



Estimate of EEOICPA Liabilities

Liability Estimate as of September 30, 2020

Report prepared for:

U.S. Department of Labor

Office of Workers' Compensation Programs

Report Date: October 23, 2020



October 23, 2020

Shanti Ananthanayagam
Acting Director/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, 2020

Dear Ms. Ananthanayagam:

Attached is the actuarial report documenting our analysis of the EEOICPA liabilities as of September 30, 2020. 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@cgconsult.com.

Sincerely,

Chris Gross, ACAS, MAAA
President and CEO

Jennifer Nelson
Senior Vice President

CG/jn

Table of Contents

Introduction.....	4
Distribution and Use	4
Qualification	4
Executive Summary	5
Discounted Cash Flow by Year	6
Summary of Changes.....	7
Actual vs Projected	8
Number of Cases Approved.....	8
The EEOICPA Model.....	9
1: Organize and Aggregate the Data	10
2: Estimate the number of Future Approved Cases	11
3: Estimate the average compensation payment per case	16
4: Payout patterns.....	17
5: Estimate the number of cases eligible for medical benefits.....	18
6: Remove double counting	19
7: Mortality	21
8: Estimate the Number of Individuals eligible for medical benefits	22
9: Estimate Average Medical Payments and Inflation Rates	24
10: Calculate the total expected Medical Payment by year	25
11: Discount the cash flows to 9/30/2020.....	26
Hindsight Opinion.....	27
Appendix 1: Reconciliation of Change in Liability Estimate	28
Appendix 2: Summary of EEOICPA Model Assumptions	29
Appendix 3: Part E Compensation Payments	31
Appendix 4: Undiscounted Liability Estimates	39

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.

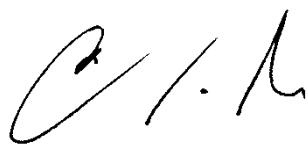
The Office of Workers’ Compensation Programs (“OWCP”) at the U.S. Department of Labor maintains a model to estimate the future liabilities of the EEOICPA program. The OWCP has requested that Gross Consulting review the annual data updates to the model, review the reasonableness of the EEOICPA model and 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, 2020, 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.



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 9/30/2020, the discounted liability estimate for future EEOICPA benefit payments is \$37.5 billion. The future compensation payments are projected at \$8.6 billion, and the future medical payments are projected at \$20.8 billion, on a discounted basis. This is a substantial increase over the 9/30/2019 liability estimate of \$26.7 billion, largely driven by the continued increase of Part E new cases and expansion of benefits due to increases in acceptances of “consequential conditions” in existing cases.

ESTIMATED LIABILITY FOR EEOICPA AS OF SEPTEMBER 30, 2020

SUMMARY OF LIABILITY FOR FUTURE PAYMENTS (\$ Millions)

	Discounted Liability Estimate		YOY Difference
	as of 9/30/2020	as of 9/30/2019	
Compensation: Part B	\$ 3,189	\$ 1,920	\$ 1,270
Compensation: Part E	5,473	3,981	1,491
Compensation: Total	8,662	5,901	2,761
Medical Payments	28,859	20,775	8,084
Total Future Payments	\$ 37,521	\$ 26,676	\$ 10,845 41%

The discount rates used for the 9/30/2020 estimates were 2.308% for compensation and 2.559% for medical.

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, 2020

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)
2021	\$ 258,931,289	\$ 398,725,134	\$ 14,149,145	\$ 671,805,568	\$ 1,020,296,151	\$ 1,692,101,719
2022	241,563,140	387,697,629	13,026,774	642,287,543	1,056,606,284	1,698,893,827
2023	225,277,409	379,316,489	11,993,434	616,587,332	1,085,233,859	1,701,821,191
2024	207,003,492	364,924,462	11,042,063	582,970,017	1,113,367,401	1,696,337,418
2025	189,525,890	345,297,798	10,166,159	544,989,848	1,131,668,200	1,676,658,048
2026	172,778,008	321,739,006	9,359,735	503,876,750	1,142,041,546	1,645,918,296
2027	156,048,218	294,915,882	8,617,281	459,581,381	1,140,694,888	1,600,276,270
2028	143,052,490	273,271,069	7,933,721	424,257,279	1,129,812,367	1,554,069,647
2029	131,182,040	255,769,274	7,304,384	394,255,699	1,113,054,640	1,507,310,338
2030	120,336,669	237,410,886	6,724,969	364,472,523	1,091,324,943	1,455,797,466
2031	110,425,270	218,020,661	6,191,515	334,637,446	1,065,428,037	1,400,065,483
2032	101,364,999	199,540,371	5,700,378	306,605,748	1,036,073,543	1,342,679,291
2033	93,080,510	182,046,584	5,248,199	280,375,293	1,003,881,517	1,284,256,810
2034	85,503,271	165,612,964	4,831,889	255,948,125	969,389,509	1,225,337,633
2035	78,570,937	150,493,722	4,448,603	233,513,261	933,068,098	1,166,581,359
2036	72,226,781	136,541,404	4,095,721	212,863,906	895,340,450	1,108,204,356
2037	66,419,185	123,591,482	3,770,830	193,781,498	856,597,368	1,050,378,866
2038	61,101,168	111,619,313	3,471,712	176,192,193	817,207,227	993,399,420
2039	56,229,966	101,163,129	3,196,321	160,589,416	777,524,946	938,114,362
2040	51,766,644	92,024,253	2,942,775	146,733,672	737,894,057	884,627,729
2041	47,675,750	83,816,069	2,709,341	134,201,160	698,641,547	832,842,707
2042	43,924,996	76,179,956	2,494,425	122,599,376	660,071,346	782,670,722
2043	40,484,971	69,255,286	2,296,556	112,036,813	622,456,412	734,493,225
2044	37,328,880	62,888,633	2,114,383	102,331,896	586,031,076	688,362,972
2045	34,432,306	56,875,180	1,946,661	93,254,148	550,985,378	644,239,526
After 2045 ¹	196,366,982	384,154,131	10,929,968	591,451,081	5,624,510,799	6,215,961,880
Total Future	\$3,022,601,259	\$ 5,472,890,768	\$ 166,706,943	\$ 8,662,198,969	\$28,859,201,590	\$37,521,400,559

¹ Reflects projected cash flow through FY 2080

Summary of Changes

Based on observed trends in the updated EEOICPA data, the following changes in assumptions were made to the model this year:

1. Part B

- Overall increase in the projected number of future approved Part B cases
- Slight increase in the percentage of Part B approvals that are already approved for Part E

2. Part E

- Large increase in the projected number of future new cases approved for Part E
- Updates to the average payment amount per case and the timing of these payments

3. Medical Costs

The estimated medical inflation rates for future years 1-5 were updated based on guidance from OWCP management regarding expected cost increases in the short term. The long-term inflation rates selected are the CPI-Medical inflation rates from the OMB Economic Assumptions for the 2021 Budget, November 2019.

Additionally, the assumptions of the percentage of approved cases that are filed by an employee (and thus eligible for medical expenses) have been updated based on the recent data. In some cases the percentage was increased and in some cases it was decreased.

Impacts of Coronavirus (COVID-19)

There are no discernable differences as of June 2020 (data evaluation date for this report) that can be directly attributed to the COVID-19 pandemic. Approval rates continue to increase as do the utilization rates of medical services, neither of which are likely to be related to the pandemic, since they have been on the increase for the past few years. However, it is still early in the pandemic and there is potential for COVID-19 to have a measurable impact on the results in the future. Results will continue to be monitored.

No changes to the assumptions or model structure were made explicitly for considerations of COVID-19.

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

Actual vs Projected

Number of Cases Approved

Overall, there were 26% more Part B cases and 29% more Part E cases newly approved during 7/1/19 to 6/30/20 than what was projected.

Total Approved 7/1/19 to 6/30/20

	Projected @7/2019	Actual @6/2020	Diff	%Diff
B: RECA	141	173	32	23%
B: BD & BS	93	78	-15	-16%
B: CS	289	405	116	40%
B: CNSEC	866	1,091	225	26%
B: CN	310	384	74	24%
Part B	1,698	2,131	433	26%
Part E	2,072	2,679	607	29%

Cash Flow

The revised cash flow projection for Fiscal Year 2020 is 12% greater than projected in the 9/30/2019 liability estimate. The revised estimate is greater due to the increased number of new cases approved, as shown above.

