs for future years.

5. Increased assumptions of the percent of claims filed by the employee

The percent of initial awards that are filed by an employee, and therefore eligible to receive medical benefits, continues to increase for Part E. The estimate of future initial awards for claims filed by an employee was increased from 90% to 96% (see page 20).

6. Change in discount rates

The 5-year average discount rates are higher for the 9/30/2023 estimate than for the 9/30/2022 estimate, which lowers the present value of the liability estimate. The discount rates for the 9/30/2023 estimate are 2.209% for compensation and 2.571% for medical. The discount rates for the 9/30/2022 estimate were 2.068% for compensation and 2.325% for medical.

¹ The terminology “initial award” is used in this report to denote the *first* EEOICPA award received by an employee or survivor of the employee, considered separately for Part B and Part E. Claimants may file additional claims, subsequent to the initial award, to request an award for additional medical conditions or additional impairment or wage loss, for example. These additional claims are contemplated within the model and are not included within the definition of “initial award”.

7. Updated assumptions for medical inflation and utilization

The unit costs for home health care were increased to reflect the home health care fee schedule rate increase of 5.5% that was implemented in July 2023. Additionally, the percentage of claimants utilizing home health care increased at a lower rate in 2023 than in previous years, so the estimates for future increases in home health care utilization were tempered within the model.

8. Revised assumptions for Part E compensation payments

The estimated average cap on the Part E compensation payment per case was lowered in the model from \$250,000 to \$215,000. Part E compensation payments are wage loss, impairment, and survivor compensation payments that pay out over time, rather than a one-time payment of fixed amount. It is not expected that every claimant would receive the maximum compensation of \$250,000 allowable under Part E.

9. Combination/other

The impacts of all other changes to the assumptions or actual results are included in this row.

Actual vs Projected

Number of Initial Awards

Overall, from 7/1/2022 to 6/30/2023, there were 4% fewer Part B initial awards and 22% more Part E initial awards than what was projected.

Table 4
Total Number of Initial Awards 7/1/2022 - 6/30/2023

	Projection as of 9/30/22	Actual	Diff	% Diff
B: RECA Section 5	118	173	55	47%
B: Beryllium Relate	60	43	(17)	-29%
B: Chronic Silicosis	340	424	84	25%
B: Cancer (SEC)	828	673	(155)	-19%
B: Cancer Other	315	278	(37)	-12%
Part B Total	1,661	1,591	(70)	-4%
Part E	2,864	3,481	617	22%

Cash Flow

The revised cash flow projection for fiscal year 2023 is 10% higher than the amount projected as of 9/30/2022. The main driver of the difference is the increase in home health care costs (see page 8 for more details).

Table 5
Benefit Payments FY 2023

	Projected @9/2022	Actual 9 month + Proj 3 mo	\$ Difference	%Diff
Part B Compensation	\$ 241,671,603	\$ 211,912,312	\$ (29,759,291)	-12%
Part E Compensation	489,006,585	494,760,963	5,754,378	1%
Medical Payments	1,252,362,010	1,470,000,000	217,637,990	17%
Total	\$ 1,983,040,198	\$ 2,176,673,275	\$ 193,633,077	10%

The EEOICPA Liability Model

The EEOICPA analysis consists of the following steps:

1. Organize and aggregate the data

Compensation Benefits

2. Estimate the number of future initial awards
3. Estimate the average compensation payout per awarded 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 9/30/2023

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. 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 and then brought into the EEOICPA liability model to begin the analysis.

² <https://www.dol.gov/owcp/energy/regs/compliance/weeklystats.htm>

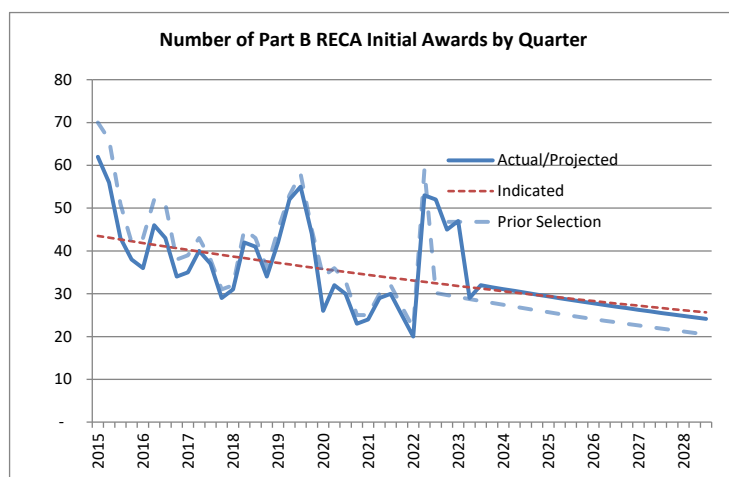
2: Estimate the number of Future Initial Awards

To estimate the number of claimants that will receive their first award (“initial awards”) in the future, the historical number of initial awards 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, and whether the decay parameters are applicable for recent history. For Part E, initial awards have been increasing recently, 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 initial awards, the modeled fit line, as well as the assumed projections (current and prior). Significant actuarial judgment was used in making these projections. Hence the projection will not always coincide with the modeled fit line.

Part B: RECA Section 5

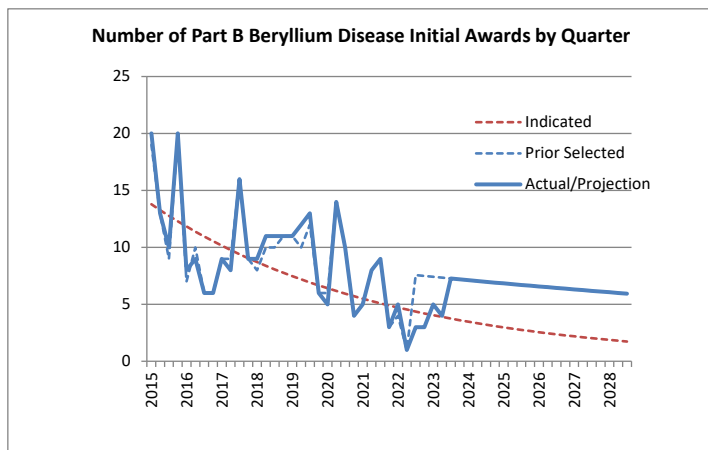


Estimated Decay Rates:

	<u>2023</u>	<u>2022</u>
Quarterly	1.4%	1.6%
Annual	5.5%	6.2%

The future projections are an increase over the projections in last year's analysis.

Part B: Beryllium Disease

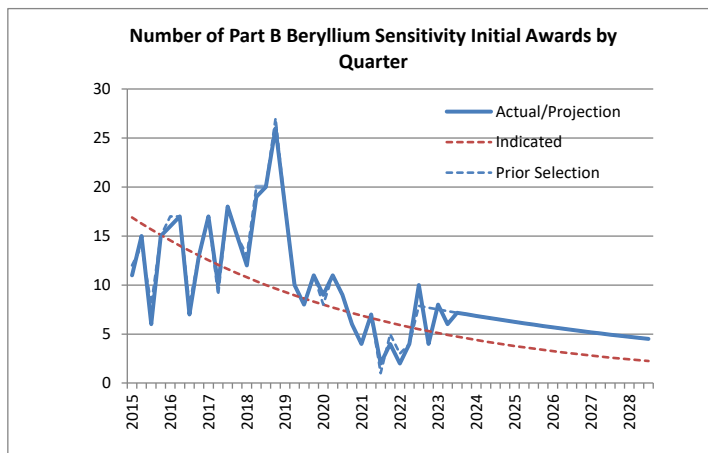


Estimated Decay Rates:

	<u>2023</u>	<u>2022</u>
Quarterly	1.0%	1.0%
Annual	3.9%	3.9%

The future projections are unchanged from last year's analysis.

