



## **Estimate of EEOICPA Liabilities**

Liability Estimate as of September 30, 2017

Report prepared for:

U.S. Department of Labor

Office of Workers' Compensation Programs

Report Date: November 10, 2017



November 10, 2017

Mr. Hari Kadavath  
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, 2017

Dear Mr. Kadavath:

Attached is the actuarial report documenting our analysis of the EEOICPA liabilities as of September 30, 2017. 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](mailto:chris.gross@cgconsult.com).

Sincerely,

Chris Gross, ACAS, MAAA  
President and CEO

Jennifer Nelson  
Senior Vice President

CG/jn  
Enclosure

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## Introduction

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

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

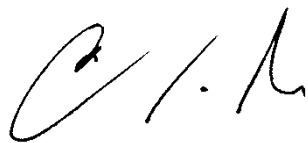
With the guidance of OWCP staff, we have updated the EEOICPA liability model for fiscal year 2017. We have made several adjustments to the model assumptions and believe that the updated assumptions contained in the model are reasonable, and that the calculations performed in the model are mathematically correct.

## 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 estimate the Energy Employees’ Occupational Illness Compensation Program (“EEOICP”) actuarial liability 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, 2017, 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 9/30/2017, the discounted liability estimate for future EEOICPA benefit payments is \$19.98 billion. The future medical payments are projected at \$14.1 billion, and the future compensation payments are projected at \$5.8 billion, on a discounted basis. The discount rates used were 2.395% for compensation and 2.897% for medical.

### **ESTIMATED LIABILITY FOR EEOICPA AS OF SEPTEMBER 30, 2017**

#### **SUMMARY OF LIABILITY FOR FUTURE PAYMENTS (\$ Millions)**

	Discounted Estimate as of 9/30/2017
Compensation: Part B	\$ 2,942
Compensation: Part E	2,894
Compensation: Total	5,836
Medical Payments	14,144
Total Future Payments	\$ 19,980

### **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, 2017**

### **SUMMARY OF ESTIMATED DISCOUNTED FUTURE PAYMENTS BY YEAR**

<b>Fiscal Year</b>	<b>Compensation Part B Discounted Payments</b>	<b>Compensation Part E Discounted Payments</b>	<b>Compensation DOJ RECA Discounted Payments</b>	<b>Compensation Total Discounted Payments</b>	<b>Medical Total Discounted Payments</b>	<b>Total Discounted Payments</b>
(1)	(2)	(3)	(4)	(5)	(6)	(7)
2018	\$ 271,398,743	\$ 284,284,751	\$ 14,825,453	\$ 570,508,948	\$ 643,701,846	\$ 1,214,210,793
2019	246,762,852	245,991,481	12,970,696	505,725,029	650,728,067	1,156,453,096
2020	224,423,710	221,598,465	11,347,981	457,370,156	653,348,076	1,110,718,232
2021	204,155,369	201,084,340	9,928,278	415,167,987	651,812,438	1,066,980,424
2022	185,756,441	183,500,118	8,686,189	377,942,748	646,421,479	1,024,364,227
2023	169,046,986	167,250,984	7,599,492	343,897,462	631,500,676	975,398,138
2024	153,865,863	152,067,154	6,648,748	312,581,766	613,719,380	926,301,147
2025	140,068,484	138,896,641	5,816,948	284,782,073	593,551,414	878,333,488
2026	127,524,880	127,959,097	5,089,212	260,573,188	571,478,686	832,051,874
2027	116,118,038	118,001,226	4,452,520	238,571,784	547,980,950	786,552,733
2028	105,742,466	108,656,530	3,895,482	218,294,478	523,518,427	741,812,905
2029	96,302,936	100,167,268	3,408,133	199,878,337	498,517,773	698,396,110
2030	87,713,398	92,870,160	2,981,754	183,565,311	473,362,445	656,927,756
2031	79,896,014	83,106,699	2,608,718	165,611,431	448,386,512	613,997,943
2032	72,780,320	73,850,423	2,282,351	148,913,095	423,872,997	572,786,091
2033	66,302,478	65,873,939	1,996,815	134,173,232	400,051,731	534,224,964
2034	60,404,615	59,046,818	1,747,001	121,198,434	377,096,894	498,295,329
2035	55,034,235	53,026,505	1,528,440	109,589,180	355,131,698	464,720,879
2036	50,143,696	47,725,604	1,337,223	99,206,522	334,236,373	433,442,895
2037	45,689,741	42,819,616	1,169,928	89,679,285	314,453,051	404,132,336
2038	32,720,914	38,164,522	1,023,563	71,908,999	295,593,844	367,502,843
2039	29,809,628	34,294,219	895,508	64,999,356	277,652,789	342,652,144
2040	27,158,559	30,950,870	783,475	58,892,903	260,810,055	319,702,958
2041	24,744,268	27,869,069	685,457	53,298,794	245,016,910	298,315,704
2042	22,545,458	24,928,900	599,702	48,074,060	230,217,117	278,291,177
After 2042 <sup>1</sup>	129,487,816	169,908,463	2,044,088	301,440,367	2,481,732,841	2,783,173,209
Total	\$ 2,825,597,908	\$ 2,893,893,861	\$ 116,353,155	\$ 5,835,844,925	\$ 14,143,894,469	\$ 19,979,739,394

<sup>1</sup> Reflects projected cash flow through FY 2076

## Model Changes for 2017

The following changes in assumptions were made to the EEOICPA model this year:

Assumption	Impact on 9/30/2017 Discounted Liability Estimate (\$billions)
<p><b>1. Medical Inflation</b></p> <p>The medical inflation rates have been increased from 5% to 6% for the next five years and from 3.9% to 5.0% for subsequent years, based on the increases in medical costs observed over the past two years. Additionally, the average medical cost for FY 2018 is calculated by applying the medical inflation rate to the average medical cost for FY 2017, rather than applying the inflation to a historical trended average.</p>	\$ 4.3
<p><b>2. Decay assumptions for new entrants</b></p> <p>The model assumes that the number of newly approved cases will decrease each year at an exponential rate. We have refit the decay parameters to incorporate FY 2017 data. The largest driver of the increase in liability was the change in decay rate for Part B Cancer approved cases (both SEC and non-SEC). Previously the quarterly decay rate was 2.1%. This year we have reduced the decay rate to 1.7% per quarter.</p>	1.0
<p><b>3. Part E average payment and payment pattern</b></p> <p>The Part E average compensation payment per case has increased from \$135,509 to \$142,114 and the payment pattern (the percent of the Part E compensation paid out in each year following the approval) has been updated to reflect recent history.</p>	0.3
<p><b>4. Percent of cases filed by employee</b></p> <p>The percent of approved cases filed by an employee is selected this year by averaging the past five years of history<sup>2</sup>.</p> <p>Additionally, the EEOICPA model was updated this year to separate the history and the projections onto different tabs. This change was made to improve the ease of refreshing and auditing the model each year – there was no numerical impact from the model structure change.</p>	(0.2)

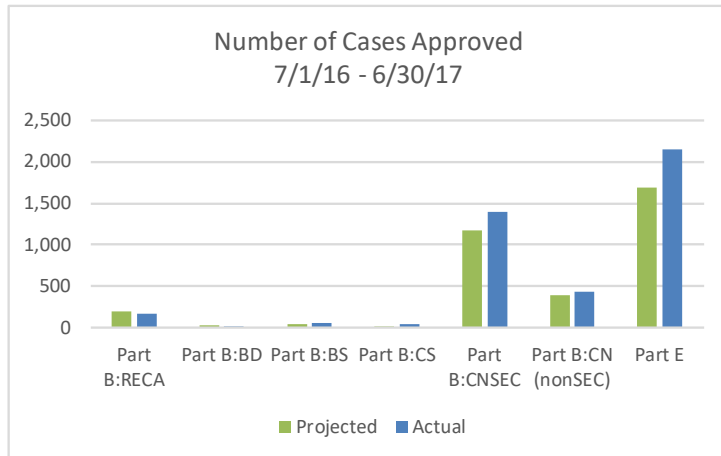
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<sup>2</sup> The exception is Part B Cancer SEC cases, for which there appears to be an upward trend in the number of approved cases filed by an employee.

# Actual vs Projected

## Number of Cases Approved

Overall, there were 21% more cases newly approved than what was projected. The decay rate for the Part B cancer cases has been decreased based on recent history.



### **Total Approved 7/1/16 to 6/30/17**

	<u>Projected</u>	<u>Actual</u>	<u>Diff</u>	<u>%Diff</u>
Part B:RECA	194	171	(23)	-12%
Part B:BD	28	22	(6)	-21%
Part B:BS	52	56	4	8%
Part B:CS	8	45	37	483%
Part B:CNSEC	1,167	1,400	233	20%
Part B:CN (nonSEC)	390	441	51	13%
Part E	1,686	2,146	460	27%
Part B	1,839	2,135	296	16%
Part E	<u>1,686</u>	<u>2,146</u>	<u>460</u>	<u>27%</u>
Total	3,525	4,281	756	21%



## Cash Flow

The projected range for cash flow from 7/1/2016 to 6/30/2017<sup>3</sup> was \$994 million - 1.116 billion. The actual cash flow during this period was \$1.223 billion, or 9.6% above the range.

The main drivers of the variance were higher-than-projected medical costs and an increased number of new cases approved during FY 2017.