Cash Flow FY 2020

	Projected @9/2019	Actual 9 month + Proj 3 mo	\$ Difference	%Diff
Part B Compensation	239,524,754	305,536,084	66,011,330	28%
Part E Compensation	331,564,066	382,365,167	50,801,100	15%
Medical Payments	885,057,176	941,144,945	56,087,770	6%
Total	1,456,145,996	1,629,046,196	172,900,200	12%

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 9/30/2020

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/weeklstats.htm>

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

	Raw Data @ 7/3/2020		DOL website as of 7/6/2020		Difference between raw data and 7/6/2020 website data	
	# Cases <u>Approved</u>	<u>Payments</u>	# Cases <u>Approved</u>	<u>Payments</u>	# Cases <u>Approved</u>	<u>Payments</u>
Part B Compensation	56,406	7,091,147,928	56,375	7,095,120,428	-0.1%	0.1%
Part E Compensation	49,894	5,131,627,979	49,779	5,136,850,479	-0.2%	0.1%
Medical		5,953,171,905		5,973,228,340		0.3%
Total		18,175,947,812		18,205,199,247		0.2%

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.

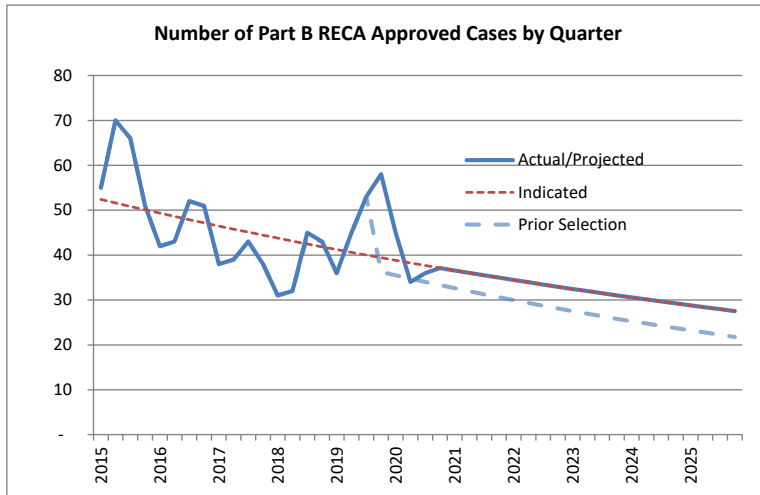
2: Estimate the number of Future Approved Cases

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 the 9/30/2020 liability estimate, the models are based predominately on the last four or five years of history. For Part E, it is assumed that the current rate of awards will continue for the next three years and will then begin to decline.

The exhibits on the following pages show a graph of the quarterly history of newly-approved cases and the modeled fit line.

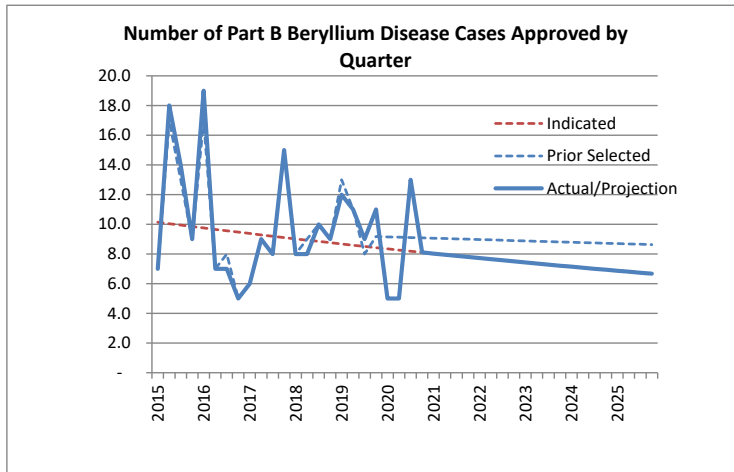
Part B: RECA



Selected Decay Rates:

	<u>2020</u>	<u>2019</u>
Quarterly	1.5%	2.1%
Annual	5.8%	8.1%

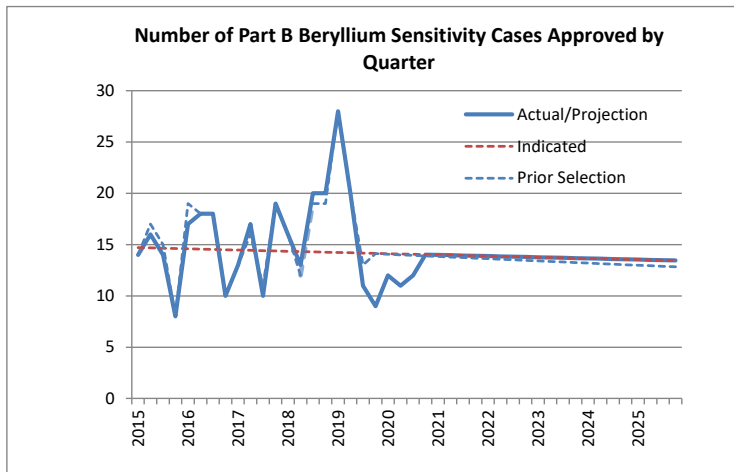
Part B: Beryllium Disease



Selected Decay Rates:

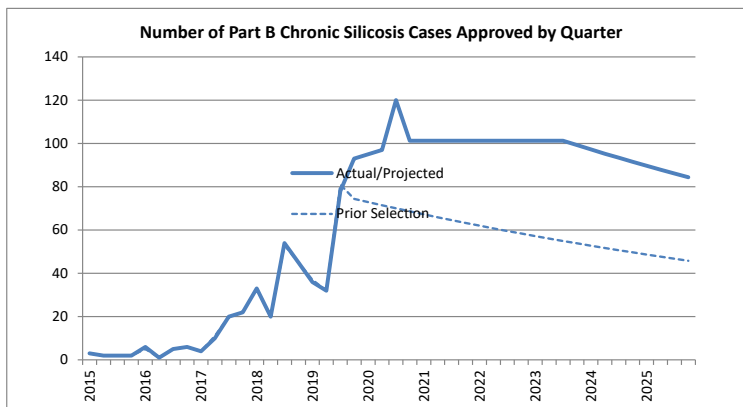
	<u>2020</u>	<u>2019</u>
Quarterly	1.0%	0.3%
Annual	3.8%	1.0%

Part B: Beryllium Sensitivity



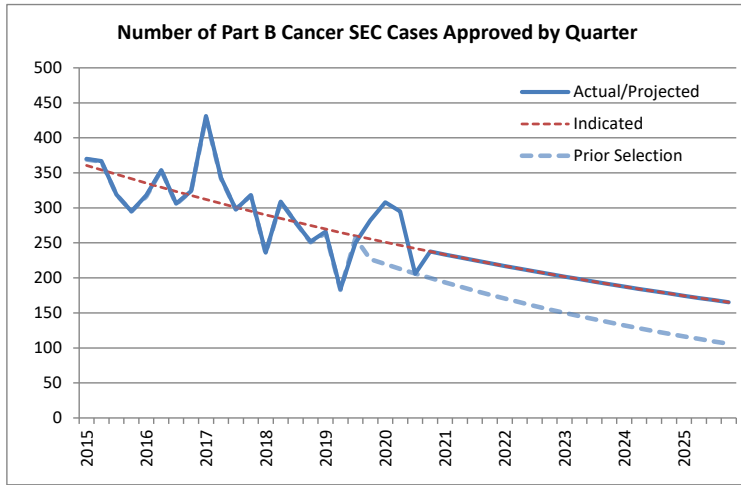
Selected Decay Rates:

	<u>2020</u>	<u>2019</u>
Quarterly	0.2%	0.4%
Annual	0.8%	1.6%



Due to the recent increase in approved cases, a curve was not fit to the historical data for Part B Chronic Silicosis. Instead, 101 new cases per quarter (average of most recent four quarters) is projected for FY2021 through in FY 2023 was assumed, with a 2% quarterly decay going forward at that point.

Part B: Cancer SEC

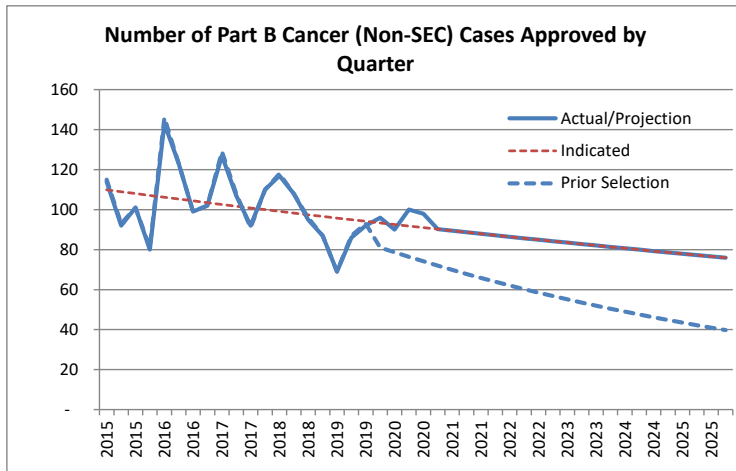


Selected Decay Rates:

	<u>2020</u>	<u>2019</u>
Quarterly	1.8%	3.1%
Annual	7.0%	11.9%

For Cancer SEC, a decay model is fit to recent history to estimate future decay rates in the number of newly-approved cases. This method does not explicitly assume any future new SEC designations.