Part B: Beryllium Sensitivity

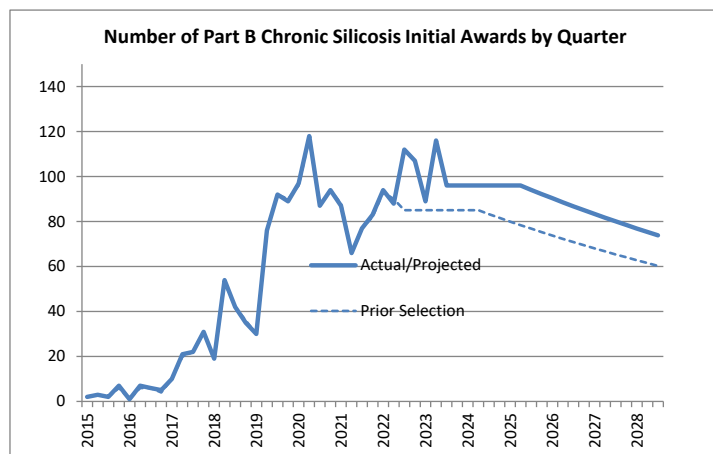


Estimated Decay Rates:

	<u>2023</u>	<u>2022</u>
Quarterly	2.3%	2.3%
Annual	8.9%	8.9%

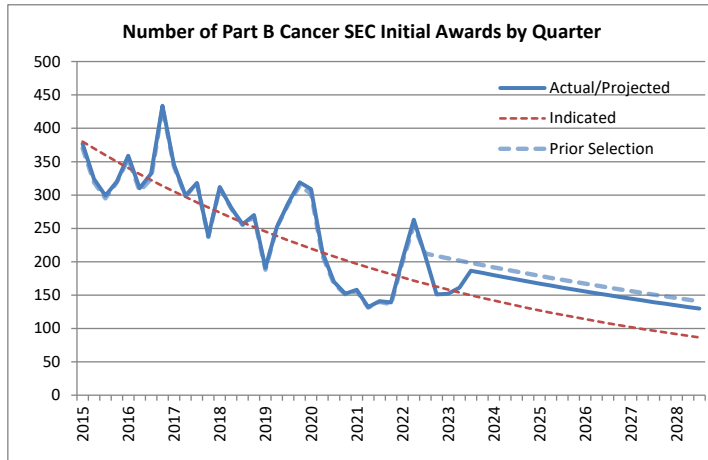
The future projections are unchanged from last year's analysis.

Part B: Chronic Silicosis



Due to the recent increase in initial awards, a curve was not fit to the historical data for Part B Chronic Silicosis. Instead, 96 new initial awards per quarter are projected for the next eight quarters, with a 2% quarterly decay going forward at that point.

Part B: Cancer SEC



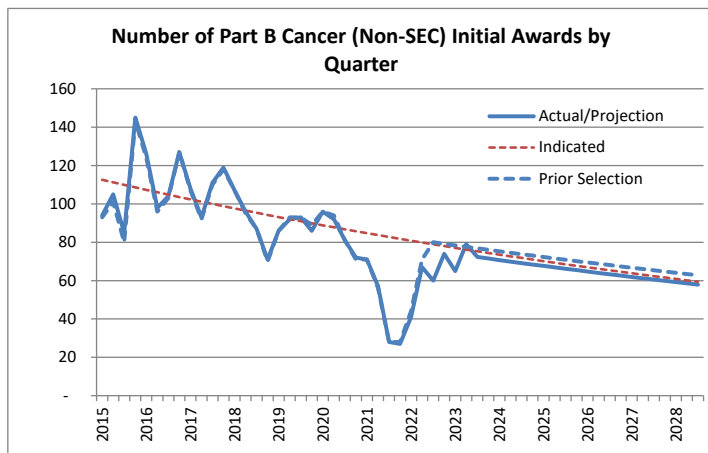
Estimated Decay Rates:

	<u>2023</u>	<u>2022</u>
Quarterly	1.8%	1.7%
Annual	7.0%	6.6%

For Cancer SEC, the decay parameter was increased slightly from last year's projections.

The liability model does not explicitly assume any future new SEC class designations.

Part B: Cancer Non-SEC

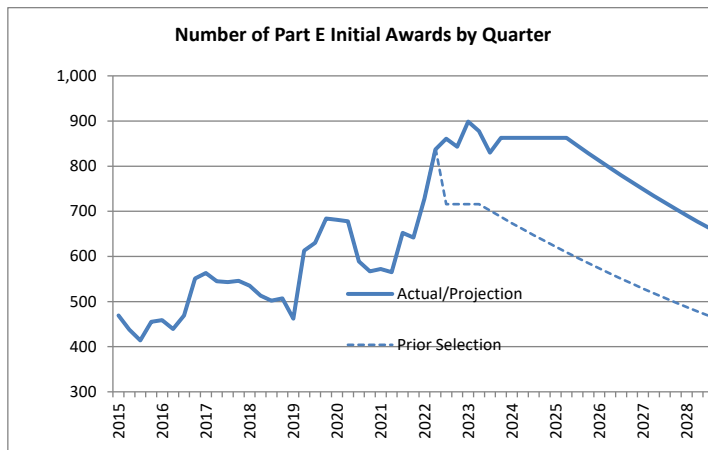


Estimated Decay Rates:

	<u>2023</u>	<u>2022</u>
Quarterly	1.1%	1.0%
Annual	4.3%	3.9%

The award rates for Cancer Non-SEC appear to be resuming decay patterns similar to those observed prior to the COVID pandemic. The rate of decay was slightly increased from last year's projections.

Part E



Due to the recent dramatic shifts in initial awards, a curve was not fit to the historical data for Part E. Instead, approximately 863 new cases per quarter are projected for the next eight quarters with a 2% quarterly decay after that point.

This is a significant increase in the estimated number of future Part E awards.

TABLE 6
NUMBER OF INITIAL AWARDS BY YEAR

Number of Initial Awards								
Fiscal Yr	Part B						Part B Total	Part E
	RECA5	BD	BS	CS	CN SEC	CN Non SEC		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Prior	5,995	2,469	709	106	8,637	5,804	23,720	18,929
2009	455	144	81	17	1,780	812	3,289	3,966
2010	324	128	68	14	2,230	787	3,551	3,412
2011	265	115	73	21	2,804	768	4,046	2,904
2012	285	98	57	13	2,570	742	3,765	2,956
2013	279	61	45	2	2,787	573	3,747	3,243
2014	214	55	37	3	1,814	441	2,564	2,300
2015	208	51	45	11	1,379	396	2,090	1,803
2016	163	43	55	21	1,321	473	2,076	1,822
2017	146	39	58	58	1,397	439	2,137	2,202
2018	143	40	66	146	1,087	409	1,891	2,096
2019	183	47	62	233	1,001	342	1,868	2,212
2020	132	35	40	391	1,012	355	1,965	2,632
2021	106	26	19	324	583	228	1,286	2,356
2022	150	12	20	377	814	195	1,568	3,068
2023	153	19	25	408	650	290	1,546	3,450
Through 2023							61,109	59,351

Notes:

1. The totals for Part B and Part E cannot be summed together to obtain the total number of claimants, as many claimants receive awards for both Part B and Part E.
2. The initial awards for the last quarter of fiscal year 2023 are projected values, as this report is produced prior to the end of the fiscal year.

