

City of Seattle

Actuarial Review of the City's Industrial Insurance Fund and Self-Insured Liability Losses

As of December 31, 2016



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Purpose

City of Seattle has retained PricewaterhouseCoopers LLP (“PwC”) to provide an actuarial review of the liabilities of its Self-Insured Liability losses. In this report, we provide estimates of:

1. Outstanding claim obligations as of December 31, 2016;
2. Projected future self-insured losses for years 2017 through 2020;
3. Projected future payments for years 2017 through 2020;
4. Allocation of the City’s losses to departments for future years under various self-insured retention assumptions; and
5. Summary financial data to meet the City’s financial reporting requirements.

Each of these issues is estimated as of the December 31, 2016 accounting date based on data valued as of December 31, 2016. We continued to receive information and supplemental data from the City through March 17, 2017; none of this additional information and data reflects activity between the valuation date of the data and the date it was provided. The estimates in this report are actuarial central estimates which represent the expected value over the range of reasonably possible outcomes. This report and supporting work-papers document the procedures and results of PwC’s analysis.

Key findings

Overview - outstanding claim obligations

The City's net undiscounted outstanding claim cost for liability losses as of December 31, 2016 is approximately \$63.4 million. This estimate is \$3.7 million (6.1%) higher than the \$59.7 million reserve requirement noted in PwC's prior December 31, 2015 year-end actuarial review.

The \$63.4 million estimate of outstanding claim liability represents the City's undiscounted outstanding claim obligations as of the December 31, 2016 balance sheet date, for self-insured liability claims incurred on or before that date. The reserves for outstanding claim liability include a provision for outstanding loss and allocated loss adjustment expenses. Allocated loss adjustment expenses ("ALAE") are those expenses that can be associated directly with specific claims, such as legal fees. In this report no provision has been made for unallocated loss adjustment expenses ("ULAE"); ULAE are the expenses that are normally associated with the overhead costs of administering claims.

The components of the reserve change since the prior year-end are summarized in the table below.

Change in Outstanding Claim Liability Dec-15 to Dec-16 (\$000s)	
Beginning Reserve (Dec-15)	59,704
Payments During Period	-15,957
New Losses Incurred	+15,912
<u>Change in Prior Year Loss Estimates</u>	<u>+3,713</u>
Ending Reserve (Dec-15)	63,372

The primary reason for the growth in outstanding claim liability is due to a higher level of outstanding case loss reserves. The following table presents the total reserve levels from recent fiscal year-ends broken out between outstanding case reserves and IBNR reserves. As can be seen from the table, IBNR reserves have been relatively stable from year to year while case reserves have been more volatile.

Comparison of Outstanding Case Reserves versus IBNR Reserves (\$000s)			
FYE	Case Reserves	IBNR Reserves	Total Claim Liability
2011	31,072	27,293	58,366
2012	32,911	26,269	59,180
2013	34,974	27,247	62,221
2014	36,061	26,501	62,562
2015	32,456	27,248	59,704
2016	35,969	27,403	63,372

Ultimate loss estimates

Exhibit 2-10 presents the City's ultimate loss estimates by accident year. As noted above in the table highlighting the change in outstanding claim liability, current ultimate loss estimates are approximately \$3.7 million higher than those presented in the prior actuarial report. There has been wide variation in the City's loss experience over the past year. Accident years 2006, 2009, 2011 and 2012 each had favorable loss experience; this resulted in the ultimate loss estimates for these years being decreased by between \$1.0 million to \$4.2 million. On the other hand, loss years 2013, 2014 and 2015 developed more than expected; this prompted increases in the ultimate loss estimates of between \$2.4 million and \$8.0 million. The changes in ultimate loss since last year are shown on Exhibit 3-1. Over the last ten years annual loss experience has ranged between \$7.7 million and \$24.5 million. The primary reason for the variability in the City's loss experience is its \$6.5 million self-insured retention limit. With larger retention limits, the presence or absence of one (or more) large claims can have a significant impact on the annual loss level.

Projected losses and payments

Future losses

The projected ultimate loss estimates for claims that will occur during years 2017 through 2020 were estimated under four scenarios:

1. A \$5 million per occurrence retention for each year;
2. A \$6.5 million per occurrence retention for each year;
3. A \$7.5 million per occurrence retention for each year; and
4. A \$10.0 million per occurrence retention.

Exhibit 2-9 presents the estimation of ultimate losses under all four scenarios. The projected losses are estimates at the expected value; they do not account for the variability associated with these projected values; as noted above, a single loss at the City’s full retention limit would result in different outcomes. Estimates of future losses are based on an assumed loss rate trend of 3%.