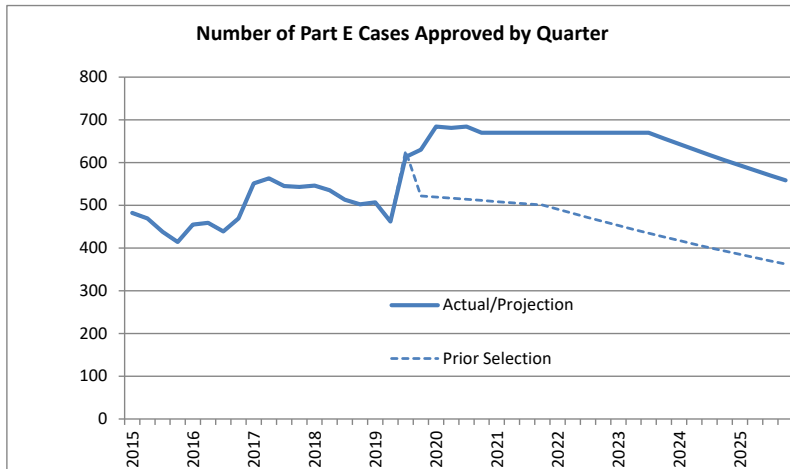
Part B: Cancer Non-SEC



Selected Decay Rates:

	<u>2020</u>	<u>2019</u>
Quarterly	0.9%	2.9%
Annual	3.4%	11.2%

Part E



Due to the recent dramatic increase in approved cases, a curve was not fit to the historical data for Part E. Instead, 670 new cases per quarter (average of most recent four quarters) is projected for FY2021 through in FY 2023 was assumed, with a 2% quarterly decay going forward at that point.

**ESTIMATED LIABILITY FOR EEOICPA
AS OF SEPTEMBER 30, 2020**

NUMBER OF CASES APPROVED BY YEAR

Projected Number of Cases Approved									
Fiscal Yr	Part B							Part E	TOTAL
	RECA	BD	BS	CS	CN SEC	CN Non SEC	Part B Total		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Prior	3,790	1,740	505	62	4,042	1,884	12,023	2,040	14,063
2006	460	221	41	14	1,127	1,577	3,440	5,709	9,149
2007	1,115	265	109	18	1,340	1,315	4,162	6,152	10,314
2008	645	213	113	12	2,100	1,013	4,096	5,028	9,124
2009	456	144	87	17	1,767	818	3,289	3,966	7,255
2010	326	122	77	13	2,222	791	3,551	3,412	6,963
2011	267	106	84	21	2,798	770	4,046	2,904	6,950
2012	295	92	66	13	2,560	739	3,765	2,956	6,721
2013	303	60	47	2	2,761	574	3,747	3,243	6,990
2014	242	53	41	2	1,786	440	2,564	2,300	4,864
2015	242	48	52	9	1,351	387	2,089	1,803	3,892
2016	188	38	63	18	1,302	467	2,076	1,822	3,898
2017	158	38	59	56	1,390	436	2,137	2,202	4,339
2018	151	35	69	152	1,076	407	1,890	2,096	3,986
2019	192	43	68	239	982	343	1,867	2,212	4,079
2020	152	31	49	413	1,047	378	2,070	2,719	4,789
Through 2020							56,812	50,564	

**ESTIMATED LIABILITY FOR EEOICPA
AS OF SEPTEMBER 30, 2020**

PROJECTED NUMBER OF CASES APPROVED BY YEAR

Projected Number of Cases Approved									
Fiscal Yr	Part B							Part E	TOTAL
	RECA	BD	BS	CS	CN SEC	CN Non SEC	Part B Total		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
2021	143	32	56	405	909	353	1,897	2,679	4,576
2022	135	30	55	405	845	341	1,812	2,679	4,491
2023	127	29	55	403	786	330	1,730	2,666	4,395
2024	120	28	54	377	731	319	1,629	2,497	4,126
2025	113	27	54	348	680	308	1,529	2,303	3,832
2026	106	26	54	315	632	297	1,430	2,084	3,514
2027	100	25	53	273	588	287	1,326	1,807	3,134
2028	94	24	53	252	547	278	1,247	1,667	2,914
2029	89	23	52	232	508	268	1,173	1,537	2,711
2030	84	22	52	214	473	259	1,104	1,418	2,522
2031	79	21	51	198	440	250	1,039	1,308	2,347
2032	74	21	51	182	409	242	979	1,206	2,185
2033	70	20	51	168	380	234	922	1,113	2,035
2034	66	19	50	155	354	226	870	1,026	1,896
2035	62	18	50	143	329	218	820	947	1,767
2036	58	18	49	132	306	211	774	873	1,647
2037	55	17	49	122	284	204	731	805	1,536
2038	52	16	48	112	264	197	690	743	1,433
2039	49	16	48	104	246	190	652	685	1,338
2040	46	15	48	96	229	184	617	632	1,249
2041	43	15	47	88	213	178	584	583	1,167
2042	41	14	47	81	198	172	552	538	1,090
2043	38	13	47	75	184	166	523	496	1,019
2044	36	13	46	69	171	160	496	457	953
2045	34	12	46	64	159	155	470	422	892
2046	32	12	45	59	148	150	446	389	835
2047	30	12	45	54	138	144	423	359	782
2048	28	11	45	50	128	140	402	331	733
2049	27	11	44	46	119	135	382	305	687
2050	25	10	44	43	111	130	363	282	645
2051	24	10	44	39	103	126	345	260	605
2052	22	9	43	36	96	122	329	240	568
2053	21	9	43	33	89	118	313	221	534
2054	-	-	-	8	-	-	8	53	60
2021-2054							28,607	35,612	
2001-2054 (All Years)							85,419	86,176	

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 only 30% of the 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 determine the ultimate payments by approval quarter from 2005 to the present. The average projected ultimate is then divided by the number of approved cases to determine the average compensation per case.

Part E Average Compensation per case	\$156,823
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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	30.0%
Year 2	23.5%
Year 3	6.1%
Year 4	6.0%
Year 5	4.4%
Year 6	4.3%
Year 7	3.4%
Year 8	3.1%
Year 9	2.9%
Year 10	2.7%
Year 11	2.4%
Year 12	2.4%
Year 13	2.5%
Year 14	1.5%
Years 15-25	0.4%

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

	<u>RECA</u>	<u>BD</u>	<u>BS</u>	<u>CS</u>	<u>CN SEC</u>	<u>CN Non SEC</u>	<u>E</u>
20153	65%	67%	100%	100%	54%	71%	74%
20154	57%	74%	100%	67%	48%	57%	74%
20161	65%	43%	100%	100%	50%	66%	74%
20162	58%	86%	100%	80%	52%	60%	77%
20163	57%	80%	100%	100%	54%	72%	77%
20164	55%	100%	100%	75%	51%	64%	71%
20171	56%	78%	100%	100%	47%	71%	75%
20172	65%	75%	100%	95%	57%	61%	80%
20173	63%	73%	100%	82%	56%	69%	80%
20174	61%	88%	94%	91%	52%	63%	79%
20181	75%	50%	100%	100%	56%	78%	79%
20182	53%	80%	100%	91%	56%	71%	79%
20183	70%	78%	100%	96%	64%	77%	82%
20184	50%	58%	100%	94%	59%	74%	82%
20191	58%	45%	100%	100%	67%	71%	85%
20192	53%	78%	100%	96%	66%	76%	84%
20193	50%	91%	100%	94%	55%	72%	82%
20194	58%	80%	100%	95%	57%	73%	81%
20201	74%	60%	100%	95%	55%	87%	86%
10-yr average	62%	72%	100%	74%	46%	66%	71%
5-yr average	60%	73%	100%	90%	55%	69%	79%
2-yr average	58%	71%	100%	95%	60%	75%	83%
1-yr average	59%	77%	100%	95%	58%	77%	83%
Prev selected	61%	72%	100%	93%	59%	72%	83%
Selected	59%	74%	100%	94%	55%	75%	83%

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 10.4% of newly-approved Part B cases have already been approved for Part E, and that 0.7% of newly-approved Part E cases have already been approved for Part B.