TABLE 6 (Continued)
PROJECTED NUMBER OF INITIAL AWARDS BY YEAR

Projected Number of Initial Awards								
Fiscal Yr	Part B						Part B Total	Part E
	RECA5	BD	BS	CS	CN SEC	CN Non SEC		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
2024	123	28	27	384	713	281	1,557	3,452
2025	117	27	25	382	663	269	1,483	3,435
2026	110	26	22	358	616	257	1,391	3,217
2027	104	25	20	330	573	246	1,300	2,967
2028	99	24	19	304	533	236	1,215	2,737
2029	93	23	17	281	496	225	1,135	2,525
2030	88	22	15	259	461	216	1,062	2,329
2031	83	21	14	239	429	206	993	2,148
2032	79	21	13	220	399	197	929	1,981
2033	74	20	12	203	371	189	869	1,827
2034	70	19	11	187	345	181	813	1,685
2035	66	18	10	173	321	173	761	1,555
2036	63	17	9	160	298	165	712	1,434
2037	59	17	8	147	277	158	667	1,323
2038	56	16	7	136	258	151	624	1,220
2039	53	16	7	125	240	145	585	1,125
2040	50	15	6	115	223	139	548	1,038
2041	47	14	6	106	207	133	514	957
2042	45	14	5	98	193	127	481	883
2043	42	13	5	91	179	121	451	814
2044	40	13	4	84	167	116	423	751
2045	38	12	4	77	155	111	397	693
2046	36	12	3	71	144	106	372	639
2047	34	11	3	66	134	102	349	589
2048	32	11	3	60	125	97	328	544
2049	30	10	3	56	116	93	308	502
2050	28	10	2	51	108	89	289	463
2051	27	10	2	47	100	85	272	427
2052	25	9	2	44	93	82	255	394
2053	24	9	2	40	87	78	240	363
2054	23	8	2	37	81	75	225	335
2055	21	8	2	34	75	71	212	309

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 Section 5 (DOL payment)	\$50,000
RECA Section 5 (DOJ payment)	\$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 award, and the survivors of the employee may be eligible to receive benefits years after the initial case award.

Because of the development of payments over time, a triangle development approach is employed where the compensation payments are organized into a triangle by initial award approval quarter and subsequent payment quarters. Historical relationships between quarters were then measured and projected forward to indicate ultimate payments by approval quarter. An increase in ultimate payment per case has been observed starting in fiscal year 2014. The selected ultimate is being modeled as a flat amount for cases with an initial award prior to fiscal year 2014, with a 6.4% annual trend following that point. The projections include this trend until \$215,000 is reached. The \$215,000 was judgmentally selected as the cap, rather than the statutory maximum benefit of \$250,000, as it would not be expected that every claimant will receive the maximum benefit.

Part E Average Compensation per case

Initial awards prior to FY 2014: \$120,000

Initial awards FY 2014 - 2025: $\$120,000 * (1.064)^{(FY - 2013)}$

Initial awards FY 2026 or later: \$215,000

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 initial awards.

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 nearly all 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	25.8%
Year 2	26.2%
Year 3	6.8%
Year 4	6.6%
Year 5	4.6%
Year 6	3.9%
Year 7	3.6%
Year 8	3.1%
Year 9	2.9%
Year 10	2.7%
Year 11	2.4%
Year 12	2.5%
Year 13	2.3%
Year 14	1.4%
Years 15-25	0.5%

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

5: Estimate the number of individuals 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 awarded 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 initial awards expected be filed by an employee (and thus eligible for medical benefits).

% of Initial Awards that were filed by an Employee

	RECA	BD	BS	CS	CN SEC	CN Non SEC	Part E
Prior	52%	63%	100%	80%	32%	41%	53%
2009	59%	64%	100%	59%	27%	53%	58%
2010	60%	73%	100%	71%	33%	57%	60%
2011	60%	70%	100%	67%	28%	61%	62%
2012	65%	68%	100%	69%	34%	59%	60%
2013	75%	67%	100%	100%	41%	60%	65%
2014	64%	78%	100%	100%	42%	69%	69%
2015	65%	78%	100%	82%	47%	65%	71%
2016	60%	70%	100%	86%	51%	63%	75%
2017	60%	79%	100%	90%	52%	66%	76%
2018	65%	78%	98%	93%	57%	72%	79%
2019	52%	70%	100%	95%	61%	73%	82%
2020	64%	80%	100%	94%	59%	82%	85%
2021	51%	77%	100%	94%	66%	83%	88%
2022	66%	100%	100%	92%	61%	82%	90%
Selected	59%	86%	100%	94%	66%	83%	96%

The selected ratios are then applied to the estimated number of initial awards in all future years, to estimate the number of individuals 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 claimants with initial awards is being projected separately by Part, so the total count of initial awards 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 initial awards need to be reduced in order to convert the number of initial awards to the number of individuals eligible for medical benefits.

Because the award 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 initial awards by Part will have already been awarded for the other Part and thus are already included in the count of individuals eligible for medical benefits. It is assumed that 12% of claimants with Part B initial awards have already been approved for Part E, and that 0.5% of claimants with Part E initial awards have already been approved for Part B.

Additionally, some claimants will receive initial awards 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 awards are not treated as two separate individuals eligible for medical benefits. Historically, approximately 80% of the employee-filed Part B initial awards are approved for Part E at the same time. It is assumed that this ratio will continue into the future.

Percent of Part B cases filed by an employee that had previously been accepted as Part E		Percent of Part E cases filed by an employee that had previously been accepted as Part B		Percent of Part B cases filed by an employee where Part E is approved in the same year	
<u>FY</u>	<u>Percent</u>	<u>FY</u>	<u>Percent</u>	<u>FY</u>	<u>Percent</u>
2009	5.8%	2009	6.1%	2009	80.5%
2010	10.2%	2010	1.3%	2010	79.5%
2011	9.0%	2011	1.4%	2011	69.3%
2012	10.5%	2012	1.5%	2012	73.3%
2013	7.8%	2013	0.8%	2013	81.2%
2014	8.8%	2014	0.7%	2014	77.9%
2015	8.9%	2015	0.8%	2015	78.7%
2016	8.6%	2016	0.8%	2016	78.4%
2017	9.7%	2017	0.6%	2017	77.8%
2018	12.3%	2018	0.7%	2018	77.2%
2019	12.2%	2019	0.4%	2019	80.5%
2020	11.7%	2020	0.3%	2020	82.1%
2021	13.0%	2021	0.5%	2021	80.3%
2022	17.7%	2022	0.3%	2022	80.1%
2023	12.0%	2023	0.5%	2023	80.0%
Selected	12.0%	Selected	0.5%	Selected	80.0%

To convert the employee-filed awards into the number of employee-filed awards eligible for medical benefits, the number of employee-filed Part B initial awards is reduced by 12%, the number of employee-filed Part E initial awards is reduced by 0.5% and then the number of employee-filed Part B initial awards is further reduced by 80% to estimate the total number of new individuals 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 9/30/2023 liability estimate uses the Private Retirement Plans (Pri-2012) Male Disabled Retiree mortality table, published by the Society of Actuaries in October 2019.

For purposes of applying mortality rates, the model uses the average age of the employees at initial award, age 71.³.