The City has asked PwC to break out the future loss estimates for 2017 through 2020 between Seattle Public Utilities (SPU), City Light and the rest of the General Fund. The loss allocation for these estimates is based on each department’s respective historic percentage of net loss incurred over the experience period from 2011 through 2015. The following table presents the ultimate loss projections for 2018 at various retention levels. Future ultimate loss estimates for these departments are broken out for years 2017 through 2020 on Exhibit 2-8.

2018 Projected Ultimate Loss at Various Self-Insured Retention Levels				
	<u>\$5 Million SIR</u>	<u>\$6.5 Million SIR</u>	<u>\$7.5 Million SIR</u>	<u>\$10.0 Million SIR</u>
Seattle Public Utilities	\$2,231,000	\$2,266,000	\$2,285,000	\$2,321,000
City Light	3,276,000	3,329,000	3,356,000	3,408,000
All Other General Fund	12,303,000	12,500,000	12,603,000	12,800,000
Total	17,810,000	18,095,000	18,244,000	18,529,000

Future payments

The self-insured loss payments that are estimated to be made during 2017 through 2020 are presented on Exhibit 2-6. Similar to the future ultimate loss estimates, future payments were estimated under the same four retention assumption scenarios and broken out into the same three groupings - SPU, City Light and All Other. Please note that these estimates are highly variable due to the timing and volatility of potential settlement amounts. Estimated payments for 2018 are broken out in the table below; the payment breakouts for 2017 through 2020 are presented on Exhibit 2-5.

2018 Projected Payments at Various Self-Insured Retention Levels				
	<u>\$5 Million SIR</u>	<u>\$6.5 Million SIR</u>	<u>\$7.5 Million SIR</u>	<u>\$10.0 Million SIR</u>
Seattle Public Utilities	\$1,785,000	\$1,790,000	\$1,793,000	\$1,798,000
City Light	2,621,000	2,629,000	2,633,000	2,640,000
All Other General Fund	9,844,000	9,873,000	9,887,000	9,915,000
Total	14,251,000	14,292,000	14,313,000	14,354,000

Exposure index

Changes in the City's underlying exposure to loss are measured by an index that is derived from weighting of Seattle population (30% weight) and City of Seattle worker hours (70% weight). Please note that the City's worker hours increased by roughly 6% during 2011 after 2010's budget cuts and has increased by at least 3% in each of the most recent four years. Per City management, hours are anticipated to be relatively flat for the near future. The City's population grew by roughly 1.6% from 2012 to 2013, by 2.2% between 2013 and 2014 and by over 3.4% in each of the most recent two years. For future years, the population growth rate is assumed to be consistent with its average over recent years. As such, the current estimates of the City's exposure to loss for future years are somewhat higher than the estimates made in prior studies.

Discounted claim reserves

The estimated discounted outstanding claim obligations for liability losses limited to the per-occurrence retention are \$60.3 million, assuming an annual effective interest rate of 1.45%. This interest rate assumption is based on information from the City regarding its investment yield.

Allocation

Allocation calculations by department are presented on Exhibits 1-1 through 1-5. The departmental allocations were performed assuming the following four retention levels for future loss years: \$5.0 million, \$6.5 million, \$7.5 million and \$10.0 million per occurrence.

In addition to the various allocations presented on Exhibits 1-1 through 1-5, the allocation exhibits also show both the undiscounted and the discounted total reserve estimates as of December 31, 2016, 2017 and 2018. The aggregate credit for investment income for the City's liability losses as of December 31, 2016 is approximately \$3.05 million.

Disclosures and methodology

Background

The liability loss data used in this report is comprised of all City liability lawsuits, claims and allocated loss adjustment expenses (ALAE).

State and City law requires that parties file claims to seek recovery for damages arising out of tortious conduct of the City. The law generally requires that claims be filed within three years of the loss incident. A claimant must wait 60 days following claim filing prior to filing a lawsuit.

Claims are handled by the Claims Unit of the Risk Management Division of the Department of Finance and Administrative Services. Lawsuits are defended by the City's Law Department, who may assign the matter to a staff attorney or retain outside counsel.

The City has historically purchased excess coverage for its self-insured liability exposures. The following table shows the City's recent self-insured retention history for liability:

Coverage Period	Retention
1996-98	N/A
1/1/99 - 12/31/01	2,500,000
1/1/02 - 5/31/09	5,000,000
6/1/09 - Present	6,500,000

Distribution and use

This report was prepared for internal use by the management of the City. Use of this report for other than the stated purpose may be inappropriate. The Actuarial Services staff of PwC is available to explain or elaborate upon the findings presented in this report, and it is assumed that users of this report will seek out such explanation. When interpreting the results of our analysis, this report should be considered only in its entirety. Further distribution of this report will not result in the creation of any duty or liability by PwC to a third party.