Percent of Part B cases filed by an employee that had previously been accepted as a Part E case		Percent of Part E cases filed by an employee that had previously been accepted as a Part B case	
<u>FY</u>	<u>Percent</u>	<u>FY</u>	<u>Percent</u>
2006	1.2%	2006	58.9%
2007	0.8%	2007	30.4%
2008	2.5%	2008	16.1%
2009	5.9%	2009	6.2%
2010	10.2%	2010	1.3%
2011	9.1%	2011	1.5%
2012	10.5%	2012	1.5%
2013	7.8%	2013	0.8%
2014	9.0%	2014	0.7%
2015	8.9%	2015	0.8%
2016	8.6%	2016	0.8%
2017	9.7%	2017	0.6%
2018	12.4%	2018	0.7%
2019	12.2%	2019	0.4%
2020	10.4%	2020	0.7%
Selected	10.4%	Selected	0.7%

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 79% 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.

Percent of Part B cases filed by an employee where Part E is approved in the same year		Percent of Part E cases filed by an employee where Part B is approved in the same year	
<u>FY</u>	<u>Percent</u>	<u>FY</u>	<u>Percent</u>
2006	71.3%	2006	32.5%
2007	88.9%	2007	46.3%
2008	82.4%	2008	49.2%
2009	80.4%	2009	47.7%
2010	79.8%	2010	60.3%
2011	69.3%	2011	60.7%
2012	73.8%	2012	67.5%
2013	81.4%	2013	68.9%
2014	78.1%	2014	63.8%
2015	79.2%	2015	70.5%
2016	78.7%	2016	67.1%
2017	78.3%	2017	58.0%
2018	78.2%	2018	57.9%
2019	81.2%	2019	56.4%
2020	79.0%	2020	49.5%
Selected	79.0%		

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 10.4%, the number of newly-approved employee-filed Part E cases is reduced by 0.7% (as shown on the previous page) and then the newly-approved employee-filed Part B cases is further reduced by 79% 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 model uses the RP-2014 Male Disabled Retiree mortality table and assumes that employees are age 72 at the time that the first claim is approved³.

Average Age of Employee at First Case Approval Date

Part B			Part E		
FY	Count	Avg Age at Award	FY	Count	Avg Age
2001	116	71.0			
2002	1,734	66.4			
2003	1,486	64.4			
2004	928	68.7			
2005	1,167	70.4	2005	239	69.0
2006	1,486	72.2	2006	3,257	70.4
2007	1,969	70.5	2007	3,777	71.0
2008	1,700	71.8	2008	2,839	70.9
2009	1,369	72.7	2009	2,302	70.8
2010	1,560	72.2	2010	2,062	70.7
2011	1,572	72.5	2011	1,792	71.0
2012	1,638	73.2	2012	1,784	72.2
2013	1,783	70.8	2013	2,103	70.2
2014	1,294	72.7	2014	1,583	71.4
2015	1,138	72.8	2015	1,277	72.2
2016	1,178	73.7	2016	1,375	72.4
2017	1,255	73.2	2017	1,687	72.4
2018	1,248	72.2	2018	1,671	71.5
2019	1,288	72.5	2019	1,837	71.3
2020	1,144	72.3	2020	1,759	70.7
Average 2012-2020		72.6	Average 2012-2020		71.6

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, 2020

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 SEC	Non SEC	Part E	Part B already in	Part E already in	EB concurrent	Net new Individuals			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Prior	1,641	1,142	505	50	1,422	671	241	-	(49)	(26)	5,597	(410)	5,187	
2006	329	108	41	13	316	679	3,257	(18)	(1,920)	(1,059)	1,746	(277)	6,656	5,922
2007	782	154	109	12	377	534	3,777	(15)	(1,150)	(1,750)	2,830	(409)	9,077	7,866
2008	380	137	112	10	597	461	2,839	(42)	(458)	(1,398)	2,638	(534)	11,181	10,129
2009	271	92	87	10	466	440	2,302	(81)	(142)	(1,098)	2,347	(647)	12,881	12,031
2010	193	88	77	9	739	452	2,062	(159)	(27)	(1,243)	2,191	(753)	14,319	13,600
2011	162	71	84	14	770	470	1,792	(143)	(26)	(1,088)	2,106	(857)	15,568	14,944
2012	188	62	66	9	869	438	1,784	(171)	(26)	(1,205)	2,014	(956)	16,626	16,097
2013	222	41	47	2	1,120	346	2,103	(139)	(16)	(1,448)	2,278	(1,068)	17,836	17,231
2014	153	41	41	2	751	306	1,583	(116)	(11)	(1,010)	1,740	(1,154)	18,422	18,129
2015	160	37	52	7	630	250	1,277	(101)	(10)	(900)	1,402	(1,224)	18,601	18,511
2016	111	27	63	15	663	294	1,375	(101)	(11)	(923)	1,513	(1,296)	18,817	18,709
2017	95	30	59	50	728	289	1,687	(121)	(10)	(979)	1,828	(1,380)	19,265	19,041
2018	97	26	68	142	611	292	1,671	(153)	(11)	(967)	1,776	(1,459)	19,583	19,424
2019	101	29	68	228	599	251	1,837	(156)	(7)	(1,036)	1,914	(1,539)	19,957	19,770
2020	90	23	49	389	577	283	2,255	(146)	(16)	(1,115)	2,390	(1,636)	20,711	20,334

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, 2020**

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 concurrent	EB	Net new Individuals			
					CN SEC	Non SEC								
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
2021	85	23	56	381	501	264	2,222	(136)	(16)	(1,036)	2,346	(1,726)	21,330	21,020
2022	80	22	55	381	466	256	2,222	(131)	(16)	(996)	2,341	(1,810)	21,862	21,596
2023	75	22	55	380	433	247	2,211	(125)	(15)	(957)	2,325	(1,885)	22,301	22,081
2024	71	21	54	356	403	239	2,071	(118)	(14)	(903)	2,178	(1,946)	22,533	22,417
2025	67	20	54	328	375	230	1,910	(111)	(13)	(848)	2,011	(1,991)	22,554	22,544
2026	63	19	54	297	349	223	1,729	(104)	(12)	(793)	1,824	(2,018)	22,359	22,457
2027	59	18	53	257	324	215	1,499	(96)	(10)	(733)	1,587	(2,025)	21,922	22,141
2028	56	18	53	237	302	208	1,383	(90)	(10)	(690)	1,466	(2,017)	21,371	21,646
2029	53	17	52	219	280	201	1,275	(85)	(9)	(649)	1,354	(1,996)	20,729	21,050
2030	50	16	52	202	261	194	1,176	(80)	(8)	(612)	1,251	(1,963)	20,016	20,373
2031	47	16	51	186	243	188	1,085	(76)	(8)	(577)	1,155	(1,922)	19,249	19,633
2032	44	15	51	172	226	181	1,001	(71)	(7)	(544)	1,067	(1,874)	18,442	18,845
2033	41	15	50	158	210	175	923	(67)	(6)	(513)	986	(1,821)	17,606	18,024
2034	39	14	50	146	195	169	851	(64)	(6)	(485)	911	(1,763)	16,754	17,180
2035	37	14	50	135	181	163	785	(60)	(5)	(458)	842	(1,703)	15,892	16,323
2036	35	13	49	124	169	158	724	(57)	(5)	(433)	778	(1,640)	15,029	15,461
2037	33	13	49	115	157	153	668	(54)	(5)	(409)	719	(1,576)	14,172	14,601
2038	31	12	48	106	146	147	616	(51)	(4)	(387)	664	(1,509)	13,327	13,750
2039	29	12	48	98	136	142	568	(48)	(4)	(367)	614	(1,442)	12,499	12,913
2040	27	11	48	90	126	138	524	(46)	(4)	(347)	567	(1,372)	11,694	12,097
2041	26	11	47	83	117	133	484	(43)	(3)	(329)	525	(1,302)	10,917	11,305
2042	24	10	47	77	109	128	446	(41)	(3)	(312)	485	(1,231)	10,170	10,543
2043	23	10	46	71	101	124	411	(39)	(3)	(297)	448	(1,160)	9,458	9,814
2044	21	10	46	65	94	120	379	(37)	(3)	(282)	415	(1,090)	8,783	9,121
2045	20	9	46	60	88	116	350	(35)	(2)	(268)	384	(1,021)	8,146	8,465
2046	19	9	45	55	82	112	323	(33)	(2)	(255)	355	(953)	7,548	7,847
2047	18	8	45	51	76	108	298	(32)	(2)	(242)	328	(888)	6,988	7,268
2048	17	8	45	47	71	105	275	(30)	(2)	(231)	304	(825)	6,467	6,728
2049	16	8	44	43	66	101	253	(29)	(2)	(220)	281	(766)	5,982	6,224
2050	15	8	44	40	61	98	234	(27)	(2)	(209)	260	(710)	5,532	5,757
2051	14	7	43	37	57	94	216	(26)	(2)	(200)	241	(657)	5,116	5,324
2052	13	7	43	34	53	91	199	(25)	(1)	(191)	223	(608)	4,731	4,923
2053	13	7	43	31	49	88	183	(24)	(1)	(182)	207	(563)	4,375	4,553
2054	-	-	-	7	-	-	44	(1)	(0)	(6)	44	(514)	3,905	4,140
2055	-	-	-	-	-	-	-	-	-	-	-	(466)	3,439	3,672
2056	-	-	-	-	-	-	-	-	-	-	-	(422)	3,017	3,228
2057	-	-	-	-	-	-	-	-	-	-	-	(382)	2,635	2,826
2058	-	-	-	-	-	-	-	-	-	-	-	(344)	2,291	2,463
2059	-	-	-	-	-	-	-	-	-	-	-	(309)	1,982	2,136
2060	-	-	-	-	-	-	-	-	-	-	-	(277)	1,705	1,843
2061	-	-	-	-	-	-	-	-	-	-	-	(247)	1,458	1,581
2062	-	-	-	-	-	-	-	-	-	-	-	(219)	1,238	1,348
2063	-	-	-	-	-	-	-	-	-	-	-	(194)	1,044	1,141
2064	-	-	-	-	-	-	-	-	-	-	-	(171)	874	959
2065	-	-	-	-	-	-	-	-	-	-	-	(149)	725	799
2066	-	-	-	-	-	-	-	-	-	-	-	(129)	596	660
2067	-	-	-	-	-	-	-	-	-	-	-	(111)	484	540
2068	-	-	-	-	-	-	-	-	-	-	-	(95)	389	437
2069	-	-	-	-	-	-	-	-	-	-	-	(80)	309	349
2070	-	-	-	-	-	-	-	-	-	-	-	(67)	242	276
2071	-	-	-	-	-	-	-	-	-	-	-	(55)	187	215
2072	-	-	-	-	-	-	-	-	-	-	-	(45)	143	165
2073	-	-	-	-	-	-	-	-	-	-	-	(36)	107	125
2074	-	-	-	-	-	-	-	-	-	-	-	(28)	79	93
2075	-	-	-	-	-	-	-	-	-	-	-	(22)	57	68
2076	-	-	-	-	-	-	-	-	-	-	-	(16)	41	49
2077	-	-	-	-	-	-	-	-	-	-	-	(12)	29	35
2078	-	-	-	-	-	-	-	-	-	-	-	(9)	20	24
2079	-	-	-	-	-	-	-	-	-	-	-	(6)	13	16
2080	-	-	-	-	-	-	-	-	-	-	-	(5)	9	11