Average Age of Employee at Initial Award

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	2,098	70.2
2014	1,291	72.7	2014	1,579	71.3
2015	1,137	72.8	2015	1,272	72.2
2016	1,176	73.7	2016	1,371	72.4
2017	1,255	73.2	2017	1,681	72.4
2018	1,246	72.2	2018	1,655	71.5
2019	1,286	72.4	2019	1,816	71.2
2020	1,421	71.9	2020	2,241	70.3
2021	984	71.3	2021	2,078	69.3
2022	1,152	71.8	2022	2,757	68.7
2023	885	71.7	2023	2,439	68.0

³ The exception to this assumption is for employees for which the initial award 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 initial awards, assumed to be still alive, plus the number of new initial awards (adjusted to remove double counting of cases with initial awards for both Parts) minus the number of expected deaths, as shown below:

ESTIMATED LIABILITY FOR EEOICPA AS OF SEPTEMBER 30, 2023

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
	RECA5	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	3,121	1,565	709	85	2,730	2,361	10,099	(74)	(3,570)	(4,227)	12,799	(2,117)	10,682	
2009	270	92	81	10	474	434	2,299	(79)	(141)	(1,096)	2,344	(627)	12,400	11,541
2010	193	94	68	10	744	446	2,052	(159)	(27)	(1,236)	2,185	(738)	13,846	13,123
2011	160	80	73	14	776	468	1,791	(142)	(25)	(1,088)	2,107	(849)	15,105	14,476
2012	184	67	57	9	874	439	1,774	(171)	(26)	(1,195)	2,012	(956)	16,160	15,633
2013	210	41	45	2	1,134	346	2,098	(138)	(16)	(1,444)	2,278	(1,076)	17,363	16,762
2014	138	43	37	3	764	306	1,579	(114)	(11)	(1,006)	1,739	(1,173)	17,929	17,646
2015	135	40	45	9	649	258	1,272	(101)	(10)	(894)	1,403	(1,253)	18,079	18,004
2016	98	30	55	18	672	298	1,371	(101)	(11)	(918)	1,512	(1,335)	18,256	18,167
2017	88	31	58	52	731	291	1,681	(121)	(10)	(973)	1,828	(1,426)	18,658	18,457
2018	93	31	65	136	617	293	1,655	(152)	(11)	(953)	1,774	(1,508)	18,924	18,791
2019	95	33	62	222	614	249	1,816	(155)	(7)	(1,026)	1,903	(1,589)	19,238	19,081
2020	84	28	40	369	598	291	2,241	(165)	(7)	(1,157)	2,322	(1,679)	19,881	19,560
2021	54	20	19	306	383	189	2,078	(126)	(10)	(780)	2,133	(1,753)	20,262	20,072
2022	99	12	20	346	498	159	2,757	(201)	(8)	(908)	2,774	(1,844)	21,191	20,727
2023	89	17	25	385	437	245	3,312	(144)	(17)	(958)	3,391	(1,954)	22,629	21,910

(2) to (8) = Number of initial awards * 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, 2023**

ESTIMATED NUMBER OF INDIVIDUALS ELIGIBLE FOR MEDICAL EXPENSES

Fiscal Year	New Cases Eligible for Medical Expenses							Remove double counting:				Assumed # Deaths	Total #	Average #
	RECA5	BD	BS	CS	CN		Part E	Part B	Part E	EB	Net new		Individuals	Individuals
					CN SEC	Non SEC		already in	already in	concurrent	Individuals		Eligible	Eligible
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
2024	73	24	27	362	471	233	3,314	(143)	(17)	(953)	3,393	(2,057)	23,964	23,296
2025	69	23	25	361	438	223	3,297	(137)	(16)	(911)	3,372	(2,152)	25,184	24,574
2026	65	22	22	338	407	214	3,088	(128)	(15)	(855)	3,159	(2,231)	26,112	25,648
2027	62	22	20	312	378	204	2,849	(120)	(14)	(798)	2,914	(2,292)	26,734	26,423
2028	58	21	19	287	352	196	2,628	(112)	(13)	(746)	2,689	(2,338)	27,085	26,909
2029	55	20	17	265	327	187	2,424	(105)	(12)	(697)	2,481	(2,370)	27,196	27,141
2030	52	19	15	245	304	179	2,235	(98)	(11)	(652)	2,289	(2,392)	27,093	27,145
2031	49	18	14	226	283	171	2,062	(91)	(10)	(609)	2,112	(2,405)	26,801	26,947
2032	46	18	13	208	263	164	1,902	(85)	(10)	(570)	1,949	(2,409)	26,342	26,571
2033	44	17	12	192	245	157	1,754	(80)	(9)	(533)	1,799	(2,404)	25,737	26,039
2034	41	16	11	177	228	150	1,618	(75)	(8)	(498)	1,660	(2,391)	25,005	25,371
2035	39	16	10	163	212	144	1,492	(70)	(7)	(466)	1,532	(2,369)	24,168	24,587
2036	37	15	9	151	197	137	1,377	(65)	(7)	(436)	1,413	(2,339)	23,243	23,705
2037	35	14	8	139	183	131	1,270	(61)	(6)	(409)	1,304	(2,299)	22,248	22,745
2038	33	14	7	128	170	126	1,171	(57)	(6)	(383)	1,204	(2,250)	21,202	21,725
2039	31	13	7	118	158	120	1,080	(54)	(5)	(358)	1,111	(2,192)	20,121	20,661
2040	30	13	6	109	147	115	996	(50)	(5)	(336)	1,025	(2,125)	19,021	19,571
2041	28	12	6	101	137	110	919	(47)	(5)	(315)	946	(2,050)	17,916	18,468
2042	26	12	5	93	127	105	848	(44)	(4)	(295)	873	(1,969)	16,820	17,368
2043	25	11	5	86	118	101	782	(41)	(4)	(276)	806	(1,881)	15,745	16,283
2044	24	11	4	79	110	96	721	(39)	(4)	(259)	743	(1,788)	14,700	15,222
2045	22	10	4	73	102	92	665	(36)	(3)	(243)	686	(1,693)	13,693	14,197
2046	21	10	3	67	95	88	614	(34)	(3)	(228)	633	(1,595)	12,731	13,212
2047	20	10	3	62	88	84	566	(32)	(3)	(214)	584	(1,498)	11,818	12,275
2048	19	9	3	57	82	81	522	(30)	(3)	(201)	539	(1,402)	10,956	11,387
2049	18	9	3	53	77	77	481	(28)	(2)	(189)	498	(1,308)	10,145	10,550
2050	17	9	2	49	71	74	444	(27)	(2)	(177)	460	(1,218)	9,387	9,766
2051	16	8	2	45	66	71	410	(25)	(2)	(166)	424	(1,132)	8,679	9,033
2052	15	8	2	41	62	68	378	(23)	(2)	(156)	392	(1,050)	8,021	8,350
2053	14	8	2	38	57	65	348	(22)	(2)	(147)	361	(973)	7,409	7,715
2054	13	7	2	35	53	62	321	(21)	(2)	(138)	334	(900)	6,843	7,126
2055	13	7	2	32	49	59	296	(19)	(1)	(130)	308	(833)	6,318	6,580
2056	-	-	-	-	-	-	-	-	-	-	-	(757)	5,560	5,939
2057	-	-	-	-	-	-	-	-	-	-	-	(687)	4,873	5,217
2058	-	-	-	-	-	-	-	-	-	-	-	(622)	4,251	4,562
2059	-	-	-	-	-	-	-	-	-	-	-	(561)	3,690	3,971
2060	-	-	-	-	-	-	-	-	-	-	-	(504)	3,186	3,438
2061	-	-	-	-	-	-	-	-	-	-	-	(452)	2,734	2,960
2062	-	-	-	-	-	-	-	-	-	-	-	(403)	2,332	2,533
2063	-	-	-	-	-	-	-	-	-	-	-	(357)	1,974	2,153
2064	-	-	-	-	-	-	-	-	-	-	-	(315)	1,659	1,817
2065	-	-	-	-	-	-	-	-	-	-	-	(276)	1,383	1,521
2066	-	-	-	-	-	-	-	-	-	-	-	(241)	1,142	1,262
2067	-	-	-	-	-	-	-	-	-	-	-	(208)	934	1,038
2068	-	-	-	-	-	-	-	-	-	-	-	(178)	756	845
2069	-	-	-	-	-	-	-	-	-	-	-	(151)	606	681
2070	-	-	-	-	-	-	-	-	-	-	-	(127)	479	542
2071	-	-	-	-	-	-	-	-	-	-	-	(105)	374	427
2072	-	-	-	-	-	-	-	-	-	-	-	(86)	288	331
2073	-	-	-	-	-	-	-	-	-	-	-	(69)	219	254
2074	-	-	-	-	-	-	-	-	-	-	-	(55)	164	192
2075	-	-	-	-	-	-	-	-	-	-	-	(43)	121	143
2076	-	-	-	-	-	-	-	-	-	-	-	(33)	88	105
2077	-	-	-	-	-	-	-	-	-	-	-	(25)	63	76
2078	-	-	-	-	-	-	-	-	-	-	-	(19)	45	54
2079	-	-	-	-	-	-	-	-	-	-	-	(14)	31	38
2080	-	-	-	-	-	-	-	-	-	-	-	(10)	21	26
2081	-	-	-	-	-	-	-	-	-	-	-	(7)	14	18
2082	-	-	-	-	-	-	-	-	-	-	-	(5)	9	12
2083	-	-	-	-	-	-	-	-	-	-	-	(3)	6	8

- (2)-(8) = Number of initial awards * 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 fiscal year 2023 \$67,094

Medical inflation rates are then estimated for future years. The medical inflation includes year-over-year increases in the unit costs of medical goods and services, as well as increased utilization and changes in mix or intensity.