Reliance on data

The data used in this analysis was prepared by and are the responsibility of the City. PwC assumes no responsibility and makes no representations with respect to the accuracy or completeness of the information provided. While our work may involve analysis of accounting records and other financial information, our actuarial engagement does not include an audit in accordance with generally accepted auditing standards. At the time of this review the data was unaudited.

The City provided historical snapshots of the case reserves and loss and expense payments as of December 31 for years 2012 through 2016. Prior year snapshots were taken from the prior actuarial report. A comparison of the prior year snapshots used in this study matched the 2015 data used in the prior study.

Data provided by the City included the following:

- December 31, 2012, 2013, 2014, 2015 and 2016 claim listings of calendar year paid losses and expenses and year-end reserves;
- Specific departmental allocation information;
- Current investment yield; and
- A listing of departments with corresponding department codes.

The exposure base used throughout the liability portion of the report is a relative index derived from Seattle population (30% weight) and City of Seattle worker hours (70% weight).

References to the term "loss" should be understood to mean loss and allocated loss adjustment expense (ALAE).

Actuarial assumptions

Both specific and general comments regarding the assumptions made include:

- *Multi-Year Liability Claim.* One liability occurrence has accident dates spanning years 1997 through 2005. In aggregate, there are multiple claims relating to this one specific occurrence. The City received a \$5.3 million reimbursement related to this occurrence in 2007. For the purposes of estimating losses limited to \$1 million, this claim has been capped at the actual cost net of the expected excess insurance recoveries. The cost has been allocated to the various accident years based on information provided by the City.

- *Incident Date Assumptions.* Per instruction by the City, if there is no incident date for a particular claim or lawsuit in the databases provided, then the loss date is estimated as the date that the claim was opened.
- *General Assumptions.* We have assumed that coverages will not be broadened by legislative action or judicial interpretation. It is certain that actual future losses and loss adjustment expenses will not develop exactly as projected and may, in fact, vary significantly from the projections. The estimates of reserves and future payment levels make no provision for extraordinary future emergence of new classes of losses or types of loss not sufficiently represented in the City's historical database or which are not yet quantifiable.

Qualifications of the actuaries

Kevin Wick is a Managing Director with PricewaterhouseCoopers LLP and is a Fellow of the Casualty Actuarial Society. Steve Higgins is a Manager with PricewaterhouseCoopers LLP and is an Associate of the Casualty Actuarial Society. Brian Jones is a Principal with PricewaterhouseCoopers LLP and is a Fellow of the Casualty Actuarial Society. All three are members in good standing of the American Academy of Actuaries. As such, Mr. Wick, Mr. Higgins and Mr. Jones each meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Limitations

The projected ultimate liabilities and associated reserves for loss shown in this report are actuarial central estimates. As estimates, these values are subject to inherent variability. Reserve estimates and projections of future loss costs are subject to significant variation due to the potential for large claims, the long periods between accident date and claim settlement, and its vulnerability to the effects of changes in the legal, social, and economic environments. Changes in claims handling and adjustment procedures can also have a significant impact on such estimates.

The variability is particularly high for the City due to the high retention limits and the volatile loss experience in the higher layers. In situations such as this, it is necessary to rely to some degree on relevant insurance industry statistics. The use of this data, however, introduces additional uncertainty because of the difficulties associated with finding and interpreting analogous external data. As such, no guarantee, either expressed or implied, should be inferred that losses and allocated loss adjustment expenses will develop as shown in this report.

Analysis

The actuarial analysis was divided into the following major work steps:

- Ultimate Loss and Reserve Estimation
- Future Losses
- Cash Flow Analysis
- Loss Allocation

Ultimate loss and reserve estimation

The first step of the analysis was to project paid and incurred losses (limited to \$1 million for liability) to estimated ultimate values for each accident year through December 31, 2016. This normal delay in payments creates a need to set aside funds each year to pay the future costs of already incurred claims. However, it is difficult to determine the exact amount of losses incurred during a year until sometime after the end of that year. One reason is that it is difficult to estimate ultimate costs for many claims when they are first reported. The claims adjuster makes estimates of the ultimate cost of individual claims based on the information available about each case. The unpaid amount estimated for an individual claim is called a "case reserve."

In most insurance programs, case reserves somewhat understate the ultimate cost of claims because the reserves are generally based only on the most currently available information about the circumstances surrounding each known claim. The result is that total estimated costs for claims incurred in a year are often revised upward over time. Though many claims settle for less than originally expected, decreases in estimated costs are more than offset by newly reported claims and by increases in case reserves for other claims about which new information emerges. This phenomenon of progressively revising reserves is called "loss development."

Loss development is a normal and expected part of typical insurance programs. Even if it is substantial, loss development does not necessarily imply that claims are being administered improperly. For financial purposes, however, it is important to estimate the amount of future loss development to recognize the entire liability.