<b>Payments 7/1/16 - 6/30/17</b>				
	<u>Projected</u>	<u>Actual</u>	<u>Difference</u>	<u>%Diff</u>
Compensation Payments	\$528,561,638	\$603,538,333	\$74,976,695	14%
Medical Payments	<u>510,019,626</u>	<u>619,877,686</u>	<u>109,858,060</u>	<u>22%</u>
Total	1,038,581,264	1,223,416,019	184,834,755	18%
			Difference in	
	<u>Projected</u>	<u>Actual</u>	<u>Payments</u>	
New cases approved	3,525	4,281	78,760,281	
Average medical expense	\$28,432	\$34,131	<u>103,150,431</u>	
			\$181,910,712	

## Hindsight Opinion

The hindsight opinion adjusts the current liability estimate to be consistent with the liability estimate as of 9/30/2016, removing additional exposure that was not included in the previous estimate, discounting back to the previous date, and adding payments made between the previous date and the current date. The current hindsight estimate for liability as of 9/30/2016 is \$18.8 billion, which is above the threshold range of \$14.7 – 17.4 billion.

## **Calculation of 9/30/2016 Hindsight Liability Opinion**

(\$000)

Current Estimated Liability as of 9/30/17	\$ 19,979,739
Minus liability for additional exposure since 9/30/16	(1,774,536)
Discount back to 9/30/16	(527,405)
Plus payments in 2017 (not including exposure for 10/1/16 - 9/30/17)	<u>1,144,774</u>
Hindsight Liability Estimate as of 9/30/16	\$ 18,822,573

The liability for additional exposure since 9/30/2016 was estimated at 8.9% of the total liability. This assumption is based on an annual 1% rate of increase over time in the number of claimants, a 2% quarterly decay rate in new approvals for a given group of claimants per year, and a 7% mortality rate.

The largest driver of the increase in hindsight opinion is the increase in the expected medical costs.

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<sup>3</sup> Because the full 2017 fiscal year payments are not yet known at the time the liability report is published, the period from 7/1/2016 to 6/30/2017 is chosen as the comparison period.

# 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
3. Estimate the average compensation payout per case
4. Determine the payout patterns to determine the compensation cash flow by year

## **Medical Benefits**

5. Estimate the percentage of cases eligible for medical benefits
  6. Remove double counting – claimants 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 participants 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 9/30/2017

These steps are described in detail in the next sections.

# 1: Organize and Aggregate the Data

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The EEOICPA analysis is performed using detailed claim-level data extracts provided by the DOL. Data provided includes information on medical payments by claim and 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, and survivor information.

The data provided for this analysis consists of a series of text data files that were imported into a Microsoft Access 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 SQL 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 Statistics<sup>4</sup> (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 as of 6/30/2017		DOL website as of 7/2/2017		Difference between raw data and 7/2/2017 website data	
	# Cases Approved	Payments	# Cases Approved	Payments	# Cases Approved	Payments
Part B Compensation	50,531	6,290,989,927	50,465	6,290,989,927	-0.1%	0.0%
Part E Compensation	43,006	4,080,274,374	42,874	4,080,274,374	-0.3%	0.0%
Medical		3,495,357,323		3,509,446,484		0.4%
Total		13,866,621,624		13,880,710,785		0.1%

<sup>4</sup> 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

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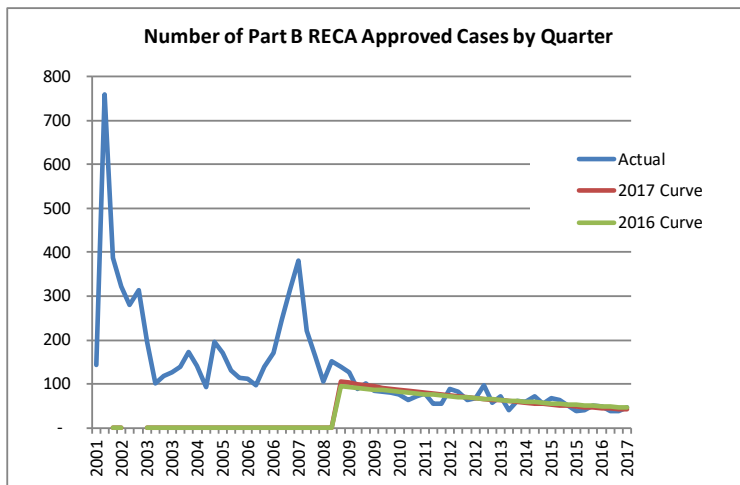
To estimate the number of cases that will be approved in the future, the historical number of approved cases by quarter is determined in total for Part E and by governing disease for Part B. Part B is split out by governing disease because the compensation payment amounts are different by governing disease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

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 appears to be slower in recent quarters than it was in the past.

For the Part B Cancer SEC (Special Exposure Cohort) estimates, we did not fit an exponential decay model, as this cohort of participants is different from the other types. New SEC designations are made periodically and this can cause a spike in the number of new entrants. For the Part B Cancer SEC, we used the same decay factor for the Cancer SEC as for the Cancer Non-SEC and assumed that the number of new entrants for the beginning of fiscal year 2018 would be similar to the number of new entrants at the end of fiscal year 2017. This method does not explicitly assume any future SEC designations.

The exhibits on the following pages show a graph of the quarterly history of approved cases and the modeled fit line. The exponential decay models fit well to the historical data, with the exception of Part B Cancer SEC, as described above.

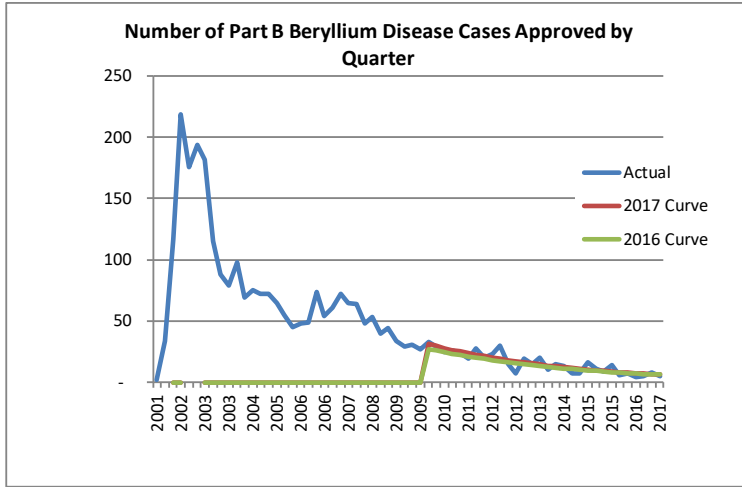
### Part B: RECA



Modeled Decay Rates:

	<u>2016</u>	<u>2017</u>
Quarterly	2.1%	2.7%
Annual	8.2%	10.4%

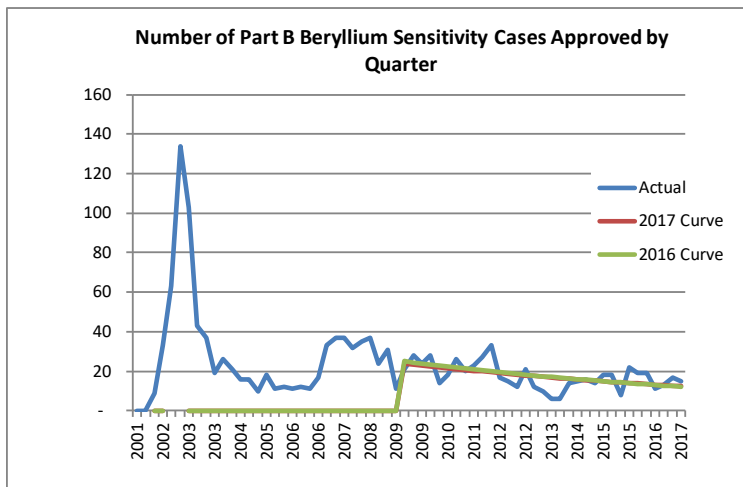
## Part B: Beryllium Disease



Modeled Decay Rates:

	<u>2016</u>	<u>2017</u>
Quarterly	5.0%	5.4%
Annual	18.6%	19.8%

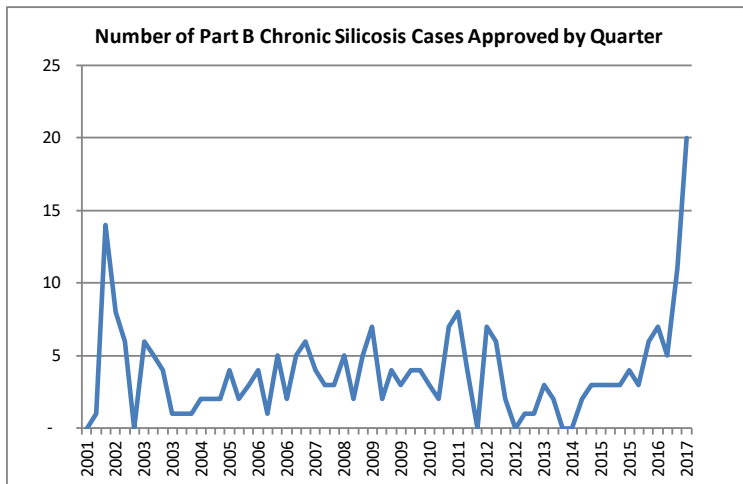
## Part B: Beryllium Sensitivity



Modeled Decay Rates:

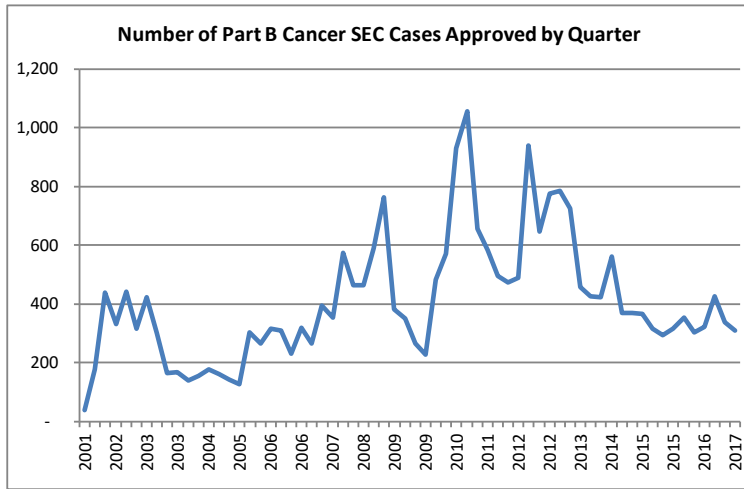
	<u>2016</u>	<u>2017</u>
Quarterly	2.2%	2.0%
Annual	8.6%	7.7%

## Part B: Chronic Silicosis



Due to the recent increase in approved cases, we did not fit a curve to the historical data for Part B Chronic Silicosis. Instead we assumed an average of 14 new cases per quarter in 2018 and a 2% quarterly decay going forward.