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.

Average Medical Payment in 2020	\$46,284
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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 the OMB Economic Assumptions for the 2019 Mid-Session Review.

Annual Medical Inflation, Future Year 1	6.2%
Annual Medical Inflation, Future Year 2	3.4%
Annual Medical Inflation, Future Year 3	3.0%
Annual Medical Inflation, Future Year 4	3.6%
Annual Medical Inflation, Future Year 5	3.7%
Annual Medical Inflation, Future Year 6+	3.9%

10: Calculate the total expected Medical Payment by year

The total number of individuals eligible is then 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> (1)	<u>Average Medical Cost per Eligible Individual</u> (2)	<u>Total Undiscounted Medical Payments</u> (3)
2021	21,020	49,155	1,033,268,375
2022	21,596	50,816	1,097,422,489
2023	22,081	52,352	1,155,999,854
2024	22,417	54,258	1,216,316,849
2025	22,544	56,244	1,267,947,033
2026	22,457	58,438	1,312,313,753
2027	22,141	60,717	1,344,308,826
2028	21,646	63,085	1,365,556,445
2029	21,050	65,545	1,379,728,369
2030	20,373	68,102	1,387,410,474
2031	19,633	70,757	1,389,148,857
2032	18,845	73,517	1,385,444,161
2033	18,024	76,384	1,376,748,710
2034	17,180	79,363	1,363,466,001
2035	16,323	82,458	1,345,962,984
2036	15,461	85,674	1,324,590,874
2037	14,601	89,015	1,299,702,835
2038	13,750	92,487	1,271,666,724
2039	12,913	96,094	1,240,878,380
2040	12,097	99,842	1,207,765,657
2041	11,305	103,736	1,172,780,807
2042	10,543	107,781	1,136,389,203
2043	9,814	111,985	1,099,053,773
2044	9,121	116,352	1,061,217,542
2045	8,465	120,890	1,023,287,397
After 2045			13,043,205,563
Total future undiscounted			44,301,581,933

11: Discount the cash flows to 9/30/2020

The projected cash flows by fiscal year are then discounted back to 9/30/2020. 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	2.308%
Discount rate for medical payments	2.559%

Hindsight Opinion

The hindsight opinion adjusts the current liability estimate to be consistent with the liability estimate as of 9/30/2019, 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 for liability as of 9/30/2019 is \$34.3 billion, compared with a liability estimate of \$26.7 billion in the 9/30/2019 actuarial report. This increase is driven by the increased number of newly approved claims as well as increased medical costs.

Calculation of 9/30/2019 Hindsight Liability Opinion

(\$millions)

Current Estimated Liability as of 9/30/2020	\$ 37,521
Minus liability for additional exposure as of 9/30/2019	(3,752)
Minus projected payments in FY2080	(1)
Plus payments in FY2019 (excluding payments for current exposures)	1,447
Discount back to 9/30/2019	<u>(915)</u>
Hindsight Liability Estimate as of 9/30/2019	34,299

To arrive at the hindsight estimate, the liability for additional exposure was estimated at 10% 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 9/30/2019 (\$millions, discounted to 9/30/19).....	\$26,676
1. FY 2020 roll off of estimate	(1,437)
2. FY 2080 roll on to estimate	1
3. Discount to 9/30/20 instead of 9/30/19	651
4. Increased projection of the number of future Part E approvals	6,636
5. Increased projection of the number of future Part B approvals	2,081
6. Revised future medical costs	1,039
7. Change in discount rates	599
8. Other changes in assumptions	312
9. Combination effect	963
Total Change	10,845
Liability Estimate as of 9/30/2020 (\$millions, discounted to 9/30/20).....	\$37,521

Appendix 2: Summary of EEOICPA Model Assumptions

	as of 9/30/2020	as of 9/30/2019
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, average	\$156,823	\$145,886
Discount Rates		
Discount Factor for Compensation	2.308%	2.458%
Discount Factor for Medical	2.559%	2.734%
Duration		
Average Compensation Duration (years)	12.2	11.2
Average Medical Duration (years)	19.2	18.4
Inflation Rates		
Annual Inflation for Compensation	0.00%	0.00%
Annual Inflation for Medical, Future Year 1	6.2%	4.5%
Annual Inflation for Medical, Future Year 2	3.4%	4.1%
Annual Inflation for Medical, Future Year 3	3.0%	4.0%
Annual Inflation for Medical, Future Year 4	3.6%	2.9%
Annual Inflation for Medical, Future Year 5	3.7%	3.9%
Annual Inflation for Medical, Future Years 6+	3.9%	3.9%
Medical Costs per Eligible Case		
Average medical payment for FY 2021	49,155	46,350
Mortality		
Mortality Table	Male RP-2014 Rates	Male RP-2014 Rates
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
Percent of new cases filed by employee		
RECA (Part B)	59%	61%
BD (Part B)	74%	72%
BS (Part B)	100%	100%
CS (Part B)	94%	93%
CN SEC (Part B)	55%	59%
CN Non SEC (Part B)	75%	72%
<u>Part E</u>	83%	83%

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 9/30/2020</u>	<u>as of 9/30/2019</u>
Probability that the newly-approved case is already eligible for medical benefits		
Part B	10.4%	9.1%
Part E	0.7%	0.7%
Part B cases where Part E approved same year		
Percent of Part E cases where Part B approved	79%	79%
Quarterly Decay in new case approval		
RECA (Part B)	1.5%	2.1%
BD (Part B)	1.0%	0.3%
BS (Part B)	0.2%	0.4%
CS (Part B)	varies	2.0%
CN SEC (Part B)	1.8%	3.1%
CN Non SEC (Part B)	0.9%	2.9%
Part E	varies	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	30.0%	31.5%
Year 2	23.5%	22.6%
Year 3	6.1%	6.2%
Year 4	6.0%	6.0%
Year 5	4.4%	4.6%
Year 6	4.3%	4.2%
Year 7	3.4%	3.5%
Year 8	3.1%	3.1%
Year 9	2.9%	2.8%
Year 10	2.7%	2.8%
Year 11	2.4%	2.5%
Year 12	2.4%	2.3%
Year 13	2.5%	2.0%
Year 14	1.5%	1.1%
Years 15-25	0.4%	0.4%
Prior Year Cohort		
Average Age at Award	67	66
Average Age at Start of FY 2006	69	68
Average Part E pmt yr for FY2021	17	18