The application of several actuarial techniques is important in order to estimate the ultimate costs of claims. Each technique relies on a specific set of assumptions about the stability of the claims environment and thus provides additional insight into trends in claims costs. These methods will also give inapplicable results when the important assumptions on which they rely are violated. Thus, the

methods applied act as checks and balances against each other, and, within reason, the more methods applied, the more likely it is that accurate loss estimates will be obtained.

Some methods may provide accurate results in some years and inaccurate results in others, depending on the situation in the local claims environment. Knowledge of the local environment and experience with the actuarial estimation methods is required to select the best results in each set of circumstances.

The actuarial methods used to estimate ultimate loss included the following:

- Paid loss development
- Incurred loss development
- Bornhuetter-Ferguson

Paid loss development assumes that the ratio of losses paid in one period to losses paid in an earlier period is approximately constant over time. For example, if, on average, paid losses at 24 months after the start of the year were 150% of losses at 12 months, loss development from 12 to 24 months is projected to be 50%. Similarly if losses at 36 months were 120% of losses at 24 months, then the combined loss development from 12 to 36 months is projected to be 80% ($1.50 \times 1.20 = 1.80$). The process of estimating period-to-period development factors is normally continued until a level of maturity is reached at which point no additional movement is expected.

Incurred loss development is similar to paid loss development but uses incurred losses (paid loss plus case loss reserves) instead of paid losses.

The Bornhuetter-Ferguson technique based on exposures and paid loss is a variation on the traditional development approach. The basic premise underlying this technique is that loss varies proportionately with exposures. Losses per exposures are selected based on historical loss experience and resulting trends. This is balanced by assuming that only future losses will develop at this rate. The percent of paid loss to ultimate loss implied from the paid loss development method is used to determine what percentage of ultimate loss is yet to be developed. Current losses are added to losses yet to be developed, yielding an estimate for each year. This method is also performed using incurred losses instead of paid losses.

The Bornhuetter-Ferguson approaches are particularly useful for the more recent years because of their relative stability compared with that of development techniques. Paid loss development factors, in

particular, can be very large for the most recent years; a relatively small change in the reporting or payment pattern could significantly distort the calculated result.

Based on a review of the results of each of the methods, ultimate losses for each fiscal year were selected. For liability claims, increased limit factors were used to estimate the expected portion of losses in excess of \$1 million but limited to the City's self-insured retention. The selected losses in the layer excess of \$1 million were estimated based on a review of the expected losses in this layer, the actual amount of incurred loss experience in the layer, and the maturity of each individual accident year. Estimated loss reserves as of December 31, 2016 were then calculated as ultimate losses at retention minus paid losses to date.

Future losses

The projected ultimate losses for accident years 2017 through 2020 were estimated based on a loss per exposure approach. In this approach, the ultimate loss estimates (limited to \$1 million for liability) and exposures from prior accident years are used to calculate historical loss rates. These rates were then trended to the accident year 2016 cost level. Because the type of exposure base used (an index using worker hours (70% weight) and City population (30% weight), is not inflation-sensitive, a 3% loss per exposure trend was used to adjust liability loss rates to the 2017 cost level. Based on these indications and trends, estimated loss rates were projected for accident year 2017. Multiplying the estimated loss rate by the projected exposure estimates and applying the appropriate increased limits factors resulted in the projected ultimate loss estimates for accident year 2017 (limited to the \$5 million, \$6.5 million, \$7.5 million and \$10 million retention limits). A similar technique was used to calculate the projected ultimate loss estimates for accident years 2018 through 2020.

Cash flow analysis

The cash flow analysis is the basis for estimating the credit for investment income. It also provides useful information regarding the timing and level of expected future payments. The timing of future payments was based on a payment pattern established by reviewing the historical relationship between cumulative paid loss and estimated ultimate loss.

The discounted loss reserves mentioned in this report are based on the assumptions that the credit for investment income is earned at the rate of 1.45%, the self-insured liability is fully funded, payments are made in the middle of each successive year on average, and the assumed payment pattern continues to apply.

Loss allocation

Loss allocations are based on each department's percentage of total incurred loss limited to \$50,000 per occurrence over the accident period 2011 through 2015. The City chose a "rolling" five year loss experience period because it provides an appropriate mix of allocation level stability and responsiveness to changing loss experience. The allocation was performed assuming the following four retention levels for future years: \$5.0 million, \$6.5 million, \$7.5 million and \$10.0 million per occurrence.

The breakout of the projected ultimate losses and payments for 2017 through 2020 at various retention levels between Seattle Public Utility, City Light and All Other General Fund was based on each departments percentage of net incurred loss over the accident period 2011 through 2015; a "rolling" five year experience period consistent with the period used for the loss allocation was chosen for these projections based on discussions with City management.