**Part B: Cancer SEC**

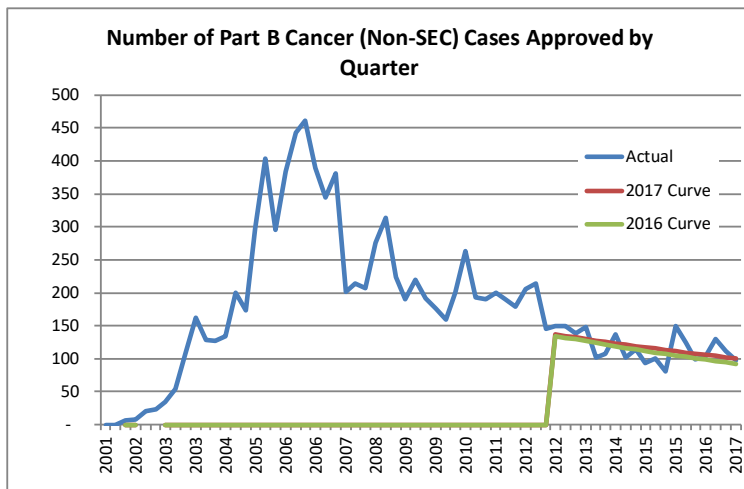


Modeled Decay Rates:

	<u>2016</u>	<u>2017</u>
Quarterly	2.1%	1.7%
Annual	8.0%	6.6%

The Cancer SEC model uses the same decay factors as Cancer Non SEC, and assumes that the number of new entrants for the beginning of fiscal year 2018 will be similar to the number of new entrants at the end of fiscal year 2017. This method does not explicitly assume any future new SEC designations.

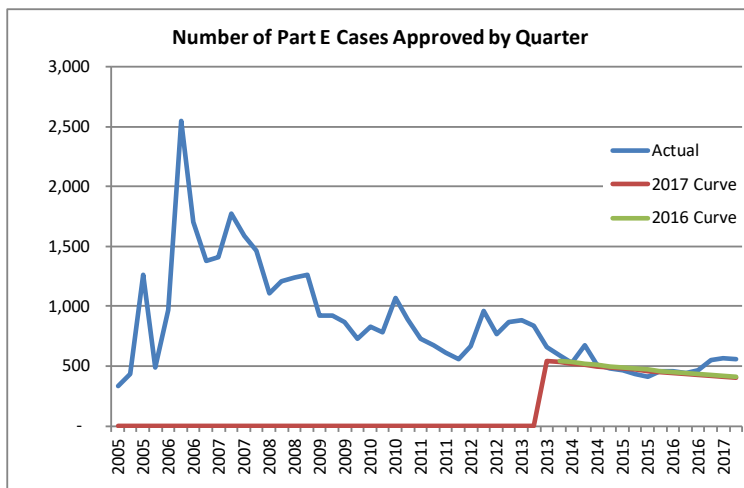
**Part B: Cancer Non-SEC**



Modeled Decay Rates:

	<u>2016</u>	<u>2017</u>
Quarterly	2.1%	1.7%
Annual	8.0%	6.6%

**Part E**



Modeled Decay Rates:

	<u>2016</u>	<u>2017</u>
Quarterly	2.0%	2.0%
Annual	7.8%	7.8%

## NUMBER OF CASES APPROVED BY YEAR

Number of Cases Approved: History										
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)	
2001	143	2	-	-	40	-	185	-	185	
2002	1,751	546	105	29	1,391	36	3,858	-	3,858	
2003	728	579	317	15	1,207	221	3,067	-	3,067	
2004	580	321	82	5	642	551	2,181	-	2,181	
2005	588	264	55	10	740	1,075	2,732	2,034	4,766	
2006	460	216	46	13	1,123	1,582	3,440	5,709	9,149	
2007	1,115	252	124	17	1,337	1,317	4,162	6,152	10,314	
2008	643	205	128	13	2,097	1,010	4,096	5,028	9,124	
2009	453	138	91	18	1,762	826	3,288	3,966	7,254	
2010	324	114	84	14	2,216	799	3,551	3,412	6,963	
2011	267	97	96	21	2,792	773	4,046	2,904	6,950	
2012	288	88	77	15	2,551	745	3,764	2,956	6,720	
2013	295	61	49	5	2,748	586	3,744	3,243	6,987	
2014	233	45	51	4	1,782	449	2,564	2,300	4,864	
2015	236	43	58	12	1,348	390	2,087	1,803	3,890	
2016	180	31	71	20	1,297	476	2,075	1,822	3,897	
2017	163	24	57	51	1,422	437	2,154	2,070	4,223	
Through 2017							50,994	43,399		

Number of Cases Approved: Projected

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)
2018	150	21	47	56	1,325	379	1,977	1,494	3,471
2019	134	17	43	52	1,237	354	1,837	1,378	3,215
2020	120	13	40	48	1,155	331	1,707	1,271	2,978
2021	108	11	37	44	1,079	309	1,587	1,172	2,759
2022	97	9	34	41	1,008	288	1,476	1,081	2,557
2023	87	7	31	38	941	269	1,373	997	2,370
2024	78	6	29	35	879	251	1,277	920	2,197
2025	69	4	27	32	821	235	1,188	848	2,036
2026	62	4	24	29	767	219	1,106	783	1,888
2027	56	3	23	27	716	205	1,029	722	1,751
2028	50	2	21	25	669	191	958	666	1,624
2029	45	2	19	23	624	179	892	614	1,506
2030	40	1	18	21	583	167	831	566	1,397
2031	36	1	16	20	545	156	773	522	1,296
2032	32	1	15	18	509	145	720	482	1,202
2033	29	1	14	17	475	136	671	444	1,116
2034	26	1	13	15	444	127	625	410	1,035
2035	23	0	12	14	414	118	582	378	961
2036	21	0	11	13	387	111	543	349	891
2037	19	0	10	12	361	103	506	322	827
2038	17	0	9	11	337	-	375	297	672
2039	15	0	9	10	315	-	349	274	623
2040	13	0	8	10	294	-	325	252	578
2041	12	0	7	9	275	-	303	233	536
2042	11	0	7	8	257	-	282	215	497
2043	10	0	6	7	240	-	263	198	461
2044	9	0	6	7	224	-	245	183	428
2045	8	0	5	6	209	-	228	169	397
2046	7	0	5	6	195	-	213	155	368
2047	6	0	5	5	182	-	198	143	342
2048	-	-	-	-	170	-	170	132	303
2049	-	-	-	-	159	-	159	122	281
2050	-	-	-	-	149	-	149	113	261
2051	-	-	-	-	139	-	139	104	242



### **3: Estimate the average compensation payment per case**

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#### **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 case develops into Beryllium Disease, it 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 38% 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.

We need a cradle-to-grave cost estimate to apply to future new entrants. Because of the development of payments over time, we employed a triangle squaring approach where we organized the compensation data into a paid triangle by approval quarter and payment quarter. Historical relationships between quarters were then measured and projected forward to determine the ultimate payments by approval quarter from 2005 to the present. There are a number of approved cases for which compensation payments have not been made and appear unlikely to be made in the future. We built a triangle of counts by approval quarter and quarter of first payment, and with it, developed an estimate of the total count of cases from 2005 to the present that will ultimately be paid. The average projected ultimate payment per approved case, excluding projected no-payment cases was \$142,114. We are applying this estimate to projected future new entrants, without projecting no-payment cases. This is a conservative assumption.

Part E Average Compensation	\$142,114
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For more detail on the triangle squaring analysis, see Technical Appendix 3.

## 4: Payout patterns

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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 for both new and existing cases.

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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To determine the payout pattern for Part E benefits, we relied on the triangle squaring analysis described in Section 3.

### Part E Compensation Payout Pattern

<u>Year</u>	<u>% Paid</u>
Year 1	38.0%
Year 2	21.4%
Year 3	6.0%
Year 4	5.3%
Year 5	4.0%
Year 6	3.5%
Year 7	3.1%
Year 8	2.7%
Year 9	2.7%
Year 10	2.7%
Year 11	2.3%
Year 12	1.5%
Years 13-25	0.5%

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

## 5: Estimate the number of cases eligible for medical benefits

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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 claims that were filed by an employee (as long as the employee is still alive).

Historical ratios for the past five years 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). The exception to this is Part B Cancer SEC cases (CN SEC), for which there appears to be an upward trend in the percentage of approved claims filed by an employee.

### % of Approved Cases that were filed by an Employee

	RECA	BD	BS	CS	CN SEC	CN Non SEC	Part E
2001	68%	50%	na	na	45%	na	na
2002	32%	83%	100%	79%	40%	83%	na
2003	37%	71%	100%	73%	32%	45%	na
2004	55%	41%	100%	80%	34%	31%	na
2005	67%	46%	100%	90%	30%	34%	12%
2006	72%	48%	100%	92%	28%	43%	57%
2007	70%	57%	100%	65%	28%	41%	62%
2008	59%	64%	100%	85%	28%	45%	57%
2009	59%	64%	100%	61%	26%	54%	58%
2010	59%	70%	100%	71%	33%	58%	61%
2011	61%	64%	100%	71%	27%	61%	62%
2012	63%	66%	100%	73%	34%	60%	61%
2013	73%	69%	100%	100%	40%	61%	65%
2014	63%	73%	100%	100%	42%	69%	69%
2015	66%	74%	100%	83%	47%	65%	71%
2016	60%	65%	100%	80%	51%	63%	77%
Selected	<b>65%</b>	<b>69%</b>	<b>100%</b>	<b>87%</b>	<b>48%</b>	<b>64%</b>	<b>69%</b>

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

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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.