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	Ultimate Count	Ultimate Average Payment
Prior	0				
2007-2	211,564,995	1.0500	222,143,244	1,774	125,222
2007-3	192,358,872	1.0560	203,130,969	1,591	127,675
2007-4	166,995,684	1.0630	177,516,412	1,467	121,006
2008-1	121,698,134	1.0700	130,217,003	1,111	117,207
2008-2	132,389,803	1.0770	142,583,818	1,207	118,131
2008-3	137,641,510	1.0850	149,341,039	1,243	120,146
2008-4	140,334,312	1.0920	153,245,068	1,259	121,720
2009-1	105,025,954	1.0990	115,423,524	920	125,460
2009-2	103,182,521	1.1070	114,223,051	922	123,886
2009-3	97,698,978	1.1140	108,836,661	865	125,823
2009-4	82,156,561	1.1220	92,179,662	729	126,447
2010-1	91,043,773	1.1300	102,879,464	830	123,951
2010-2	86,204,677	1.1370	98,014,718	785	124,860
2010-3	107,690,040	1.1440	123,197,406	1,068	115,353
2010-4	92,042,721	1.1520	106,033,214	894	118,605
2011-1	74,494,675	1.1610	86,488,318	725	119,294
2011-2	69,660,327	1.1700	81,502,583	673	121,103
2011-3	61,833,553	1.1790	72,901,759	612	119,121
2011-4	55,032,980	1.1880	65,379,181	556	117,588
2012-1	67,307,044	1.2000	80,768,453	668	120,911
2012-2	96,353,497	1.2090	116,491,378	963	120,967
2012-3	71,482,155	1.2200	87,208,229	769	113,405
2012-4	83,991,264	1.2310	103,393,245	865	119,530
2013-1	86,063,517	1.2430	106,976,951	883	121,152
2013-2	81,371,404	1.2560	102,202,483	839	121,815
2013-3	63,384,479	1.2680	80,371,520	656	122,518
2013-4	57,168,280	1.2810	73,232,567	589	124,334
2014-1	51,095,441	1.2940	66,117,500	529	124,986
2014-2	61,810,770	1.3060	80,724,866	673	119,948
2014-3	48,734,999	1.3220	64,427,669	509	126,577
2014-4	46,984,326	1.3360	62,771,060	482	130,230
2015-1	49,036,737	1.3550	66,444,779	469	141,673
2015-2	43,087,708	1.3750	59,245,599	438	135,264
2015-3	41,370,002	1.3960	57,752,523	414	139,499
2015-4	43,779,046	1.4170	62,034,909	455	136,340
2016-1	44,826,178	1.4410	64,594,522	459	140,729
2016-2	44,839,756	1.4640	65,645,403	439	149,534
2016-3	48,963,338	1.4830	72,612,630	469	154,824
2016-4	51,987,335	1.5090	78,448,889	551	142,375
2017-1	55,519,661	1.5380	85,389,238	563	151,668
2017-2	51,722,512	1.5740	81,411,234	545	149,378
2017-3	54,706,957	1.6160	88,406,442	543	162,811
2017-4	53,477,351	1.6630	88,932,835	546	162,881
2018-1	51,736,696	1.7000	87,952,382	535	164,397
2018-2	47,850,652	1.7390	83,212,284	513	162,207
2018-3	47,784,247	1.7800	85,055,960	502	169,434
2018-4	47,668,695	1.8280	87,138,374	507	171,871
2019-1	38,860,830	1.8940	73,602,412	462	159,313
2019-2	52,031,680	1.9950	103,803,202	613	169,336
2019-3	48,027,032	2.1550	103,498,254	630	164,283
2019-4	44,455,987	2.5720	114,340,797	684	167,165
2020-1	26,140,003	4.2560	111,251,853	681	163,365
2020-2	7,755,000	8.9230	69,197,865	684	101,166
Total	3,940,424,651	1.3095	5,159,895,403	39,358	131,102
				Average 5 Years	156,823

Part E Compensation

Calculation of Payment Pattern

t (qtr)	% Ultimate	Cumulative % Paid by Quarter	t (yr)	Cumulative % Paid by Year	Incremental % Paid by Year	Prior % of Ultimate Paid
			1	0.3000	0.29997	0.31485
53	0.952381	0.112	2	0.5345	0.23455	0.22560
52	0.94697	0.235	3	0.5959	0.06133	0.06176
51	0.940734	0.389	4	0.6556	0.05978	0.05992
50	0.934579	0.464	5	0.6998	0.04414	0.04579
49	0.928505	0.501	6	0.7426	0.04279	0.04188
48	0.921659	0.528	7	0.7769	0.03439	0.03522
47	0.915751	0.547	8	0.8082	0.03123	0.03055
46	0.909918	0.562	9	0.8376	0.02942	0.02820
45	0.903342	0.575	10	0.8646	0.02695	0.02756
44	0.897666	0.588	11	0.8883	0.02380	0.02538
43	0.891266	0.601	12	0.9127	0.02432	0.02329
42	0.884956	0.619	13	0.9377	0.02503	0.01987
41	0.879507	0.635	14	0.9524	0.01468	0.01115
40	0.874126	0.650	15	1	0.00433	0.00445
39	0.868056	0.663	16		0.00433	0.00445
38	0.861326	0.674	17		0.00433	0.00445
37	0.854701	0.683	18		0.00433	0.00445
36	0.848176	0.694	19		0.00433	0.00445
35	0.841751	0.706	20		0.00433	0.00445
34	0.833333	0.716	21		0.00433	0.00445
33	0.82713	0.727	22		0.00433	0.00445
32	0.819672	0.738	23		0.00433	0.00445
31	0.812348	0.749	24		0.00433	0.00445
30	0.804505	0.756	25		0.00433	0.00445
29	0.796178	0.766				
28	0.788644	0.773				
27	0.78064	0.781				
26	0.772798	0.789				
25	0.765697	0.796				
24	0.75643	0.805				
23	0.748503	0.812				
22	0.738007	0.820				
21	0.727273	0.827				
20	0.716332	0.833				
19	0.705716	0.842				
18	0.693963	0.848				
17	0.68306	0.855				
16	0.674309	0.861				
15	0.662691	0.868				
14	0.650195	0.874				
13	0.635324	0.880				
12	0.618812	0.885				
11	0.601323	0.891				
10	0.588235	0.898				
9	0.575043	0.903				
8	0.561798	0.910				
7	0.547046	0.916				
6	0.527983	0.922				
5	0.501253	0.929				
4	0.464037	0.935				
3	0.388802	0.941				
2	0.234962	0.947				
1	0.11207	0.952				

Part E Compensation

Cumulative Payments by Approval Quarter

Approval Quarter	10	11	12	13	14	15	16	17	18	19
Prior	561,976,793	586,300,993	605,211,792	619,218,204	631,690,953	643,680,231	658,581,332	670,059,886	682,693,355	692,825,525
20072	135,840,513	138,798,320	141,775,734	144,732,287	147,727,366	149,666,825	152,179,515	154,335,525	155,808,025	156,868,137
20073	125,810,943	128,785,626	131,226,522	132,489,022	134,506,002	137,543,326	140,433,326	141,953,191	143,323,397	145,870,897
20074	114,472,934	116,399,286	118,246,740	119,723,912	120,943,849	123,479,460	125,144,061	126,328,037	127,327,010	128,789,672
20081	86,675,102	87,752,559	90,065,736	91,597,162	92,953,638	94,009,854	94,804,757	95,810,590	96,300,174	97,210,322
20082	100,605,837	102,028,337	104,103,797	105,426,565	106,324,065	107,281,565	108,351,565	109,208,929	109,823,929	110,248,929
20083	105,688,610	107,023,786	108,520,691	109,993,181	111,517,236	112,872,321	113,344,821	114,124,226	115,003,440	116,191,833
20084	108,383,048	109,585,559	110,685,376	111,797,876	113,210,376	114,230,473	115,544,900	116,108,260	116,955,760	118,012,400
20091	78,813,095	80,200,852	80,923,352	81,647,828	82,540,328	83,995,328	84,650,328	85,122,828	86,035,328	86,842,828
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	84,879,997
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	
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		
20162	39,199,975	40,354,975	41,714,934	42,669,599	43,684,599	44,417,256	44,839,756			
20163	42,835,838	43,923,338	45,415,838	46,918,338	48,045,838	48,963,338				
20164	48,200,094	49,389,835	50,459,835	51,134,835	51,987,335					
20171	51,820,661	53,338,161	54,109,661	55,519,661						
20172	48,297,512	49,995,012	51,722,512							
20173	52,986,957	54,706,957								
20174	53,477,351									
20181										
20182										
20183										
20184										
20191										
20192										
20193										
20194										
20201										
20202										
	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	1.022	1.020	1.018	1.016	1.014	1.013	1.013	1.012	1.012	1.012
Wtd Avg	1.025	1.022	1.018	1.016	1.015	1.015	1.013	1.012	1.012	1.011
20 Qtr	1.028	1.025	1.021	1.019	1.016	1.014	1.016	1.014	1.015	1.014
12 Qtr	1.029	1.027	1.023	1.019	1.017	1.013	1.016	1.017	1.015	1.015
Selected	1.029	1.027	1.023	1.019	1.017	1.013	1.016	1.017	1.015	1.015
Prior Select	1.028	1.027	1.023	1.019	1.017	1.015	1.018	1.014	1.015	1.014
Age-to-Ultimate	1.663	1.616	1.574	1.538	1.509	1.483	1.464	1.441	1.417	1.396