City of Seattle
Liability Losses

Allocation of Estimates by Department
Assuming a \$5 Million Retention for Future Accident Years
As of December 31, 2016

Department	2017						Undiscounted 12/31/2017		Discounted 12/31/2017		Undiscounted 12/31/2018		Discounted 12/31/2018	
	Case Loss Reserves	Undiscounted Reserves	Undiscounted Total Loss (1)+(2)	Discounted Total Loss Reserves	Ultimate Loss	Payments	Total Loss Reserves (3)+(5)-(6)	Total Loss Reserves	Total Loss Reserves	Ultimate Loss	Payments	Total Loss Reserves (7)+(9)-(10)	Total Loss Reserves	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)		
City Budget Office	\$0	\$57,871	\$57,871	\$55,086	\$1,206	\$11,134	\$47,943	\$44,704	\$1,249	\$9,540	\$39,651	\$36,973		
City Light	3,688,430	2,559,844	6,248,274	5,947,563	1,993,111	1,295,284	6,946,101	6,476,824	2,064,156	1,476,387	7,533,871	7,024,884		
Department of Information Technology	0	23,074	23,074	21,964	15,237	5,177	33,134	30,895	15,780	7,339	41,574	38,766		
Drainage and Waste Water Fund (Seattle Public Utilities)	1,226,675	3,402,469	4,629,144	4,406,357	2,629,759	1,017,290	6,241,613	5,819,931	2,723,499	1,370,083	7,595,028	7,081,910		
FAS	195,000	254,036	449,036	427,425	220,587	96,954	572,669	533,979	228,450	124,634	676,485	630,782		
Fire Department	607,689	1,132,969	1,740,658	1,656,885	468,143	356,488	1,852,312	1,727,171	484,830	390,426	1,946,716	1,815,196		
Fire Pension Board	0	136	136	129	0	26	110	102	0	22	88	82		
Human Services	70,000	381,776	451,776	430,034	48,679	88,883	411,572	383,766	50,414	83,885	378,101	352,557		
Law Department	500	81,854	82,354	78,391	443	15,781	67,017	62,489	459	13,272	54,204	50,542		
Legislative	0	120,257	120,257	114,470	44,344	25,229	139,373	129,957	45,925	29,849	155,448	144,946		
Library	157,617	81,493	239,110	227,603	80,915	49,800	270,225	251,969	83,799	57,611	296,413	276,388		
Mayor's Office	0	22,115	22,115	21,051	41,818	6,323	57,610	53,718	43,308	13,554	87,364	81,462		
Municipal Court	6,341,551	787,271	7,128,822	6,785,732	49,680	1,366,608	5,811,893	5,419,243	51,450	1,151,529	4,711,814	4,393,485		
Neighborhoods	0	7,643	7,643	7,275	105	1,468	6,280	5,856	108	1,247	5,141	4,794		
Parks & Recreation	489,403	1,063,299	1,552,702	1,477,975	691,114	331,670	1,912,145	1,782,961	715,749	413,801	2,214,093	2,064,510		
Personnel	0	35,658	35,658	33,942	19	6,824	28,853	26,904	20	5,705	23,168	21,603		
Planning & Development	25,156	247,005	272,161	259,063	85,366	56,347	301,180	280,832	88,409	63,961	325,628	303,629		
Police Department	8,468,518	7,059,908	15,528,426	14,781,088	3,351,651	3,138,999	15,741,077	14,677,613	3,471,123	3,285,419	15,926,780	14,850,770		
Seattle Center	98,118	443,089	541,207	515,160	142,027	110,663	572,571	533,888	147,090	120,546	599,114	558,638		
Seattle Employees' Retirement Fund	0	13,730	13,730	13,069	44,331	4,844	53,217	49,622	45,911	12,816	86,312	80,481		
Solid Waste Fund (Seattle Public Utilities)	0	82,173	82,173	78,218	66,919	19,070	130,022	121,238	69,305	29,169	170,157	158,662		
Transportation	10,818,390	7,320,032	18,138,422	17,265,472	5,684,625	3,755,079	20,067,968	18,712,180	5,887,258	4,261,612	21,693,614	20,227,998		
Water Fund (Seattle Public Utilities)	3,746,608	2,136,933	5,883,541	5,600,384	1,484,997	1,200,085	6,168,453	5,751,714	1,537,931	1,296,342	6,410,042	5,976,981		
All Other General Fund	35,000	88,998	123,998	118,030	51,927	26,324	149,601	139,494	53,778	32,264	171,116	159,555		
Total City	\$35,968,655	\$27,403,634	\$63,372,289	\$60,322,366	\$17,197,000	\$12,986,351	\$67,582,938	\$63,017,050	\$17,810,000	\$14,251,012	\$71,141,925	\$66,335,594		

1. Case reserves in column (1) are net reserve amounts per the City's December 31, 2016 database.
2. A per occurrence self-insured retention of \$5 million is assumed for 2017 and 2018.
3. Column (2) includes IBNR and reopened claims. It is allocated to departments based on the distribution presented on Exhibit 1-5, column (2).
4. Totals for columns (3), (5), (6), (9) and (10) are from Exhibit 2-1.
5. Columns (5) and (9) are from Exhibit 1-5, columns (5) and (9), respectively.
6. Columns (4), (8) and (12) assume an annual effective interest rate of 1.45% as specified by the City.