The average medical inflation rates for fiscal years 2024 to 2028 were estimated based on guidance from OWCP management regarding expected cost increases in the short term. Estimated medical inflation rates for 2029 and later are based on long-term expectations for medical inflation.

Annual Medical Inflation

Fiscal year 2024	7.8%
Fiscal year 2025	4.7%
Fiscal year 2026	4.7%
Fiscal year 2027	4.7%
Fiscal year 2028	4.7%
Fiscal year 2029 and later	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)
2024	23,296	\$ 72,311	\$ 1,684,561,961
2025	24,574	75,741	1,861,267,646
2026	25,648	79,311	2,034,170,522
2027	26,423	83,028	2,193,815,414
2028	26,909	86,896	2,338,320,530
2029	27,141	90,285	2,450,376,726
2030	27,145	93,806	2,546,320,470
2031	26,947	97,464	2,626,383,155
2032	26,571	101,265	2,690,768,046
2033	26,039	105,215	2,739,708,533
2034	25,371	109,318	2,773,512,169
2035	24,587	113,582	2,792,588,207
2036	23,705	118,011	2,797,477,129
2037	22,745	122,614	2,788,876,826
2038	21,725	127,396	2,767,648,017
2039	20,661	132,364	2,734,800,125
2040	19,571	137,526	2,691,478,054
2041	18,468	142,890	2,638,937,697
2042	17,368	148,462	2,578,517,938
2043	16,283	154,252	2,511,618,261
2044	15,222	160,268	2,439,652,214
2045	14,197	166,519	2,363,987,175
2046	13,212	173,013	2,285,888,994
2047	12,275	179,760	2,206,478,834
2048	11,387	186,771	2,126,710,621
After 2048			25,197,246,416
Total future undiscounted			\$ 86,861,111,678

11: Discount the cash flows to 9/30/2023

The projected cash flows by fiscal year for 2024 through 2083 are then discounted back to 9/30/2023.

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	2.209%
Discount rate for medical payments	2.571%

Appendix 1: Hindsight Opinion

The hindsight opinion adjusts the current liability estimate to be consistent with the liability estimate as of 9/30/2023, 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 amounts.

The current hindsight estimate of liability as of 9/30/2022 is \$67.6 billion, compared with a liability estimate of \$48.3 billion in the 9/30/2022 actuarial report. This increase is mainly driven by the increase in the estimated number of future Part E initial awards and the increase in home health care costs in 2023. This increase is in line with what was expected from the analysis shown in the Reconciliation of Change presented in Table 3.

Calculation of 9/30/2022 Hindsight Liability Opinion

(\$millions)

Current Estimated Liability as of 9/30/2023	\$ 67,791
Minus liability for additional exposure from 10/1/2022-9/30/2023	(678)
Plus payments in FY 2023 (excluding payment for current exposures)	2,177
Discount back to 9/30/2022	<u>(1,695)</u>
Hindsight Liability Estimate as of 9/30/2022	67,595
 Liability Estimate as of 9/30/2022	 \$ 48,290
 Change in liability estimate: dollars	 19,305
Change in liability estimate: percent	40%

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 2: Summary of EEOICPA Model Assumptions

	<u>as of 9/30/2023</u>	<u>as of 9/30/2022</u>
Compensation Benefit Amounts		
RECA Section 5 Benefit (DOL payment)	50,000	50,000
RECA Section 5 Benefit (DOJ payment)	100,000	100,000
Part B Benefit	150,000	150,000
Part B Annual Benefit Inflation	0.0%	0.0%
Part E Benefit, piecewise:		
Through 2013	120,000	120,000
post-2013 annual trend	6.4%	6.1%
cap	215,000	250,000
Discount Rates		
Discount Factor for Compensation	2.209%	2.068%
Discount Factor for Medical	2.571%	2.325%
Discount Period		
	60 Future Years 2024 - 2083	60 Future Years 2023 - 2082
Duration (years) ⁴		
Average Compensation Duration	12.5	12.7
Average Medical Duration	19.2	18.6
Medical Inflation Rates (Annual)		
Fiscal Year 2024	7.8%	6.7%
Fiscal Year 2025	4.7%	6.0%
Fiscal Year 2026	4.7%	6.6%
Fiscal Year 2027	4.7%	6.1%
Fiscal Year 2028	4.7%	3.9%
Fiscal Year 2029 and later	3.9%	3.9%
Mortality		
Mortality Table	PRI-2012 Male Disabled Retiree	PRI-2012 Male Disabled Retiree
Projection Scale	No projection	No projection
Average Age of awardees 2013-2023	71	72
New Cases (Initial awards)		
Eligible for medical benefits if filed by employee	100%	100%

⁴ The duration, as used in this context, is the nominal-weighted average payout of benefits, in years. The duration is used to determine the appropriate discount rate at which to discount the cash flows.

	<u>as of 9/30/2023</u>	<u>as of 9/30/2022</u>
Percent of initial awards filed by employee		
RECA (Part B)	59%	59%
BD (Part B)	86%	86%
BS (Part B)	100%	100%
CS (Part B)	94%	94%
CN SEC (Part B)	66%	66%
CN Non SEC (Part B)	83%	80%
Part E	96%	90%
Probability that the newly-approved case is already eligible for medical benefits		
Part B	12.0%	12.0%
Part E	0.5%	0.5%
Part B cases where Part E approved same year	80.0%	80.0%
Annual Decay in initial awards		
RECA (Part B)	5.5%	6.2%
BD (Part B)	3.9%	3.9%
BS (Part B)	8.9%	8.9%
CS (Part B)	Flat 2 yrs, then 7.8% decay	Flat 2 yrs, then 7.8% decay
CN SEC (Part B)	7.0%	6.6%
CN Non SEC (Part B)	4.3%	3.9%
Part E	Flat 2 yrs, then 7.8% decay	Flat 1 yr, then 7.8% decay
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	25.8%	27.0%
Year 2	26.2%	25.6%
Year 3	6.8%	6.6%
Year 4	6.6%	6.4%
Year 5	4.6%	4.5%
Year 6	3.9%	4.2%
Year 7	3.6%	3.6%
Year 8	3.1%	3.1%
Year 9	2.8%	3.0%
Year 10	2.7%	2.6%
Year 11	2.4%	2.3%
Year 12	2.5%	2.4%
Year 13	2.3%	2.2%
Year 14	1.3%	1.2%
Year 15-25	0.5%	0.5%
Prior Year Cohort		
Average Age at Award	69	69

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 initial award quarter and payment quarter. Historical relationships between quarters were then measured and projected forward to estimate the ultimate payments by initial award 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.