We assume that 8% 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.

<b>Percent of Part B cases filed by an employee that had previously been accepted as a Part E case</b>		<b>Percent of Part E cases filed by an employee that had previously been accepted as a Part B case</b>	
<b><u>FY</u></b>	<b><u>Percent</u></b>	<b><u>FY</u></b>	<b><u>Percent</u></b>
2005	0.0%	2005	20.5%
2006	1.2%	2006	58.9%
2007	0.8%	2007	30.4%
2008	2.5%	2008	16.1%
2009	5.9%	2009	6.1%
2010	10.2%	2010	1.4%
2011	9.2%	2011	1.4%
2012	10.6%	2012	1.4%
2013	7.9%	2013	0.8%
2014	9.2%	2014	0.6%
2015	9.1%	2015	0.8%
2016	8.6%	2016	0.8%
2017	8.0%	2017	0.7%
<b>Selected</b>	<b>8.0%</b>	<b>Selected</b>	<b>0.7%</b>

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

<b>Percent of Part B cases filed by an employee where Part E is approved in the same year</b>		<b>Percent of Part E cases filed by an employee where Part B is approved in the same year</b>	
<u>FY</u>	<u>Percent</u>	<u>FY</u>	<u>Percent</u>
2005	2.2%	2005	10.9%
2006	71.6%	2006	32.6%
2007	89.0%	2007	46.3%
2008	82.8%	2008	49.4%
2009	80.8%	2009	47.9%
2010	80.1%	2010	60.2%
2011	69.4%	2011	60.8%
2012	74.5%	2012	67.8%
2013	82.1%	2013	69.0%
2014	78.5%	2014	63.9%
2015	79.8%	2015	70.5%
2016	80.3%	2016	67.4%
2017	80.0%	2017	66.4%
<b>Selected</b>	<b>80.0%</b>		

To convert the number of approved employee-filed cases into the number of employee-filed cases eligible for medical benefits, we reduce the number of newly-approved employee-filed Part B cases by 8%, reduce the number of newly-approved employee-filed Part E by 0.7% (as shown on the previous page) and then reduce the newly-approved employee-filed Part B cases by 80% to estimate the total number of cases eligible for medical benefits by year.

## 7: Mortality

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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 approved.

### Average Age of Employee at First Claim Approval Date

<b>Part B</b>		<b>Part E</b>	
<u>FY</u>	<u>Avg Age</u>	<u>FY</u>	<u>Avg Age</u>
2001	71.0		
2002	66.5		
2003	64.5		
2004	68.7		
2005	70.4	2005	69.1
2006	72.2	2006	70.4
2007	70.6	2007	71.1
2008	71.9	2008	70.9
2009	72.8	2009	70.8
2010	72.3	2010	70.7
2011	72.6	2011	71.1
2012	73.3	2012	72.3
2013	70.9	2013	70.2
2014	72.7	2014	71.4
2015	72.8	2015	72.3
2016	73.7	2016	72.5
2017	73.4	2017	72.4
Avg 10-17	72.7	Avg 10-17	71.6

## 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, 2017

#### ESTIMATED NUMBER OF INDIVIDUALS ELIGIBLE FOR MEDICAL EXPENSES IN HISTORICAL YEARS

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	Part E already	EB concurrent	Net new Individuals			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
2001	97	1	-	-	18	-	-	-	-	-	116	(1)	115	115
2002	563	452	105	23	561	30	1	-	-	(1)	1,734	(84)	1,765	940
2003	269	409	317	11	382	100	1	-	-	(1)	1,488	(152)	3,102	2,434
2004	318	133	82	4	219	173	-	-	-	-	929	(196)	3,835	3,468
2005	394	121	55	9	221	367	239	-	(49)	(26)	1,331	(258)	4,907	4,371
2006	329	104	46	12	314	683	3,266	(18)	(1,924)	(1,065)	1,747	(340)	6,314	5,611
2007	782	143	124	11	375	536	3,785	(15)	(1,152)	(1,754)	2,835	(472)	8,678	7,496
2008	378	131	128	11	594	458	2,847	(43)	(458)	(1,407)	2,639	(596)	10,721	9,699
2009	269	88	91	11	462	448	2,311	(81)	(142)	(1,106)	2,351	(707)	12,365	11,543
2010	191	80	84	10	734	460	2,072	(159)	(28)	(1,248)	2,196	(812)	13,749	13,057
2011	162	62	96	15	765	473	1,794	(145)	(26)	(1,091)	2,105	(913)	14,941	14,345
2012	181	58	77	11	862	445	1,796	(173)	(26)	(1,217)	2,014	(1,009)	15,946	15,443
2013	215	42	49	5	1,110	357	2,113	(140)	(16)	(1,459)	2,276	(1,116)	17,106	16,526
2014	147	33	51	4	748	312	1,591	(119)	(10)	(1,016)	1,741	(1,197)	17,650	17,378
2015	156	32	58	10	628	253	1,286	(103)	(10)	(907)	1,403	(1,260)	17,793	17,721
2016	108	20	71	16	658	300	1,397	(101)	(11)	(942)	1,516	(1,326)	17,983	17,888
2017	106	17	57	44	682	280	1,428	(95)	(10)	(949)	1,560	(1,389)	18,154	18,068

#### Notes:

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

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

(13) = Mortality tables applied to number of individuals eligible, assuming new cases are 72 years old at approval

(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, 2017**

**ESTIMATED NUMBER OF INDIVIDUALS ELIGIBLE FOR MEDICAL EXPENSES IN FUTURE YEARS**

Fiscal Year	New Cases Eligible for Medical Expenses							Remove double counting:				Assumed # Deaths	Total # Individuals Eligible	Average # Individuals Eligible
	RECA	BD	BS	CS	CN		Part E	Part B already in	Part E already in	EB concurrent	Net new individuals			
					CN SEC	CN Non SEC								
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
2018	98	14	47	49	636	243	1,031	(87)	(7)	(869)	1,154	(1,430)	17,878	18,016
2019	87	12	43	45	594	227	951	(81)	(7)	(806)	1,065	(1,462)	17,481	17,679
2020	78	9	40	42	555	212	877	(75)	(6)	(748)	983	(1,483)	16,981	17,231
2021	70	7	37	38	518	198	809	(69)	(6)	(694)	907	(1,495)	16,394	16,687
2022	63	6	34	35	484	184	746	(64)	(5)	(645)	838	(1,495)	15,736	16,065
2023	56	5	31	33	452	172	688	(60)	(5)	(599)	773	(1,486)	15,023	15,380
2024	50	4	29	30	422	161	635	(56)	(4)	(557)	714	(1,466)	14,271	14,647
2025	45	3	27	28	394	150	585	(52)	(4)	(517)	659	(1,437)	13,493	13,882
2026	40	2	24	26	368	140	540	(48)	(4)	(481)	608	(1,398)	12,703	13,098
2027	36	2	23	24	344	131	498	(45)	(3)	(447)	562	(1,352)	11,913	12,308
2028	32	2	21	22	321	122	459	(42)	(3)	(416)	519	(1,298)	11,133	11,523
2029	29	1	19	20	300	114	424	(39)	(3)	(387)	479	(1,239)	10,373	10,753
2030	26	1	18	19	280	107	391	(36)	(3)	(360)	442	(1,176)	9,639	10,006
2031	23	1	16	17	261	100	360	(33)	(3)	(335)	408	(1,110)	8,937	9,288
2032	21	1	15	16	244	93	333	(31)	(2)	(312)	377	(1,043)	8,272	8,604
2033	19	1	14	15	228	87	307	(29)	(2)	(290)	348	(975)	7,645	7,958
2034	17	0	13	13	213	81	283	(27)	(2)	(270)	321	(908)	7,058	7,351
2035	15	0	12	12	199	76	261	(25)	(2)	(251)	297	(844)	6,511	6,785
2036	13	0	11	11	186	71	241	(23)	(2)	(234)	274	(781)	6,004	6,257
2037	12	0	10	11	173	66	222	(22)	(2)	(218)	253	(722)	5,535	5,769
2038	11	0	9	10	162	-	205	(15)	(1)	(154)	226	(666)	5,095	5,315
2039	10	0	9	9	151	-	189	(14)	(1)	(143)	209	(614)	4,689	4,892
2040	9	0	8	8	141	-	174	(13)	(1)	(133)	193	(565)	4,317	4,503
2041	8	0	7	8	132	-	161	(12)	(1)	(124)	178	(520)	3,975	4,146
2042	7	0	7	7	123	-	148	(12)	(1)	(115)	164	(479)	3,660	3,817
2043	6	0	6	6	115	-	137	(11)	(1)	(107)	152	(441)	3,371	3,516
2044	6	0	6	6	107	-	126	(10)	(1)	(100)	140	(406)	3,105	3,238
2045	5	0	5	6	100	-	116	(9)	(1)	(93)	129	(374)	2,861	2,983
2046	4	0	5	5	94	-	107	(9)	(1)	(87)	119	(344)	2,637	2,749
2047	4	0	5	5	88	-	99	(8)	(1)	(81)	110	(317)	2,430	2,533
2048	-	-	-	-	82	-	91	(7)	(1)	(65)	100	(292)	2,239	2,334
2049	-	-	-	-	76	-	84	(6)	(1)	(61)	93	(269)	2,062	2,151
2050	-	-	-	-	71	-	78	(6)	(1)	(57)	86	(248)	1,900	1,981
2051	-	-	-	-	67	-	72	(5)	(1)	(53)	79	(228)	1,751	1,826
2052	-	-	-	-	-	-	-	-	-	-	0	(207)	1,544	1,648
2053	-	-	-	-	-	-	-	-	-	-	0	(187)	1,357	1,450
2054	-	-	-	-	-	-	-	-	-	-	0	(169)	1,187	1,272
2055	-	-	-	-	-	-	-	-	-	-	0	(153)	1,035	1,111
2056	-	-	-	-	-	-	-	-	-	-	0	(137)	898	966
2057	-	-	-	-	-	-	-	-	-	-	0	(123)	775	836
2058	-	-	-	-	-	-	-	-	-	-	0	(110)	665	720
2059	-	-	-	-	-	-	-	-	-	-	0	(98)	568	616
2060	-	-	-	-	-	-	-	-	-	-	0	(86)	481	524
2061	-	-	-	-	-	-	-	-	-	-	0	(76)	405	443
2062	-	-	-	-	-	-	-	-	-	-	0	(67)	339	372
2063	-	-	-	-	-	-	-	-	-	-	0	(58)	281	310
2064	-	-	-	-	-	-	-	-	-	-	0	(50)	230	255
2065	-	-	-	-	-	-	-	-	-	-	0	(43)	187	209
2066	-	-	-	-	-	-	-	-	-	-	0	(36)	151	169
2067	-	-	-	-	-	-	-	-	-	-	0	(31)	120	136
2068	-	-	-	-	-	-	-	-	-	-	0	(25)	95	108
2069	-	-	-	-	-	-	-	-	-	-	0	(21)	74	84
2070	-	-	-	-	-	-	-	-	-	-	0	(17)	57	66
2071	-	-	-	-	-	-	-	-	-	-	0	(13)	44	50
2072	-	-	-	-	-	-	-	-	-	-	0	(10)	33	39
2073	-	-	-	-	-	-	-	-	-	-	0	(8)	25	29
2074	-	-	-	-	-	-	-	-	-	-	0	(6)	19	22
2075	-	-	-	-	-	-	-	-	-	-	0	(5)	15	17
2076	-	-	-	-	-	-	-	-	-	-	0	(3)	11	13