City of Seattle
Liability Losses

Allocation of Estimates by Department
Assuming a \$6.5 Million Retention for Future Accident Years
As of December 31, 2016

Department	2017						2018			2019		
	Undiscounted	Undiscounted	Undiscounted	Discounted			Undiscounted	Discounted	Undiscounted	Discounted		
	Case Loss	Additional Loss	Total Loss	Total Loss	Reserves	Payments	Total Loss	Total Loss	Total Loss	Total Loss		
	Reserves	Reserves	(1)+(2)	Reserves	Ultimate Loss	Payments	(3)+(5)-(6)	Reserves	Ultimate Loss	Payments	(7)+(9)-(10)	Reserves
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
City Budget Office	\$0	\$57,871	\$57,871	\$55,086	\$1,225	\$11,135	\$47,961	\$44,721	\$1,269	\$9,527	\$39,703	\$37,020
City Light	3,688,430	2,559,844	6,248,274	5,947,563	2,024,867	1,296,872	6,976,269	6,504,954	2,097,188	1,481,416	7,592,041	7,079,125
Department of Information Technology	0	23,074	23,074	21,964	15,480	5,189	33,364	31,110	16,032	7,385	42,012	39,173
Drainage and Waste Water Fund (Seattle Public Utilities)	1,226,675	3,402,469	4,629,144	4,406,357	2,671,659	1,019,385	6,281,418	5,857,046	2,767,081	1,377,802	7,670,696	7,152,466
FAS	195,000	254,036	449,036	427,425	224,102	97,130	576,008	537,093	232,106	125,263	682,850	636,717
Fire Department	607,689	1,132,969	1,740,658	1,656,885	475,601	356,861	1,859,398	1,733,778	492,588	391,526	1,960,461	1,828,013
Fire Pension Board	0	136	136	129	0	26	110	102	0	22	88	82
Human Services	70,000	381,776	451,776	430,034	49,454	88,922	412,309	384,453	51,221	83,918	379,612	353,965
Law Department	500	81,854	82,354	78,391	450	15,781	67,023	62,495	466	13,248	54,241	50,577
Legislative	0	120,257	120,257	114,470	45,051	25,264	140,044	130,582	46,660	29,966	156,737	146,148
Library	157,617	81,493	239,110	227,603	82,204	49,865	271,450	253,111	85,140	57,819	298,770	278,586
Mayor's Office	0	22,115	22,115	21,051	42,484	6,356	58,243	54,308	44,001	13,693	88,552	82,569
Municipal Court	6,341,551	787,271	7,128,822	6,785,732	50,471	1,366,648	5,812,645	5,419,944	52,274	1,149,564	4,715,355	4,396,787
Neighborhoods	0	7,643	7,643	7,275	106	1,468	6,281	5,857	110	1,245	5,147	4,799
Parks & Recreation	489,403	1,063,299	1,552,702	1,477,975	702,125	332,221	1,922,606	1,792,715	727,202	415,728	2,234,080	2,083,146
Personnel	0	35,658	35,658	33,942	19	6,824	28,853	26,904	20	5,694	23,179	21,613
Planning & Development	25,156	247,005	272,161	259,063	86,726	56,415	302,472	282,037	89,824	64,175	328,121	305,953
Police Department	8,468,518	7,059,908	15,528,426	14,781,088	3,405,052	3,141,669	15,791,809	14,724,918	3,526,668	3,292,371	16,026,107	14,943,386
Seattle Center	98,118	443,089	541,207	515,160	144,290	110,776	574,721	535,893	149,443	120,876	603,288	562,530
Seattle Employees' Retirement Fund	0	13,730	13,730	13,069	45,037	4,879	53,888	50,247	46,646	12,965	87,568	81,652
Solid Waste Fund (Seattle Public Utilities)	0	82,173	82,173	78,218	67,985	19,123	131,035	122,182	70,414	29,377	172,072	160,447
Transportation	10,818,390	7,320,032	18,138,422	17,265,472	5,775,199	3,759,608	20,154,012	18,792,411	5,981,468	4,275,860	21,859,620	20,382,789
Water Fund (Seattle Public Utilities)	3,746,608	2,136,933	5,883,541	5,600,384	1,508,658	1,201,268	6,190,931	5,772,673	1,562,541	1,299,720	6,453,751	6,017,737
All Other General Fund	35,000	88,998	123,998	118,030	52,755	26,365	150,387	140,227	54,639	32,406	172,620	160,958
Total City	\$35,968,655	\$27,403,634	\$63,372,289	\$60,322,366	\$17,471,000	\$13,000,051	\$67,843,238	\$63,259,761	\$18,095,000	\$14,291,566	\$71,646,671	\$66,806,238