Part E Compensation
Cumulative Payments by Approval Quarter

Approval Quarter	20	21	22	23	24	25	26	27	28	29
Prior	700,458,010	710,605,509	720,522,932	728,874,726	736,393,907	742,738,235	749,184,574	755,332,623	761,199,329	767,720,475
20072	158,796,383	160,763,201	162,203,201	164,340,701	166,430,701	167,994,451	170,149,451	171,379,578	172,109,578	173,985,581
20073	147,334,465	149,500,004	150,713,465	152,363,985	153,743,921	155,237,716	156,595,355	157,616,251	158,591,834	159,914,575
20074	129,867,156	131,405,726	132,799,717	133,956,676	135,529,176	136,346,101	137,612,120	139,596,488	141,469,454	142,969,223
20081	98,024,300	98,956,800	99,695,813	100,758,313	101,345,616	102,205,616	103,173,116	103,695,616	104,587,655	105,799,381
20082	110,905,018	111,629,018	112,392,939	113,147,803	114,299,072	115,169,072	115,802,300	116,333,134	116,763,224	117,495,846
20083	117,202,953	117,962,953	118,405,453	118,762,953	119,560,453	120,372,953	121,044,171	121,984,171	122,753,386	123,609,636
20084	118,998,179	120,327,012	121,362,012	122,107,012	123,178,208	123,715,708	124,663,208	125,543,208	126,306,958	127,044,458
20091	87,392,828	87,962,828	88,412,915	89,279,894	90,266,277	91,363,777	92,268,777	92,963,834	93,343,834	93,992,584
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	
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		
20134	52,634,904	53,759,904	54,434,516	55,429,441	56,215,780	56,855,780	57,168,280			
20141	47,751,466	48,675,441	49,217,941	49,642,941	50,517,941	51,095,441				
20142	58,775,770	59,978,270	60,535,770	61,350,770	61,810,770					
20143	46,294,999	46,992,499	48,109,999	48,734,999						
20144	46,151,826	46,724,326	46,984,326							
20151	48,419,388	49,036,737								
20152	43,087,708									
20153										
20154										
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20192										
20193										
20194										
20201										
20202										
	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	1.012	1.011	1.011	1.009	1.009	1.009	1.009	1.010	1.008
Wtd Avg	1.013	1.012	1.011	1.010	1.009	1.009	1.009	1.008	1.009	1.008
20 Qtr	1.014	1.015	1.011	1.011	1.009	1.010	1.010	1.009	1.009	1.008
12 Qtr	1.015	1.014	1.011	1.012	1.009	1.010	1.010	1.010	1.010	1.010
Selected	1.015	1.014	1.011	1.012	1.009	1.010	1.010	1.010	1.010	1.010
Prior Select	1.014	1.015	1.011	1.012	1.009	1.010	1.010	1.010	1.010	1.009
Age-to-Ultimate	1.375	1.355	1.336	1.322	1.306	1.294	1.281	1.268	1.256	1.243

Part E Compensation

Cumulative Payments by Approval Quarter

Approval Quarter	30	31	32	33	34	35	36	37	38	39
Prior	774,574,054	779,982,557	785,305,179	790,390,441	796,043,330	800,861,292	807,030,374	812,015,520	819,433,309	824,608,808
20072	175,560,581	176,943,081	178,473,081	180,177,007	182,495,444	184,495,444	186,298,280	187,348,697	189,221,113	190,947,235
20073	161,661,917	163,365,192	164,585,192	165,792,713	167,557,713	168,850,606	171,543,106	173,596,423	175,125,714	176,628,214
20074	143,596,723	144,416,132	145,833,491	146,560,991	148,073,491	149,818,491	150,744,216	152,255,466	153,722,966	154,602,808
20081	106,191,881	107,067,715	107,845,215	109,037,667	109,832,667	110,712,418	111,852,418	113,073,452	114,103,452	114,880,952
20082	117,841,051	118,799,166	120,104,166	121,376,666	122,161,666	123,044,166	123,665,631	124,655,889	125,333,389	126,171,924
20083	124,426,719	124,926,719	126,384,219	127,303,802	127,818,802	128,505,870	129,452,979	130,382,496	131,055,283	132,240,183
20084	127,834,052	128,626,552	130,031,552	130,953,280	131,487,030	132,379,530	132,725,986	133,548,486	134,564,372	135,169,372
20091	94,480,373	95,034,150	95,575,690	96,825,170	97,960,170	98,662,670	99,667,670	100,137,616	100,817,616	101,477,616
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	
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		
20112	66,832,410	67,386,160	67,773,660	68,343,660	68,678,660	69,301,160	69,660,327			
20113	58,806,053	59,563,553	60,233,553	60,931,053	61,556,053	61,833,553				
20114	53,023,691	53,588,191	54,210,691	54,532,980	55,032,980					
20121	65,799,544	66,544,544	67,059,544	67,307,044						
20122	94,604,997	95,402,497	96,353,497							
20123	70,714,655	71,482,155								
20124	83,991,264									
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	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	1.009	1.008	1.009	1.008	1.008	1.009	1.008	1.007	1.007
Wtd Avg	1.008	1.009	1.008	1.009	1.007	1.008	1.008	1.008	1.007	1.007
20 Qtr	1.008	1.009	1.008	1.009	1.008	1.008	1.009	1.008	1.007	1.007
12 Qtr	1.009	1.010	1.007	1.010	1.008	1.007	1.008	1.008	1.007	1.006
Selected	1.009	1.010	1.007	1.010	1.008	1.007	1.008	1.008	1.007	1.006
Prior Select	1.008	1.009	1.008	1.009	1.008	1.008	1.008	1.008	1.007	1.008
Age-to-Ultimate	1.231	1.220	1.209	1.200	1.188	1.179	1.170	1.161	1.152	1.144
Prior Age-to-Ultimate	1.220	1.211	1.200	1.190	1.180	1.171	1.161	1.152	1.143	1.135