## 9: Estimate Average Medical Payments and Inflation Rates

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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. We then review the historical trends to determine inflation rate assumptions for future years.

The observed average medical inflation rate over the last 5 years was 9.4%. Variability around this measurement suggests that the true underlying rate could be between 5.9% and 12.9%. To be consistent with this range, we increased the near-term medical inflation assumption (next five years) from 5% to 6%. We also raised the assumption for medical inflation in subsequent years from 3.9% to 5%, to be more consistent with the high level of medical inflation observed in the past.

<u>FY</u>	<u>Total Medical Payments</u> (1)	<u>Average # Individuals Eligible</u> (2)	<u>Average Medical Cost per Eligible Individual</u> (3)	<u>Annual Trend</u> (4)
2001	\$ -	115	\$ -	
2002	3,822,401	940	4,065	
2003	14,738,401	2,434	6,056	49.0%
2004	23,002,548	3,468	6,633	9.5%
2005	32,552,187	4,371	7,447	12.3%
2006	41,293,195	5,611	7,359	-1.2%
2007	60,256,316	7,496	8,038	9.2%
2008	77,063,027	9,699	7,945	-1.2%
2009	120,195,778	11,543	10,413	31.1%
2010	217,045,131	13,057	16,623	59.6%
2011	319,622,272	14,345	22,281	34.0%
2012	340,680,645	15,443	22,060	-1.0%
2013	389,272,258	16,526	23,555	6.8%
2014	410,756,908	17,378	23,636	0.3%
2015	443,404,479	17,721	25,021	5.9%
2016	541,350,003	17,888	30,264	21.0%
2017	617,800,448	18,068	34,192	13.0%
			Average Trend 2013-2017	9.4%
			Standard Error of Trend 2013-2017	3.5%
			Implied Range (+/- one std error)	5.9%-12.9%
			<b>Selected Trend for next five years</b>	<b>6.0%</b>
			<b>Selected Trend for six years and later</b>	<b>5.0%</b>

## 10: Calculate the total expected Medical Payment by year

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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>	<u>Average Medical Cost per Eligible Individual</u>	<u>Total Undiscounted Medical Payments</u>
(1)	(2)	(3)	(4)
2018	18,016	36,244	652,959,298
2019	17,679	38,418	679,209,276
2020	17,231	40,723	701,699,874
2021	16,687	43,167	720,331,055
2022	16,065	45,757	735,068,795
2023	15,380	48,045	738,905,231
2024	14,647	50,447	738,903,072
2025	13,882	52,969	735,323,916
2026	13,098	55,618	728,489,166
2027	12,308	58,399	718,772,137
2028	11,523	61,319	706,578,565
2029	10,753	64,385	692,327,918
2030	10,006	67,604	676,437,555
2031	9,288	70,984	659,309,244
2032	8,604	74,533	641,320,449
2033	7,958	78,260	622,813,768
2034	7,351	82,173	604,084,537
2035	6,785	86,281	585,378,698
2036	6,257	90,596	566,896,661
2037	5,769	95,125	548,793,192
2038	5,315	99,882	530,824,551
2039	4,892	104,876	513,050,798
2040	4,503	110,119	495,890,024
2041	4,146	115,625	479,357,815
2042	3,817	121,407	463,451,272
After 2042			6,523,071,000
Total future undiscounted			22,459,247,866

## **11: Discount the cash flows to 9/30/2017**

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The projected cash flows by fiscal year are then discounted back to 9/30/17. 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.

## Ranges

We have calculated a range of reasonable estimates to clarify the level of uncertainty surrounding this estimate, and have shared that range with OWCP management. This includes a low, high and middle range of estimates. We recommend OWCP to use the middle range value of \$19.980 billion as the best estimates for financial reporting purposes. Significant uncertainty exists around these estimates, and the reader of this report should not confuse any level of reported precision in estimates contained in this report to be indicative of predictive accuracy.

## Technical Appendix 1: Reconciliation of Change in Liability Estimate

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Liability Estimate as of 9/30/2016 (\$000, discounted) .....	\$15,373,336
1. FY 2017 roll off of estimate	(1,010,354)
2. FY 2076 roll on to estimate	1,562
3. Increase in medical inflation rate assumptions	4,281,574
4. Decrease in decay rate for Part B Cancer (SEC and Non-SEC)	977,526
5. Change in Part E average payment and payment pattern	263,349
6. Change in assumptions for percent filed by an employee	(160,892)
7. More approvals in 2017 than projected	61,135
8. Change in discount rates	111,239
9. Change in decay rates other than for Part B Cancer	27,050
10. Combination effect/other	54,212
Total Change	4,606,404
Liability Estimate as of 9/30/2017 (\$000, discounted) .....	\$ 19,979,739

## Technical Appendix 2: Summary of Model Assumptions

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### EEOICPA 2017 Liability Model Assumptions

#### **Compensation Benefit Amounts**

RECA Benefit (Non DOJ)	\$50,000
RECA Benefit (on behalf of DOJ)	\$100,000
Part B Benefit (lump sum)	\$150,000
Part E Benefit, average	\$142,114

#### **Discount Rates**

Discount Factor for Compensation	2.395%
Discount Factor for Medical	2.897%

#### **Duration**

Average Compensation Duration (years)	11.1
Average Medical Duration (years)	18.8

#### **Inflation Rates**

Annual Inflation for Compensation	0.00%
Annual Inflation for Medical, Future Years 1-5	6.00%
Annual Inflation for Medical, Future Years 6+	5.00%

#### **Medical Costs per Eligible Case**

Average medical payment for FY 2018	36,244
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#### **Mortality**

Mortality Table	RP-2014 Male Disabled Retiree
Projection Scale	
RP-2014 Table Multiplier (for sensitivity testing)	1.00

#### **New Cases**

Eligible for medical benefits if filed by employee	100%
Average age of employee when case approved	72

#### Percent of new cases filed by employee

RECA (Part B)	65%
BD (Part B)	69%
BS (Part B)	100%
CS (Part B)	87%
CN SEC (Part B)	48%
CN Non SEC (Part B)	64%
Part E	69%

Probability that the newly approved case is already eligible for medical benefits	
Part B	8.0%
Part E	0.7%
Percent of Part B cases where Part E approved in same year	80.0%
Quarterly Decay in new case approval	
RECA (Part B)	2.7%
BD (Part B)	5.4%
BS (Part B)	2.0%
CS (Part B)	2.0%
CN SEC (Part B)	1.7%
CN Non SEC (Part B)	1.7%
Part E	2.0%

**Payment Pattern: Part B Compensation**

<u>Year</u>	<u>% Paid</u>
Year 1	100.0%

**Payment Pattern: Part E Compensation**

<u>Year</u>	<u>% Paid</u>
Year 1	38.0%
Year 2	21.4%
Year 3	6.0%
Year 4	5.3%
Year 5	4.0%
Year 6	3.5%
Year 7	3.1%
Year 8	2.7%
Year 9	2.7%
Year 10	2.7%
Year 11	2.3%
Year 12	1.5%
Years 13-25	0.5%

## Technical Appendix 3: Part E Triangle Squaring

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In order to estimate the Part E compensation payout patterns and ultimate payment amount per case, we employed a triangle squaring approach. We organized the compensation data into a paid triangle by approval quarter and payment quarter. Historical relationships between quarters were then measured and projected forward to determine the ultimate payments by approval quarter from 2005 to the present. There are a number of approved cases for which compensation payments have not been made and appear unlikely to be made in the future. We built a triangle of counts by approval quarter and quarter of first payment, and with it, developed an estimate of the total count of cases from 2005 to the present that will ultimately be paid.