1. Case reserves in column (1) are net reserve amounts per the City's December 31, 2016 database.
2. A per occurrence self-insured retention of \$6.5 million is assumed for 2017 and 2018.
3. Column (2) includes IBNR and reopened claims. It is allocated to departments based on the distribution presented on Exhibit 1-5, column (2).
4. Totals for columns (3), (5), (6), (9) and (10) are from Exhibit 2-2.
5. Columns (5) and (9) are from Exhibit 1-5, columns (6) and (10), respectively.
6. Columns (4), (8) and (12) assume an annual effective interest rate of 1.45% as specified by the City.

City of Seattle
Liability Losses

Allocation of Estimates by Department
Assuming a \$7.5 Million Retention for Future Accident Years
As of December 31, 2016

Department	Undiscounted						Undiscounted				Undiscounted	
	Undiscounted	Undiscounted	Total Loss	Discounted			12/31/2017	Discounted			12/31/2018	Discounted
	Case Loss	Additional Loss	Reserves	Total Loss	2017		Total Loss	12/31/2017	2018		Total Loss	12/31/2018
	Reserves	Reserves	(1)+(2)	Reserves	Ultimate Loss	Payments	(3)+(5)-(6)	Reserves	Ultimate Loss	Payments	(7)+(9)-(10)	Reserves
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
City Budget Office	\$0	\$57,871	\$57,871	\$55,086	\$1,235	\$11,136	\$47,971	\$44,730	\$1,279	\$9,520	\$39,730	\$37,046
City Light	3,688,430	2,559,844	6,248,274	5,947,563	2,041,672	1,297,712	6,992,234	6,519,841	2,114,457	1,484,065	7,622,625	7,107,643
Department of Information Technology	0	23,074	23,074	21,964	15,608	5,196	33,486	31,224	16,164	7,409	42,241	39,388
Drainage and Waste Water Fund (Seattle Public Utilities)	1,226,675	3,402,469	4,629,144	4,406,357	2,693,832	1,020,494	6,302,482	5,876,688	2,789,866	1,381,869	7,710,480	7,189,561
FAS	195,000	254,036	449,036	427,425	225,962	97,223	577,775	538,740	234,017	125,595	686,197	639,838
Fire Department	607,689	1,132,969	1,740,658	1,656,885	479,549	357,058	1,863,148	1,737,274	496,644	392,105	1,967,688	1,834,751
Fire Pension Board	0	136	136	129	0	26	110	102	0	22	88	82
Human Services	70,000	381,776	451,776	430,034	49,865	88,942	412,699	384,817	51,642	83,935	380,406	354,706
Law Department	500	81,854	82,354	78,391	454	15,781	67,027	62,499	470	13,236	54,261	50,595
Legislative	0	120,257	120,257	114,470	45,424	25,283	140,399	130,914	47,044	30,028	157,415	146,780
Library	157,617	81,493	239,110	227,603	82,886	49,899	272,098	253,715	85,841	57,929	300,010	279,741
Mayor's Office	0	22,115	22,115	21,051	42,836	6,374	58,578	54,621	44,364	13,765	89,176	83,152
Municipal Court	6,341,551	787,271	7,128,822	6,785,732	50,890	1,366,669	5,813,043	5,420,315	52,704	1,148,530	4,717,217	4,398,523
Neighborhoods	0	7,643	7,643	7,275	107	1,468	6,282	5,858	111	1,244	5,149	4,801
Parks & Recreation	489,403	1,063,299	1,552,702	1,477,975	707,952	332,512	1,928,142	1,797,877	733,190	416,744	2,244,588	2,092,944
Personnel	0	35,658	35,658	33,942	19	6,824	28,854	26,904	20	5,689	23,185	21,619
Planning & Development	25,156	247,005	272,161	259,063	87,446	56,451	303,156	282,675	90,563	64,288	329,431	307,175
Police Department	8,468,518	7,059,908	15,528,426	14,781,088	3,433,313	3,143,082	15,818,656	14,749,951	3,555,708	3,296,034	16,078,330	14,992,081
Seattle Center	98,118	443,089	541,207	515,160	145,488	110,836	575,858	536,953	150,674	121,050	605,483	564,576
Seattle Employees' Retirement Fund	0	13,730	13,730	13,069	45,411	4,898	54,243	50,579	47,030	13,044	88,229	82,268
Solid Waste Fund (Seattle Public Utilities)	0	82,173	82,173	78,218	68,550	19,152	131,571	122,682	70,993	29,486	173,079	161,386
Transportation	10,818,390	7,320,032	18,138,422	17,265,472	5,823,130	3,762,005	20,199,547	18,834,870	6,030,721	4,283,367	21,946,900	20,464,173
Water Fund (Seattle Public Utilities)	3,746,608	2,136,933	5,883,541	5,600,384	1,521,179	1,201,894	6,202,826	5,783,764	1,575,408	1,301,501	6,476,732	6,039,166
All Other General Fund	35,000	88,998	123,998	118,030	53,192	26,387	150,803	140,615	55,089	32,482	173,410	161,695
Total City	\$35,968,655	\$27,403,634	\$63,372,289	\$60,322,366	\$17,616,000	\$13,007,301	\$67,980,988	\$63,388,208	\$18,244,000	\$14,312,936	\$71,912,051	\$67,053,690