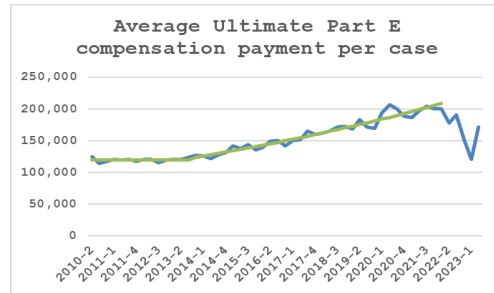
Loss Development Factor (LDF) Method

The LDF method applies a loss development factor to paid cases by period (in this case, initial award 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.

⁵ 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.

Part E Compensation Payments
Summary of Results

	Current Paid	Paid LDF	Indicated Ultimate Payments	Ultimate Count	Indicated Ultimate Average Payment	Selected Ultimate Average Payment
2010-2	\$ 92,488,196	1.056	\$ 97,667,535	785	\$ 124,417	\$ 120,000
2010-3	115,316,019	1.062	122,465,612	1,068	114,668	120,000
2010-4	98,418,612	1.068	105,111,078	894	117,574	120,000
2011-1	81,374,007	1.074	87,395,683	725	120,546	120,000
2011-2	74,775,820	1.080	80,757,886	673	119,997	120,000
2011-3	67,607,241	1.087	73,489,071	612	120,080	120,000
2011-4	59,417,866	1.094	65,003,146	556	116,912	120,000
2012-1	72,831,519	1.102	80,260,334	668	120,150	120,000
2012-2	104,771,268	1.110	116,296,108	963	120,764	120,000
2012-3	79,075,867	1.118	88,406,820	769	114,963	120,000
2012-4	91,508,764	1.125	102,947,359	865	119,014	120,000
2013-1	94,288,305	1.133	106,828,650	883	120,984	120,000
2013-2	88,473,905	1.140	100,860,251	839	120,215	120,000
2013-3	70,453,054	1.148	80,880,106	656	123,293	120,000
2013-4	64,540,440	1.156	74,608,748	589	126,670	124,222
2014-1	57,120,283	1.164	66,488,009	529	125,686	126,188
2014-2	69,547,920	1.173	81,579,710	673	121,218	128,184
2014-3	54,886,484	1.184	64,985,597	509	127,673	130,212
2014-4	53,067,583	1.193	63,309,627	482	131,348	132,272
2015-1	55,120,487	1.202	66,254,825	469	141,268	134,365
2015-2	49,832,083	1.212	60,396,484	438	137,892	136,491
2015-3	48,720,081	1.223	59,584,659	414	143,924	138,650
2015-4	50,106,546	1.234	61,831,478	455	135,893	140,844
2016-1	51,431,178	1.246	64,083,248	459	139,615	143,072
2016-2	52,022,256	1.257	65,391,976	439	148,957	145,336
2016-3	55,693,774	1.269	70,675,399	469	150,694	147,635
2016-4	60,641,227	1.284	77,863,335	551	141,313	149,971
2017-1	65,303,623	1.299	84,829,406	563	150,674	152,344
2017-2	62,976,999	1.308	82,373,915	545	151,145	154,754
2017-3	67,609,922	1.326	89,650,757	543	165,103	157,202
2017-4	64,876,820	1.344	87,194,446	546	159,697	159,690
2018-1	63,544,196	1.360	86,420,106	535	161,533	162,216
2018-2	61,630,652	1.378	84,927,039	513	165,550	164,782
2018-3	61,759,743	1.396	86,216,601	502	171,746	167,390
2018-4	61,705,811	1.419	87,560,545	507	172,703	170,038
2019-1	53,865,330	1.440	77,566,075	462	167,892	172,728
2019-2	77,084,563	1.457	112,312,209	613	183,217	175,461
2019-3	73,149,964	1.480	108,261,947	630	171,844	178,237
2019-4	77,068,039	1.508	116,218,603	684	169,910	181,057
2020-1	85,509,119	1.543	131,940,570	681	193,745	183,921
2020-2	88,534,771	1.582	140,062,008	678	206,581	186,831
2020-3	72,106,187	1.632	117,677,297	589	199,792	189,787
2020-4	63,574,644	1.680	106,805,401	567	188,369	192,790
2021-1	61,919,782	1.725	106,811,624	572	186,734	195,840
2021-2	62,967,787	1.768	111,327,048	565	197,039	198,938
2021-3	73,430,921	1.820	133,644,277	652	204,976	202,086
2021-4	68,158,813	1.888	128,683,840	642	200,442	205,283
2022-1	74,665,975	1.952	145,747,983	728	200,203	208,531
2022-2	73,034,950	2.044	149,283,437	837	178,355	211,830
2022-3	74,180,000	2.212	164,086,160	861	190,576	215,000
2022-4	44,920,000	2.832	127,213,440	843	150,906	215,000
2023-1	17,865,000	6.049	108,065,385	899	120,206	215,000
2023-2	9,317,500	16.158	150,552,165	878	171,472	215,000



Part E Compensation

Cumulative Payments by Initial Award Quarter

Initial Award										
Quarter	1	2	3	4	5	6	7	8	9	10
Prior	891,704,985	1,241,386,057	1,406,319,019	1,540,402,535	1,656,515,399	1,744,385,012	1,808,731,680	1,864,488,320	1,912,190,126	1,950,053,718
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	59,927,302	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	38,953,735	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	33,109,785	34,913,435	37,109,785	37,855,935	38,120,935	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	39,973,350	48,052,032	50,504,532	52,859,532	54,444,532	57,414,532	59,612,464	61,179,964
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	82,777,271
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	67,803,687	68,531,187
20204	5,429,167	18,371,667	39,039,644	47,977,144	51,402,144	53,534,644	55,594,644	57,927,144	59,609,644	61,567,144
20211	7,900,000	19,219,167	40,777,500	48,087,907	50,815,407	52,940,407	55,814,782	57,189,782	59,162,282	61,919,782
20212	6,356,764	20,904,264	41,954,705	51,114,705	55,075,287	57,355,287	58,840,287	61,372,787	62,967,787	
20213	7,709,602	24,233,504	53,381,877	64,207,778	66,565,921	69,678,421	71,248,421	73,430,921		
20214	7,829,167	21,894,167	48,476,813	59,431,313	63,256,313	66,121,313	68,158,813			
20221	8,358,886	21,796,767	51,135,988	66,318,488	71,035,975	74,665,975				
20222	11,212,500	24,337,500	50,347,500	67,587,450	73,034,950					
20223	9,827,500	20,497,500	51,092,500	74,180,000						
20224	7,075,000	18,490,000	44,920,000							
20231	8,655,000	17,865,000								
20232	9,317,500									
	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	1.939	1.575	1.185	1.074	1.046	1.033	1.025	1.024	1.022	1.022
Wtd Avg	1.559	1.329	1.148	1.074	1.049	1.034	1.028	1.024	1.021	1.020
20 Qtr	2.476	1.977	1.247	1.082	1.049	1.035	1.032	1.027	1.025	1.025
12 Qtr	2.671	2.136	1.280	1.082	1.047	1.034	1.037	1.030	1.025	1.027
Selected	2.671	2.136	1.280	1.082	1.047	1.034	1.037	1.030	1.025	1.027
Prior Selected	2.742	1.933	1.241	1.087	1.050	1.034	1.034	1.028	1.024	1.025
Age-to-Ultimate	16.158	6.049	2.832	2.212	2.044	1.952	1.888	1.820	1.768	1.725