The exhibits in the following pages show the triangle of payment amounts, the age-to-age factors as well as the selection of ultimate payments using a weighting of the LDF Method and the BF Method.

### 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.

### Bornhuetter-Ferguson (BF) Method

The BF method uses a development pattern coinciding with the loss development factors used in the LDF method in conjunction with an a priori, or “seed” estimate for a given period estimate an ultimate amount of payment. This seed loss estimate was based on a moving average of LDF model results. This approach is more stable with regard to the random fluctuation from period than the LDF method alone, but still captures changes in the level of payments over time.



**Part E Compensation**  
 Cumulative Payments by Approval Quarter

Approval Quarter	Age1	Age2	Age3	Age4	Age5	Age6	Age7	Age8	Age9	Age10
<b>2005-1</b>	27,375,000	35,375,000	35,662,500	35,900,000	36,697,827	37,047,827	37,327,827	38,037,827	38,377,500	38,678,750
<b>2005-2</b>	29,875,000	36,218,209	36,993,209	37,398,209	38,000,709	38,822,040	39,187,040	40,217,040	41,240,253	42,158,598
<b>2005-3</b>	122,316,667	152,087,500	152,762,500	153,100,000	153,627,500	154,082,500	154,292,500	154,632,364	155,279,942	155,729,942
<b>2005-4</b>	43,605,571	52,584,737	52,869,737	53,362,237	53,679,737	53,704,737	54,244,737	54,429,737	54,891,138	55,453,638
<b>2006-1</b>	37,653,510	49,970,692	52,271,192	54,491,192	56,650,319	59,621,041	63,991,072	66,636,939	68,501,939	71,262,220
<b>2006-2</b>	64,386,865	81,756,870	85,782,854	93,657,975	106,797,213	118,066,153	127,273,247	133,452,216	143,853,735	150,735,405
<b>2006-3</b>	56,418,945	73,228,912	77,274,340	84,826,775	96,180,665	104,459,903	108,071,873	114,125,054	119,416,179	123,184,929
<b>2006-4</b>	39,038,023	63,208,254	69,928,896	78,235,843	84,737,813	89,306,526	91,939,412	96,747,196	100,796,718	102,786,671
<b>2007-1</b>	39,194,497	54,373,021	65,142,269	73,570,943	79,536,610	85,132,732	90,546,932	94,333,944	97,004,771	100,109,096
<b>2007-2</b>	49,980,068	73,085,397	83,824,152	91,976,649	102,573,722	112,390,867	119,257,577	124,834,315	128,993,572	132,414,967
<b>2007-3</b>	47,907,568	67,464,711	78,712,408	90,307,942	100,362,657	109,720,785	113,707,038	117,742,538	120,759,838	123,968,142
<b>2007-4</b>	44,178,152	64,792,726	79,113,033	89,378,875	94,251,681	99,604,059	105,134,286	107,798,494	110,967,707	112,615,207
<b>2008-1</b>	40,643,280	54,623,607	60,875,980	66,437,599	72,116,475	77,777,662	80,335,162	82,495,270	83,952,642	84,995,102
<b>2008-2</b>	40,892,619	59,619,464	69,227,820	78,743,966	87,709,163	91,967,045	94,915,130	97,345,842	99,263,284	99,954,864
<b>2008-3</b>	43,042,671	64,630,541	73,710,459	85,147,287	91,585,581	95,751,378	98,626,474	101,872,987	103,139,079	104,090,869
<b>2008-4</b>	43,992,832	63,361,662	77,852,432	86,466,890	93,434,407	97,115,542	100,178,042	102,850,918	104,963,054	106,773,048
<b>2009-1</b>	26,657,702	43,771,585	53,048,973	63,541,424	67,364,100	70,113,635	73,117,417	73,966,955	75,174,455	77,310,595
<b>2009-2</b>	30,433,663	43,565,550	57,611,183	63,145,649	68,611,437	71,143,229	72,431,620	74,177,870	75,092,870	75,837,870
<b>2009-3</b>	22,563,488	39,535,214	51,381,077	56,675,312	61,389,811	63,092,738	64,987,181	66,782,454	67,247,454	67,922,454
<b>2009-4</b>	19,399,524	28,968,448	42,530,198	49,466,020	51,632,963	53,575,463	55,062,963	56,455,463	57,014,610	57,307,110
<b>2010-1</b>	22,033,279	39,047,894	49,677,745	54,505,686	59,557,578	61,829,961	64,044,961	65,693,711	66,325,198	66,731,448
<b>2010-2</b>	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
<b>2010-3</b>	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
<b>2010-4</b>	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
<b>2011-1</b>	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
<b>2011-2</b>	23,965,751	32,859,782	40,413,250	43,289,500	45,219,500	47,033,250	48,285,280	49,000,875	50,110,875	51,015,875
<b>2011-3</b>	18,689,711	26,865,180	35,235,569	38,093,752	39,379,344	41,745,347	42,880,347	43,715,347	44,670,347	46,181,197
<b>2011-4</b>	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
<b>2012-1</b>	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
<b>2012-2</b>	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
<b>2012-3</b>	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
<b>2012-4</b>	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
<b>2013-1</b>	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
<b>2013-2</b>	25,768,833	34,871,290	45,108,051	50,764,064	53,794,514	56,264,514	56,962,014	58,054,514	58,927,302	59,669,802
<b>2013-3</b>	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
<b>2013-4</b>	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
<b>2014-1</b>	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
<b>2014-2</b>	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
<b>2014-3</b>	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
<b>2014-4</b>	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
<b>2015-1</b>	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
<b>2015-2</b>	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	
<b>2015-3</b>	12,774,544	18,457,044	23,451,338	27,636,407	29,861,195	31,033,695	32,106,695	32,651,695		
<b>2015-4</b>	10,412,500	17,463,540	24,260,779	28,400,714	30,968,214	33,005,714	34,130,714			
<b>2016-1</b>	13,225,000	19,137,500	24,776,921	29,247,285	31,647,285	33,109,785				
<b>2016-2</b>	10,932,500	19,001,272	25,584,678	30,798,906	32,946,225					
<b>2016-3</b>	10,050,000	19,173,750	26,609,762	31,795,125						
<b>2016-4</b>	14,800,000	23,947,322	34,411,081							
<b>2017-1</b>	13,945,000	24,438,511								
<b>2017-2</b>	10,715,000									

**Age to Age Factors**

	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
<b>Periods (N)</b>	8	12	12	12	12	12	12	12	12	12
<b>Wtd Avg</b>	1.627	1.328	1.158	1.078	1.048	1.034	1.021	1.023	1.020	1.020
<b>Prior Select</b>	1.508	1.267	1.122	1.062	1.039	1.026	1.020	1.019	1.019	1.018
<b>Selected</b>	1.597	1.328	1.158	1.078	1.048	1.034	1.021	1.023	1.020	1.020

**Part E Compensation**

Cumulative Payments by Approval Quarter

**Approval**

Quarter	Age11	Age12	Age13	Age14	Age15	Age16	Age17	Age18	Age19	Age20
2005-1	38,868,750	39,071,250	39,183,750	39,706,250	39,706,250	39,948,750	39,963,750	40,531,250	40,588,750	40,636,250
2005-2	42,874,338	43,094,338	43,344,338	43,814,338	44,591,671	44,784,171	45,223,183	45,743,183	45,953,183	46,223,183
2005-3	155,962,627	156,264,966	156,299,966	156,824,966	156,909,966	157,152,466	157,292,466	157,292,466	157,327,466	157,682,466
2005-4	55,863,638	56,268,638	56,268,638	56,268,638	56,446,138	56,548,638	56,883,638	57,126,138	57,263,638	57,263,638
2006-1	72,786,642	74,299,142	75,646,642	76,824,878	77,524,878	78,857,108	80,189,608	81,307,108	82,638,677	82,981,177
2006-2	156,528,420	161,779,785	165,443,792	169,860,305	174,090,865	179,146,668	182,810,158	186,239,362	188,748,576	192,042,164
2006-3	125,931,696	128,706,891	130,975,056	133,662,309	135,627,842	138,663,605	140,410,045	141,926,712	144,472,816	146,620,316
2006-4	104,360,157	106,177,558	108,609,474	109,789,792	113,085,890	115,089,243	116,562,857	117,935,198	119,685,198	120,988,557
2007-1	102,793,796	106,677,938	108,379,838	109,762,955	111,384,560	113,060,050	114,950,515	116,427,938	118,363,603	120,461,962
2007-2	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
2007-3	125,832,818	128,807,501	131,248,397	132,510,897	134,527,877	137,565,201	140,455,201	141,953,191	143,323,397	145,870,897
2007-4	114,481,873	116,408,224	118,255,678	119,732,850	120,952,787	123,488,398	125,144,061	126,328,037	127,327,010	128,789,672
2008-1	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
2008-2	100,665,837	102,088,337	104,163,797	105,486,565	106,324,065	107,281,565	108,351,565	109,208,929	109,823,929	110,628,929
2008-3	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
2008-4	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
2009-1	78,863,095	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
2009-2	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
2009-3	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
2009-4	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
2010-1	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
2010-2	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
2010-3	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
2010-4	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
2011-1	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
2011-2	52,155,601	53,108,101	53,575,601	54,808,101	55,430,601	55,910,601	56,745,601	57,188,101	57,973,101	59,473,101
2011-3	46,656,284	47,201,284	47,691,284	48,388,784	49,281,284	50,027,648	50,312,648	50,615,148	50,892,648	51,657,648
2011-4	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
2012-1	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
2012-2	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
2012-3	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
2012-4	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	
2013-1	66,677,998	67,802,998	69,366,434	70,106,434	71,121,434	71,916,434	73,617,684	75,352,684		
2013-2	61,602,302	62,809,662	63,819,662	65,599,662	66,762,162	67,624,662	69,084,662			
2013-3	46,479,920	47,798,504	49,186,004	50,293,504	51,518,504	52,545,624				
2013-4	44,196,501	45,042,751	46,367,713	47,031,463	48,486,463					
2014-1	39,030,926	40,373,426	41,570,042	42,692,966						
2014-2	48,690,652	50,510,652	51,730,652							
2014-3	38,043,749	38,786,249								
2014-4	38,166,826									