Part E Compensation

Cumulative Payments by Approval Quarter

Approval Quarter	40	41	42	43	44	45	46	47	48	49	50	51	52	53
Prior	831,371,237	837,397,993	843,116,978	848,811,353	854,990,702	862,652,749	869,086,592	874,216,311	881,178,513	887,628,806	894,276,990	899,596,619	905,000,428	933,887,615
20072	192,929,777	194,761,819	196,921,675	198,748,342	199,534,592	200,704,592	202,593,758	204,399,761	205,988,264	207,784,043	208,886,633	210,196,245	211,564,995	
20073	177,872,939	178,931,702	180,599,202	182,024,202	183,461,379	185,123,879	186,094,113	187,661,356	188,768,856	189,976,997	190,666,997	192,358,872		
20074	155,566,558	156,715,258	157,869,789	159,232,289	160,011,039	161,424,964	162,484,171	163,669,067	165,189,591	166,136,934	166,995,684			
20081	115,448,452	116,098,452	116,795,739	117,447,669	118,567,690	118,982,690	119,845,190	120,425,190	121,288,940	121,698,134				
20082	127,218,764	127,880,100	128,825,100	129,537,564	130,129,464	131,096,964	131,669,464	131,901,964	132,389,803					
20083	132,855,008	133,702,508	134,102,340	135,359,840	136,071,772	136,581,397	137,170,495	137,641,510						
20084	136,579,462	137,272,751	137,845,757	138,511,812	139,514,312	139,749,312	140,334,312							
20091	102,174,115	102,816,615	103,448,454	103,905,954	104,580,954	105,025,954								
20092	100,522,187	101,144,687	101,684,687	102,605,021	103,182,521									
20093	95,610,801	96,355,801	97,125,801	97,698,978										
20094	81,325,833	81,919,583	82,156,561											
20101	90,543,773	91,043,773												
20102	86,204,677													
20103														
20104														
20111														
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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		
Average	1.007	1.006	1.007	1.006	1.006	1.006	1.006	1.007	1.006	1.005	1.008	1.007		
Wtd Avg	1.007	1.007	1.007	1.007	1.007	1.007	1.006	1.007	1.007	1.006	1.006	1.006		
20 Qtr	1.007	1.006	1.007	1.006	1.006	1.006	1.006	1.007	1.006	1.005	1.008	1.007		
12 Qtr	1.007	1.006	1.007	1.007	1.007	1.007	1.006	1.007	1.007	1.006	1.006	1.006		
Selected	1.007	1.006	1.007	1.007	1.007	1.007	1.006	1.007	1.007	1.006	1.006	1.006	1.050	
Prior Select	1.007	1.007	1.007	1.006	1.006	1.006	1.007	1.005	1.005	1.004	1.004	1.004	1.053	
Age-to-Ultimate	1.137	1.130	1.122	1.114	1.107	1.099	1.092	1.085	1.077	1.070	1.063	1.056	1.050	

Appendix 4: Undiscounted Liability Estimate

As of 9/30/2020, the **undiscounted** liability for future EEOICPA benefit payments is projected at \$55.4 billion. The future compensation payments are projected at \$11.1 billion, and the future medical payments are projected at \$44.3 billion, on an undiscounted basis.

ESTIMATED LIABILITY FOR EEOICPA AS OF SEPTEMBER 30, 2020

SUMMARY OF LIABILITY FOR FUTURE PAYMENTS (\$ Millions)

	Undiscounted Estimate as of 9/30/2020
Compensation: Part B	\$ 4,048
Compensation: Part E	7,030
Compensation: Total	11,079
Medical Payments	44,302
Total Future Payments	\$ 55,380

**ESTIMATED LIABILITY FOR EEOICPA
AS OF SEPTEMBER 30, 2020**

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)
2021	\$ 261,902,311	\$ 403,300,174	\$ 14,311,495	\$ 679,513,981	\$ 1,033,268,375	\$ 1,712,782,355
2022	249,974,126	401,196,871	13,480,353	664,651,350	1,097,422,489	1,762,073,838
2023	238,501,783	401,583,360	12,697,480	652,782,622	1,155,999,854	1,808,782,476
2024	224,213,240	395,263,360	11,960,072	631,436,672	1,216,316,849	1,847,753,521
2025	210,020,517	382,637,020	11,265,490	603,923,026	1,267,947,033	1,871,870,059
2026	195,880,514	364,759,396	10,611,245	571,251,155	1,312,313,753	1,883,564,907
2027	180,996,918	342,066,487	9,994,996	533,058,401	1,344,308,826	1,877,367,227
2028	169,752,970	324,276,604	9,414,535	503,444,109	1,365,556,445	1,869,000,555
2029	159,259,716	310,513,100	8,867,785	478,640,601	1,379,728,369	1,858,368,970
2030	149,464,872	294,877,597	8,352,787	452,695,257	1,387,410,474	1,840,105,731
2031	140,319,883	277,043,776	7,867,698	425,231,357	1,389,148,857	1,814,380,215
2032	131,779,653	259,412,630	7,410,781	398,603,063	1,385,444,161	1,784,047,224
2033	123,802,293	242,132,156	6,980,399	372,914,848	1,376,748,710	1,749,663,558
2034	116,348,894	225,358,457	6,575,011	348,282,362	1,363,466,001	1,711,748,364
2035	109,383,308	209,511,327	6,193,167	325,087,802	1,345,962,984	1,671,050,786
2036	102,871,951	194,474,689	5,833,498	303,180,138	1,324,590,874	1,627,771,012
2037	96,783,619	180,093,009	5,494,717	282,371,345	1,299,702,835	1,582,074,180
2038	91,089,312	166,401,506	5,175,611	262,666,429	1,271,666,724	1,534,333,153
2039	85,762,084	154,294,255	4,875,036	244,931,375	1,240,878,380	1,485,809,756
2040	80,776,887	143,595,027	4,591,918	228,963,831	1,207,765,657	1,436,729,488
2041	76,110,439	133,805,504	4,325,242	214,241,185	1,172,780,807	1,387,021,993
2042	71,741,097	124,421,950	4,074,053	200,237,101	1,136,389,203	1,336,626,303
2043	67,648,740	115,722,767	3,837,452	187,208,959	1,099,053,773	1,286,262,732
2044	63,814,656	107,509,696	3,614,591	174,938,944	1,061,217,542	1,236,156,486
2045	60,221,447	99,473,605	3,404,674	163,099,726	1,023,287,397	1,186,387,123
After 2045 ⁵	377,658,870	776,653,923	21,004,466	1,175,317,259	13,043,205,563	14,218,522,822
Total Future	3,836,080,099	7,030,378,248	212,214,552	11,078,672,899	44,301,581,933	55,380,254,832

⁵ Reflects projected cash flow through 2080

Appendix 5: Ranges

We have calculated a range of reasonable estimates 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, we varied key assumptions 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 we consider 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.

We have also calculated a range around next year's hindsight value as well as the cash flow for FY 2021, 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 9/30/2020	\$ 31,216	\$ 37,521	\$ 71,148
Difference from estimated	-17%		90%
<u>Projections for 2021</u>			
Cash Flow (7/1/2020 - 6/30/2021)	1,542	1,713	1,884
Hindsight Liability Estimate for 9/30/2020 as of 9/30/2021	36,266	37,521	44,214

EEOICPA Liability Report as of 9/30/2020
Reasonable Range of Liability Estimates

	Assumption			Liability Estimate as of 9/30/2020 (\$millions)			Difference from Base (\$ millions)	
	Low ¹	Base	High ¹	Low	Base	High	Diff: Low	Diff: High
Benefit Payments								
1. Medical Inflation ²	3.9% all yrs	varies yrs 1-5 3.9% yrs 6+	10.0% yrs 1-5 8.0% yrs 6+	33,953	37,521	64,968	(3,568)	27,447
2. Part E avg benefit	\$141,000	\$156,823	\$173,000	36,969	37,521	38,086	(552)	565
Quarterly Decay of IBNR claims								
3. B: RECA	na	1.5%	na	37,378	37,521	37,664	(143)	143
4. B: BD	na	1.0%	na	37,636	37,521	37,406	115	(115)
5. B: BS	na	0.2%	na	37,509	37,521	37,533	(12)	12
6. B: CS	2.0%	0.0%	increase then decay	37,471	37,521	38,722	(50)	1,201
7. B: CN SEC	na	1.8%	na	36,198	37,521	38,844	(1,323)	1,323
8. B: CN NonSEC	na	0.9%	na	36,850	37,521	38,192	(671)	671
9. Part E ²	2.0%	0.0%	increase then decay	34,341	37,521	56,784	(3,180)	19,263
10. Mortality	10% higher	RP-14 Disabled Male	10% lower	36,703	37,521	38,523	(818)	1,002
Approvals for Both Parts								
11. %B already E	10.9%	10.4%	9.9%	37,469	37,521	37,587	(52)	66
12. %E already B	0.8%	0.7%	0.6%	37,503	37,521	37,540	(18)	19
13. % EB approved in same yr	80.0%	79.0%	78.0%	37,403	37,521	37,653	(118)	132
Percent filed by employee								
14. RECA (Part B)	53%	59%	67%	37,512	37,521	37,533	(9)	12
15. BD (Part B)	66%	74%	82%	37,518	37,521	37,525	(3)	4
16. BS (Part B)	95%	100%	100%	37,515	37,521	37,521	(6)	-
17. CS (Part B)	69%	94%	100%	37,429	37,521	37,543	(92)	22
18. CN SEC (Part B)	41%	55%	65%	37,420	37,521	37,598	(101)	77
19. CN Non SEC (Part B)	61%	75%	82%	37,463	37,521	37,558	(58)	37
20. Part E	66%	83%	88%	33,824	37,521	38,676	(3,697)	1,155
a. Reasonable Range: combination of assumptions ³				31,216	37,521	71,148	(6,305)	33,627
b. Percent Difference from Base				-17%		90%		

Notes

- 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 9/30/2020 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.