Part E Compensation

Cumulative Payments by Initial Award Quarter

Initial Award										
Quarter	11	12	13	14	15	16	17	18	19	20
Prior	1,984,351,167	2,020,845,832	2,052,224,596	2,081,119,134	2,109,538,552	2,139,813,546	2,166,499,772	2,187,943,171	2,208,299,271	2,230,213,911
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	84,879,997
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	62,809,320
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	61,101,696	62,234,196
20182	50,555,652	52,483,152	54,020,652	55,585,652	56,463,152	57,543,152	58,568,152	59,220,652	59,830,652	60,643,152
20183	51,236,038	52,558,538	54,761,038	56,118,538	57,376,038	59,003,493	59,602,243	60,379,743	61,062,243	61,759,743
20184	52,477,398	54,188,311	55,803,311	56,915,811	57,973,311	59,285,811	59,943,311	60,563,311	61,705,811	
20191	45,743,330	47,360,830	49,083,330	50,747,830	51,700,330	52,344,080	53,289,080	53,865,330		
20192	64,602,063	66,518,730	69,116,230	71,158,730	73,426,230	75,051,230	77,084,563			
20193	62,842,464	64,322,464	66,227,464	69,489,964	71,562,464	73,149,964				
20194	68,670,539	71,078,039	73,705,539	75,525,539	77,068,039					
20201	78,587,869	81,471,619	83,729,119	85,509,119						
20202	84,227,271	86,592,271	88,534,771							
20203	70,611,187	72,106,187								
20204	63,574,644									
20211										
20212										
20213										
20214										
20221										
20222										
20223										
20224										
20231										
20232										
	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	1.025	1.025	1.022	1.019	1.016	1.014	1.014	1.014	1.015	1.013
Wtd Avg	1.022	1.020	1.018	1.016	1.015	1.013	1.012	1.011	1.012	1.011
20 Qtr	1.028	1.029	1.024	1.021	1.018	1.015	1.013	1.016	1.016	1.014
12 Qtr	1.029	1.032	1.026	1.023	1.019	1.016	1.012	1.015	1.017	1.013
Selected	1.029	1.032	1.026	1.023	1.019	1.016	1.012	1.015	1.017	1.013
Prior Selected	1.029	1.031	1.023	1.022	1.018	1.015	1.013	1.016	1.017	1.015
Age-to-Ultimate	1.680	1.632	1.582	1.543	1.508	1.480	1.457	1.440	1.419	1.396

Part E Compensation

Cumulative Payments by Initial Award Quarter

Initial Award										
Quarter	21	22	23	24	25	26	27	28	29	30
Prior	2,249,277,134	2,272,692,673	2,291,126,610	2,311,166,048	2,329,923,310	2,347,479,977	2,366,266,998	2,383,711,213	2,399,013,331	2,416,995,607
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	48,652,458
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	47,062,581	47,170,081
20154	45,681,546	46,284,046	46,476,546	46,879,046	47,202,796	47,612,796	48,104,046	48,969,046	49,316,546	49,669,046
20161	46,113,678	46,961,178	47,543,678	48,448,678	49,018,678	49,138,678	49,713,678	49,968,678	50,851,178	51,431,178
20162	48,394,756	48,694,756	49,109,756	49,287,256	49,904,756	50,297,256	51,032,256	51,614,756	52,022,256	
20163	52,505,024	52,935,024	53,807,524	54,215,024	54,660,024	54,770,024	54,975,024	55,693,774		
20164	56,806,227	57,326,227	57,943,727	59,003,727	59,231,227	59,731,227	60,641,227			
20171	61,094,661	62,241,123	63,056,123	64,088,623	64,978,623	65,303,623				
20172	59,414,749	60,179,749	61,129,749	62,164,499	62,976,999					
20173	65,327,422	66,019,922	66,644,922	67,609,922						
20174	63,409,320	64,391,820	64,876,820							
20181	62,521,696	63,544,196								
20182	61,630,652									
20183										
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20224										
20231										
20232										
	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	1.009	1.010
Wtd Avg	1.012	1.011	1.010	1.010	1.008	1.009	1.009	1.008	1.008	1.008
20 Qtr	1.014	1.013	1.013	1.013	1.008	1.011	1.011	1.009	1.010	1.010
12 Qtr	1.013	1.012	1.014	1.013	1.008	1.011	1.012	1.009	1.009	1.010
Selected	1.013	1.012	1.014	1.013	1.008	1.011	1.012	1.009	1.009	1.010
Prior Selected	1.013	1.013	1.013	1.014	1.009	1.010	1.011	1.009	1.010	1.010
Age-to-Ultimate	1.378	1.360	1.344	1.326	1.308	1.299	1.284	1.269	1.257	1.246

Initial Award	31	32	33	34	35	36	37	38	39	40
Quarter										
Prior	2,431,917,204	2,446,888,286	2,465,861,438	2,483,671,862	2,502,975,749	2,522,019,441	2,540,522,561	2,558,698,234	2,576,022,790	2,592,283,067
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	89,418,764
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	92,340,805	92,863,305
20132	82,513,904	83,196,404	83,908,904	84,751,405	85,368,905	85,741,405	86,266,405	86,558,905	87,166,405	87,948,905
20133	64,868,229	65,178,229	66,280,729	66,698,229	66,858,229	67,745,554	68,833,054	69,108,054	69,620,554	70,453,054
20134	59,778,280	60,280,780	60,746,007	61,583,507	61,846,007	62,543,096	63,213,096	63,825,596	64,540,440	
20141	53,735,849	54,023,349	54,640,849	55,228,349	55,766,683	56,052,783	56,702,783	57,120,283		
20142	66,257,920	66,825,420	67,712,920	68,067,920	68,395,420	68,755,420	69,547,920			
20143	52,631,693	53,064,193	53,599,193	53,989,193	54,616,484	54,886,484				
20144	50,776,333	51,308,833	51,871,333	52,493,833	53,067,583					
20151	54,127,987	54,512,987	55,052,987	55,120,487						
20152	49,057,458	49,574,583	49,832,083							
20153	48,095,081	48,720,081								
20154	50,106,546									
20161										
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20224										
20231										
20232										
	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	1.009	1.009	1.008	1.008	1.008	1.009	1.008	1.008	1.007	1.007
Vtd Avg	1.007	1.008	1.007	1.008	1.008	1.008	1.007	1.007	1.007	1.007
20 Qtr	1.009	1.009	1.008	1.008	1.008	1.009	1.008	1.008	1.007	1.007
12 Qtr	1.009	1.010	1.008	1.008	1.007	1.009	1.007	1.007	1.007	1.007
Selected	1.009	1.010	1.008	1.008	1.007	1.009	1.007	1.007	1.007	1.007
Prior Selected	1.009	1.010	1.009	1.008	1.008	1.007	1.008	1.007	1.007	1.006
Age-to-Ultimate	1.234	1.223	1.212	1.202	1.193	1.184	1.173	1.164	1.156	1.148