**Age to Age Factors**

	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
Periods (N)	12	12	12	12	12	12	12	12	12	12
Wtd Avg	1.023	1.021	1.018	1.017	1.013	1.014	1.014	1.009	1.013	1.010
Prior Select	1.018	1.017	1.015	1.014	1.012	1.011	1.010	1.009	1.009	1.008
Selected	1.023	1.021	1.018	1.017	1.013	1.014	1.014	1.009	1.013	1.010

**Part E Compensation**

Cumulative Payments by Approval Quarter

**Approval**

Quarter	Age21	Age22	Age23	Age24	Age25	Age26	Age27	Age28	Age29	Age30
2005-1	40,758,750	41,113,750	41,143,750	41,168,750	41,226,250	41,290,737	41,393,237	41,500,737	41,535,777	41,775,777
2005-2	46,693,183	46,870,683	47,233,183	47,458,183	47,708,183	48,145,683	48,383,183	48,568,145	48,650,645	48,730,645
2005-3	157,807,466	157,894,966	158,002,466	158,112,466	158,212,466	158,359,966	158,489,966	158,539,966	158,664,966	158,664,966
2005-4	57,378,638	57,378,638	57,543,638	57,543,638	57,656,138	57,781,138	57,781,138	57,913,638	57,976,138	58,221,138
2006-1	84,026,177	84,988,677	85,908,677	86,513,677	87,361,177	87,868,677	88,396,177	88,711,177	88,997,287	89,464,787
2006-2	195,457,164	198,511,181	200,951,181	202,686,421	204,688,921	206,660,707	208,640,014	210,870,014	213,330,014	214,606,322
2006-3	147,759,071	149,201,007	150,895,157	152,078,117	152,958,117	154,088,117	155,249,616	156,687,116	157,938,737	158,988,737
2006-4	121,609,942	122,717,442	123,423,672	124,758,672	125,428,672	126,410,426	127,485,426	128,240,426	128,934,795	129,804,795
2007-1	121,296,899	123,344,048	124,645,311	126,355,210	127,971,994	129,385,573	130,801,147	131,984,401	132,647,261	133,763,753
2007-2	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
2007-3	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
2007-4	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
2008-1	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
2008-2	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
2008-3	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
2008-4	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
2009-1	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
2009-2	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
2009-3	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
2009-4	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
2010-1	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
2010-2	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	
2010-3	91,318,456	92,037,206	93,132,206	93,571,103	94,103,603	95,178,353	96,155,853	97,168,095		
2010-4	77,942,480	78,709,564	79,847,470	80,870,375	82,147,875	83,250,375	83,989,067			
2011-1	62,799,135	63,396,635	64,344,217	65,404,217	66,074,217	66,796,897				
2011-2	60,043,101	60,465,601	61,375,601	62,243,101	63,160,878					
2011-3	51,922,648	53,122,648	54,342,775	54,973,553						
2011-4	47,261,339	48,031,339	48,583,839							
2012-1	58,603,627	59,218,627								
2012-2	85,499,997									

**Age to Age Factors**

	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
Periods (N)	12	12	12	12	12	12	12	12	12	12
Wtd Avg	1.013	1.012	1.011	1.009	1.009	1.008	1.009	1.008	1.009	1.006
Prior Select	1.007	1.007	1.007	1.006	1.006	1.005	1.005	1.005	1.005	1.004
Selected	1.013	1.012	1.011	1.009	1.009	1.008	1.009	1.008	1.009	1.006

**Part E Compensation**

Cumulative Payments by Approval Quarter

**Approval**

Quarter	Age31	Age32	Age33	Age34	Age35	Age36	Age37	Age38	Age39	Age40
2005-1	41,853,277	41,928,277	41,945,777	41,945,777	41,983,277	42,028,277	42,028,277	42,028,277	42,110,777	42,110,777
2005-2	48,893,145	48,993,145	49,250,645	49,378,145	49,665,676	49,673,176	49,705,676	49,735,676	49,740,676	49,740,676
2005-3	158,874,966	158,899,966	158,899,966	158,899,966	158,899,966	158,909,966	158,984,810	159,034,810	159,112,310	159,279,810
2005-4	58,221,138	58,363,638	58,363,638	58,363,638	58,488,638	58,528,638	58,628,638	58,676,138	58,676,138	58,736,138
2006-1	90,032,287	90,319,787	90,874,162	91,488,582	91,863,632	92,678,632	93,381,132	93,966,132	94,468,511	95,211,011
2006-2	216,713,822	218,849,917	220,666,958	222,706,943	225,001,943	226,756,527	229,817,704	231,792,434	233,702,434	235,969,934
2006-3	159,850,669	160,900,605	162,056,031	163,137,613	164,160,113	165,827,613	166,650,113	167,775,471	169,187,180	169,849,680
2006-4	130,734,795	131,419,795	132,552,295	133,459,081	134,466,581	135,438,354	136,385,300	137,319,901	138,219,901	138,894,901
2007-1	134,286,253	135,031,253	135,582,529	136,679,140	137,523,258	139,560,883	140,226,329	141,438,747	142,552,497	143,666,970
2007-2	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
2007-3	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
2007-4	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	
2008-1	106,191,881	107,067,715	107,845,215	109,037,667	109,832,667	110,712,418	111,852,418	113,073,452		
2008-2	117,841,051	118,799,166	120,104,166	121,376,666	122,161,666	123,044,166	123,665,631			
2008-3	124,426,719	124,926,719	126,384,219	127,303,802	127,818,802	128,505,870				
2008-4	127,834,052	128,626,552	130,031,552	130,953,280	131,487,030					
2009-1	94,480,373	95,034,150	95,575,690	96,825,170						
2009-2	93,782,017	94,667,017	95,581,642							
2009-3	87,147,432	87,525,265								
2009-4	73,968,019									

**Age to Age Factors**

	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
Periods (N)	12	12	12	12	12	12	12	12	11	10
Wtd Avg	1.007	1.009	1.008	1.008	1.009	1.008	1.007	1.007	1.006	1.007
Prior Select	1.004	1.004	1.004	1.004	1.003	1.003	1.003	1.003	1.003	1.003
Selected	1.007	1.009	1.008	1.008	1.009	1.008	1.007	1.007	1.006	1.007

**Part E Compensation**

Cumulative Payments by Approval Quarter

**Approval**

Quarter	Age41	Age42	Age43	Age44	Age45	Age46	Age47	Age48	Age49	Age50
2005-1	42,110,777	42,110,777	42,110,777	42,110,777	42,143,277	42,233,277	42,233,277	42,233,277	42,233,277	42,233,277
2005-2	49,885,676	49,945,676	50,105,676	50,118,176	50,238,176	50,290,676	50,370,676	50,410,676	50,623,176	
2005-3	159,279,810	159,292,310	159,292,310	159,407,310	159,462,310	159,492,310	159,734,810	159,734,810		
2005-4	58,736,138	58,878,638	58,883,638	58,958,638	58,958,638	59,083,638	59,083,638			
2006-1	95,816,011	96,436,011	97,156,011	97,698,511	98,306,811	98,841,811				
2006-2	238,289,000	240,099,000	242,631,500	245,401,500	248,036,500					
2006-3	171,150,305	171,897,524	173,727,088	174,948,385						
2006-4	140,137,558	140,990,058	141,688,183							
2007-1	145,143,653	146,488,074								
2007-2	192,929,777									

**Age to Age Factors**

	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 Ult
Periods (N)	9	8	7	6	5	4	3	2	1	50
Wtd Avg	1.005	1.006	1.006	1.005	1.002	1.001	1.000	1.002	1.000	1.016
Prior Select	1.003	1.003	1.002	1.002	1.002	1.000	1.000	1.000	1.000	1.100
Selected	1.005	1.006	1.006	1.005	1.002	1.001	1.000	1.002	1.000	1.070

**Part E Compensation**  
**Summary of Results: Paid Losses**

	<b>Current Paid</b>	<b>Paid LDF Indication</b>	<b>Paid BF Indication</b>	<b>Selected Ultimate</b>	<b>Ultimate Number of Cases</b>	<b>Ultimate Payment Amount per Case</b>
2005-1	\$ 42,233,277	\$ 45,189,606	\$ 47,836,461	\$ 47,615,449	331	143,853
2005-2	50,623,176	54,166,798	55,809,345	55,672,192	399	139,529
2005-3	159,734,810	171,315,584	165,385,732	165,880,875	1,237	134,099
2005-4	59,083,638	63,379,019	67,607,834	67,254,728	464	144,946
2006-1	98,841,811	106,136,337	109,239,639	108,980,513	793	137,428
2006-2	248,036,500	266,862,471	258,473,877	259,174,325	1,978	131,028
2006-3	174,948,385	189,224,173	187,499,944	187,643,917	1,383	135,679
2006-4	141,688,183	154,128,406	156,753,784	156,534,565	1,122	139,514
2007-1	146,488,074	160,331,197	161,424,265	161,332,994	1,166	138,364
2007-2	192,929,777	212,242,048	208,378,811	208,701,391	1,515	137,757
2007-3	176,628,214	195,686,398	192,656,787	192,909,760	1,366	141,222
2007-4	153,722,966	171,354,990	170,254,932	170,346,787	1,222	139,400
2008-1	113,073,452	126,902,335	129,221,584	129,027,927	932	138,442
2008-2	123,665,631	139,779,262	139,766,065	139,767,167	1,019	137,161
2008-3	128,505,870	146,393,887	144,199,808	144,383,014	1,058	136,468
2008-4	131,487,030	151,104,895	147,780,227	148,057,837	1,062	139,414
2009-1	96,825,170	112,162,277	113,040,319	112,967,002	793	142,455
2009-2	95,581,642	111,639,358	111,026,812	111,077,960	794	139,897
2009-3	87,525,265	103,096,010	102,297,252	102,363,948	716	142,966
2009-4	73,968,019	87,726,070	88,747,071	88,661,817	612	144,872
2010-1	84,233,990	100,533,267	99,707,304	99,776,272	704	141,728
2010-2	77,518,896	93,371,510	93,718,718	93,689,726	645	145,255
2010-3	97,168,095	117,942,634	113,790,932	114,137,599	858	133,028
2010-4	83,989,067	102,836,214	100,530,087	100,722,649	717	140,478
2011-1	66,796,897	82,467,449	83,065,750	83,015,792	579	143,378
2011-2	63,160,878	78,647,925	77,919,493	77,980,317	531	146,856
2011-3	54,973,553	69,090,761	69,252,043	69,238,576	481	143,947
2011-4	48,583,839	61,730,626	64,636,646	64,393,993	439	146,683
2012-1	59,218,627	76,155,155	76,171,323	76,169,973	533	142,908
2012-2	85,499,997	111,338,096	104,525,673	105,094,510	765	137,378
2012-3	63,213,084	83,150,491	84,670,242	84,543,343	588	143,781
2012-4	74,600,932	99,368,441	97,749,818	97,884,973	684	143,107
2013-1	75,352,684	101,311,684	97,269,431	97,606,959	709	137,668
2013-2	69,084,662	94,141,669	91,086,777	91,341,860	660	138,397
2013-3	52,545,624	72,633,816	73,380,588	73,318,233	542	135,273
2013-4	48,486,463	67,885,896	68,589,712	68,530,943	487	140,721
2014-1	42,692,966	60,816,129	61,578,212	61,514,578	433	142,066
2014-2	51,730,652	75,040,484	70,537,634	70,913,622	530	133,799
2014-3	38,786,249	57,446,314	57,815,804	57,784,952	420	137,583
2014-4	38,166,826	57,807,475	57,769,083	57,772,289	397	145,522
2015-1	37,220,135	57,512,553	56,071,432	56,191,766	391	143,713
2015-2	35,577,708	56,091,815	55,030,440	55,119,065	365	151,011
2015-3	32,651,695	52,663,918	52,762,385	52,754,163	349	151,158
2015-4	34,130,714	56,189,394	55,002,551	55,101,652	368	149,733
2016-1	33,109,785	56,339,609	55,421,011	55,497,714	373	148,787
2016-2	32,946,225	58,776,066	58,722,281	58,726,772	382	153,735
2016-3	31,795,125	61,164,283	61,449,041	61,425,264	396	155,114
2016-4	34,411,081	76,643,801	67,829,815	68,565,783	469	146,196
2017-1	24,438,511	72,286,671	65,379,316	65,956,080	439	150,242
2017-2	10,715,000	50,612,303	60,477,226	59,653,505	388	153,746
<b>Total</b>	<b>\$ 4,078,390,850</b>	<b>\$ 5,030,817,570</b>	<b>\$ 4,989,311,317</b>	<b>\$ 4,992,777,091</b>	<b>35,584</b>	<b>140,310</b>
					<b>Average 2005-2017</b>	<b>142,114</b>

**Part E Compensation**  
**Summary of Results: Counts**

	<b>Current Reported</b>	<b>Reported LDF</b>	<b>Reported BF</b>	<b>Selected</b>
2005-1	325	330	331	331
2005-2	390	396	399	399
2005-3	1,226	1,244	1,237	1,237
2005-4	452	459	464	464
2006-1	777	789	793	793
2006-2	1,957	1,988	1,978	1,978
2006-3	1,357	1,381	1,383	1,383
2006-4	1,099	1,120	1,122	1,122
2007-1	1,139	1,163	1,166	1,166
2007-2	1,484	1,519	1,515	1,515
2007-3	1,331	1,366	1,366	1,366
2007-4	1,190	1,224	1,222	1,222
2008-1	901	929	932	932
2008-2	987	1,020	1,019	1,019
2008-3	1,023	1,059	1,058	1,058
2008-4	1,026	1,065	1,062	1,062
2009-1	759	790	793	793
2009-2	762	795	794	794
2009-3	685	717	716	716
2009-4	581	609	612	612
2010-1	673	707	704	704
2010-2	608	640	645	645
2010-3	819	865	858	858
2010-4	677	717	717	717
2011-1	544	578	579	579
2011-2	499	531	531	531
2011-3	451	481	481	481
2011-4	407	435	439	439
2012-1	494	530	533	533
2012-2	721	776	765	765
2012-3	538	581	588	588
2012-4	633	687	684	684
2013-1	653	712	709	709
2013-2	606	664	660	660
2013-3	491	541	542	542
2013-4	440	488	487	487
2014-1	383	427	433	433
2014-2	479	539	530	530
2014-3	367	417	420	420
2014-4	346	397	397	397
2015-1	340	393	391	391
2015-2	312	366	365	365
2015-3	293	350	349	349
2015-4	308	374	368	368
2016-1	309	385	373	373
2016-2	302	393	382	382
2016-3	289	409	396	396
2016-4	307	521	469	469
2017-1	191	482	439	439
2017-2	75	323	388	388
<b>Total</b>	<b>33,006</b>	<b>35,672</b>	<b>35,584</b>	<b>35,584</b>

## Technical Appendix 4: Undiscounted Liability Estimates

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As of 9/30/2017, the **undiscounted** liability for future EEOICPA benefit payments is projected at \$29.8 billion. The future medical payments are projected at \$22.5 billion, and the future compensation payments are projected at \$7.4 billion, on an undiscounted basis.

### ESTIMATED LIABILITY FOR EEOICPA AS OF SEPTEMBER 30, 2017

#### SUMMARY OF LIABILITY FOR FUTURE PAYMENTS (\$ Millions)

	Undiscounted Estimate as of 9/30/2017
Compensation: Part B	\$ 3,676
Compensation: Part E	3,675
Compensation: Total	7,352
Medical Payments	22,459
Total Future Payments	\$ 29,811



**ESTIMATED LIABILITY FOR EEOICPA  
AS OF SEPTEMBER 30, 2017**

**SUMMARY OF ESTIMATED UNDISCOUNTED FUTURE EEOICPA PAYMENTS BY YEAR**

Fiscal Year	<b>Compensation Part B</b> Undiscounted Payments	<b>Compensation Part E</b> Undiscounted Payments	<b>Compensation DOJ RECA</b> Undiscounted Payments	<b>Compensation Total</b> Undiscounted Payments	<b>Medical Total</b> Undiscounted Payments	<b>Total</b> Undiscounted Payments
(1)	(2)	(3)	(4)	(4)	(5)	(6)
2018	274,629,514	287,668,919	15,001,937	577,300,369	652,959,298	1,230,259,668
2019	255,680,676	254,881,428	13,439,448	524,001,552	679,209,276	1,203,210,828
2020	238,103,409	235,105,952	12,039,695	485,249,056	701,699,874	1,186,948,930
2021	221,787,176	218,450,919	10,785,730	451,023,825	720,331,055	1,171,354,880
2022	206,632,324	204,122,427	9,662,369	420,417,120	735,068,795	1,155,485,915
2023	192,548,686	190,502,995	8,656,009	391,707,690	738,905,231	1,130,612,921
2024	179,454,418	177,356,576	7,754,464	364,565,458	738,903,072	1,103,468,530
2025	167,275,007	165,875,547	6,946,817	340,097,371	735,323,916	1,075,421,287
2026	155,942,431	156,473,409	6,223,288	318,639,128	728,489,166	1,047,128,294
2027	145,394,446	147,752,435	5,575,117	298,721,998	718,772,137	1,017,494,135
2028	135,573,969	139,310,134	4,994,454	279,878,558	706,578,565	986,457,123
2029	126,428,550	131,501,728	4,474,269	262,404,547	692,327,918	954,732,465
2030	117,909,911	124,841,958	4,008,263	246,760,132	676,437,555	923,197,687
2031	109,973,549	114,392,924	3,590,792	227,957,265	659,309,244	887,266,509
2032	102,578,381	104,086,611	3,216,802	209,881,795	641,320,449	851,202,243
2033	95,686,439	95,067,980	2,881,764	193,636,183	622,813,768	816,449,951
2034	89,262,594	87,256,117	2,581,621	179,100,332	604,084,537	783,184,868
2035	83,274,314	80,236,345	2,312,739	165,823,398	585,378,698	751,202,096
2036	77,691,449	73,944,915	2,071,861	153,708,225	566,896,661	720,604,886
2037	72,486,032	67,932,626	1,856,071	142,274,729	548,793,192	691,067,921
2038	53,154,473	61,997,504	1,662,757	116,814,734	530,824,551	647,639,284
2039	49,584,929	57,044,536	1,489,577	108,119,041	513,050,798	621,169,839
2040	46,257,121	52,716,279	1,334,433	100,307,833	495,890,024	596,197,857
2041	43,154,415	48,604,121	1,195,449	92,953,986	479,357,815	572,311,800
2042	40,261,360	44,517,677	1,070,940	85,849,977	463,451,272	549,301,248
After 2042 <sup>5</sup>	<u>256,767,792</u>	<u>353,647,538</u>	<u>3,896,522</u>	<u>614,311,851</u>	<u>6,523,071,000</u>	<u>7,137,382,852</u>
Total Future	3,537,493,365	3,675,289,599	138,723,189	7,351,506,153	22,459,247,866	29,810,754,019

<sup>5</sup> Reflects projected cash flow through FY 2076