Part E Compensation

Cumulative Payments by Initial Award Quarter

Initial Award Quarter	41	42	43	44	45	46	47	48	49	50	51	52	53	54
Prior	2,609,935,121	2,625,519,643	2,643,004,131	2,661,131,938	2,676,415,742	2,692,260,432	2,707,699,630	2,724,325,139	2,738,735,704	2,753,213,105	2,766,832,034	2,780,007,223	2,792,512,445	2,805,392,297
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	91,160,098	91,255,098	91,986,348	92,488,196	
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	113,951,019	114,226,019	114,958,519	115,316,019		
20104	93,445,221	94,072,721	94,531,721	95,210,873	95,655,039	96,293,612	96,708,612	97,053,612	97,291,112		98,418,612			
20111	76,284,675	76,818,992	77,641,492	78,058,992	78,518,992	79,331,507	80,036,507	80,586,507	80,951,507	81,374,007				
20112	71,015,327	71,748,320	72,178,320	72,840,820	73,403,320	73,713,320	73,960,820	74,265,820	74,650,820					
20113	64,393,491	64,663,491	65,019,741	65,512,241	65,774,741	66,342,241	66,954,741	67,482,241						
20114	57,053,518	57,081,018	57,301,018	57,969,019	58,331,519	59,065,366	59,417,866							
20121	70,496,519	70,996,519	71,396,519	71,879,019	72,459,019	72,831,519								
20122	102,216,077	103,086,077	103,573,577	104,093,577	104,771,268									
20123	77,859,655	78,429,655	78,925,867	79,075,867										
20124	89,951,264	90,571,264	91,508,764											
20131	93,515,805	94,288,305												
20132	88,473,905													
20133														
20134														
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	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	
Average	1.006	1.006	1.007	1.007	1.007	1.006	1.006	1.004	1.005	1.004	1.005	1.005		
Wtd Avg	1.006	1.007	1.007	1.006	1.006	1.006	1.006	1.005	1.005	1.005	1.005	1.005	1.005	
20 Qtr	1.006	1.006	1.007	1.007	1.007	1.006	1.006	1.004	1.005	1.004	1.005	1.005	0.000	
12 Qtr	1.006	1.006	1.007	1.007	1.008	1.006	1.006	1.004	1.005	1.004	1.006	1.005	1.005	
Selected	1.006	1.007	1.007	1.007	1.007	1.007	1.007	1.006	1.006	1.005	1.006	1.006	1.006	1.050
Prior 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
Age-to- Ultimate	1.140	1.133	1.125	1.118	1.110	1.102	1.094	1.087	1.080	1.074	1.068	1.062	1.056	1.050

Appendix 4: Undiscounted Liability Estimate

As of 9/30/2023, the **undiscounted** liability for future EEOICPA benefit payments is projected at \$101.5 billion. The future compensation payments are projected at \$14.7 billion, and the future medical payments are projected at \$86.9 billion, on an undiscounted basis.

ESTIMATED LIABILITY FOR EEOICPA AS OF SEPTEMBER 30, 2023

SUMMARY OF LIABILITY FOR FUTURE PAYMENTS (\$ Millions)

	Undiscounted Estimate as of 9/30/2023
Compensation: Part B	\$ 3,221
Compensation: Part E	11,465
Compensation: Total	14,685
Medical Payments	86,861
Total Future Payments	\$ 101,547

ESTIMATED LIABILITY FOR EEOICPA AS OF SEPTEMBER 30, 2023

SUMMARY OF UNDISCOUNTED EEOICPA PAYMENTS BY YEAR

Fiscal Year	Compensation Part B x/ DOJ Undiscounted Payments	Compensation Part E Undiscounted Payments	Compensation DOJ RECA5 Undiscounted Payments	Compensation Total Undiscounted Payments	Medical Total Undiscounted Payments	Total Undiscounted Payments
(1)	(2)	(3)	(4)	(4)	(5)	(6)
2024	\$ 217,160,061	\$ 579,725,412	\$ 12,349,111	\$ 809,234,584	\$ 1,684,561,961	\$ 2,493,796,545
2025	207,045,647	603,745,706	11,671,948	822,463,302	1,861,267,646	2,683,730,947
2026	194,218,102	610,806,820	11,031,918	816,056,840	2,034,170,522	2,850,227,361
2027	181,441,558	601,419,009	10,426,983	793,287,550	2,193,815,414	2,987,102,964
2028	169,537,708	587,851,858	9,855,220	767,244,785	2,338,320,530	3,105,565,315
2029	158,445,327	571,617,792	9,314,810	739,377,929	2,450,376,726	3,189,754,655
2030	148,107,570	552,934,277	8,804,033	709,845,880	2,546,320,470	3,256,166,349
2031	138,471,646	533,287,822	8,321,264	680,080,733	2,626,383,155	3,306,463,887
2032	129,488,532	501,799,173	7,864,968	639,152,674	2,690,768,046	3,329,920,720
2033	121,112,695	480,391,357	7,433,693	608,937,746	2,739,708,533	3,348,646,278
2034	113,301,845	456,591,750	7,026,067	576,919,662	2,773,512,169	3,350,431,831
2035	106,016,697	432,138,332	6,640,793	544,795,822	2,792,588,207	3,337,384,029
2036	99,220,756	406,364,788	6,276,646	511,862,190	2,797,477,129	3,309,339,319
2037	92,880,116	380,536,224	5,932,466	479,348,806	2,788,876,826	3,268,225,633
2038	86,963,274	355,375,158	5,607,160	447,945,591	2,767,648,017	3,215,593,608
2039	81,440,955	331,920,245	5,299,691	418,660,892	2,734,800,125	3,153,461,016
2040	76,285,956	310,323,795	5,009,083	391,618,835	2,691,478,054	3,083,096,889
2041	71,472,993	290,220,062	4,734,410	366,427,465	2,638,937,697	3,005,365,163
2042	66,978,563	271,217,617	4,474,799	342,670,979	2,578,517,938	2,921,188,917
2043	62,780,821	253,540,734	4,229,424	320,550,979	2,511,618,261	2,832,169,240
2044	58,859,459	236,908,500	3,997,504	299,765,462	2,439,652,214	2,739,417,676
2045	55,195,591	220,932,692	3,778,301	279,906,584	2,363,987,175	2,643,893,759
2046	51,771,661	206,122,730	3,571,118	261,465,509	2,285,888,994	2,547,354,502
2047	48,571,340	191,420,998	3,375,296	243,367,633	2,206,478,834	2,449,846,467
After 2048 ⁶	250,058,111	1,320,568,467	17,935,235	1,588,561,813	25,197,246,416	26,785,808,230
Total Future	\$ 3,032,406,426	\$ 11,464,911,780	\$ 188,152,155	\$ 14,685,470,360	\$ 86,861,111,678	\$ 101,546,582,039

⁶ Reflects projected cash flow through 2083

Totals may not equal sum of components because of independent rounding



Review of Estimate of EEOICPA Liability for Future Payments

Liability Estimate as of September 30, 2023

Report Date, September 10, 2023

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 and cash flows of the EEOICPA and has requested that Cognalysis¹ review the reasonableness of the EEOICPA model.

This review has been conducted in accordance with relevant Actuarial Standards of Practice. The purpose of the report is to assess the reasonableness of the related inputs, assumptions, methods and resulting estimate of liabilities. 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.

We have reviewed the inputs, assumptions, and calculations in the EEOICPA cash flow and liability model. We have reviewed the report produced by the OWCP to document and support the estimates. We have had discussions with the OWCP’s actuaries regarding their selected assumptions and the resulting estimated liability. We find that the inputs, assumptions, and model are reasonable individually and in combination, and we believe that the resulting liability and cashflow estimates are actuarially reasonable.

There is uncertainty associated with any actuarial estimate. To provide context for our review, we have produced a range of reasonable estimates for this liability estimate. This range is based on actuarial judgment, considering the importance of the various parameters and model formulations, as well as our historical knowledge of changes in the value of these estimates over

¹ Cognalysis is a trade name for Christopher Gross Consulting, Inc.

time. It is our view that another actuary, working in the same field, making alternate assumptions and/or model structures, could reasonably select as their estimate of the discounted value of the liability between \$45 Billion and \$95 Billion. In our opinion, the biggest reasons for uncertainty with this estimate are regarding assumptions regarding the number of future Part E awards and of future medical costs per case.

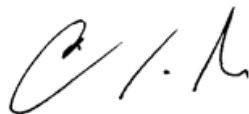
This range does *not* indicate the range of all possible *outcomes* for the future payments being estimated, but rather the range of *estimate* of those outcomes that an actuary could arrive at considering the information available at the current point in time. The range of potential outcomes is wider.

Qualifications

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 actuarial opinion.

If there are any questions regarding our review, I can be reached by telephone at (651) 293-8008 or by email at chris.gross@cognalysis.com.

Sincerely,

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

Chris G. Gross, ACAS, MAAA