1. Case reserves in column (1) are net reserve amounts per the City's December 31, 2016 database.
2. A per occurrence self-insured retention of \$7.5 million is assumed for 2017 and 2018.
3. Column (2) includes IBNR and reopened claims. It is allocated to departments based on the distribution presented on Exhibit 1-5, column (2).
4. Totals for columns (3), (5), (6), (9) and (10) are from Exhibit 2-3.
5. Columns (5) and (9) are from Exhibit 1-5, columns (7) and (11), respectively.
6. Columns (4), (8) and (12) assume an annual effective interest rate of 1.45% as specified by the City.

City of Seattle
Liability Losses

Allocation of Estimates by Department
Assuming a \$10 Million Retention for Future Accident Years
As of December 31, 2016

Department	Undiscounted	Undiscounted	Undiscounted	Discounted	2017		Undiscounted	Discounted	2018		Undiscounted	Discounted
	Case Loss	Additional Loss	Total Loss	Total Loss	Ultimate Loss	Payments	12/31/2017	12/31/2017	Ultimate Loss	Payments	12/31/2018	12/31/2018
	Reserves	Reserves	Reserves	Reserves	Reserves	Reserves	Reserves	Reserves	Reserves	Reserves	Reserves	Reserves
	(1)	(2)	(3)	(4)	(5)	(6)	(3)+(5)-(6)	(8)	(9)	(10)	(7)+(9)-(10)	(12)
City Budget Office	\$0	\$57,871	\$57,871	\$55,086	\$1,254	\$11,137	\$47,989	\$44,747	\$1,299	\$9,507	\$39,781	\$37,094
City Light	3,688,430	2,559,844	6,248,274	5,947,563	2,073,544	1,299,306	7,022,513	6,548,073	2,147,488	1,489,103	7,680,898	7,161,978
Department of Information Technology	0	23,074	23,074	21,964	15,852	5,208	33,718	31,440	16,417	7,455	42,680	39,796
Drainage and Waste Water Fund (Seattle Public Utilities)	1,226,675	3,402,469	4,629,144	4,406,357	2,735,885	1,022,597	6,342,433	5,913,939	2,833,448	1,389,590	7,786,290	7,260,250
FAS	195,000	254,036	449,036	427,425	229,489	97,399	581,126	541,865	237,673	126,224	692,574	645,784
Fire Department	607,689	1,132,969	1,740,658	1,656,885	487,035	357,432	1,870,260	1,743,906	504,403	393,207	1,981,456	1,847,589
Fire Pension Board	0	136	136	129	0	26	110	102	0	22	88	82
Human Services	70,000	381,776	451,776	430,034	50,643	88,981	413,438	385,507	52,449	83,969	381,918	356,116
Law Department	500	81,854	82,354	78,391	461	15,782	67,034	62,505	478	13,213	54,298	50,630
Legislative	0	120,257	120,257	114,470	46,134	25,318	141,073	131,542	47,779	30,146	158,705	147,983
Library	157,617	81,493	239,110	227,603	84,180	49,964	273,327	254,861	87,182	58,138	302,371	281,943
Mayor's Office	0	22,115	22,115	21,051	43,505	6,407	59,213	55,213	45,057	13,903	90,366	84,261
Municipal Court	6,341,551	787,271	7,128,822	6,785,732	51,684	1,366,708	5,813,798	5,421,019	53,528	1,146,582	4,720,744	4,401,811
Neighborhoods	0	7,643	7,643	7,275	109	1,468	6,284	5,859	113	1,242	5,155	4,806
Parks & Recreation	489,403	1,063,299	1,552,702	1,477,975	719,004	333,065	1,938,641	1,807,667	744,644	418,673	2,264,612	2,111,615
Personnel	0	35,658	35,658	33,942	20	6,824	28,854	26,904	20	5,678	23,196	21,629
Planning & Development	25,156	247,005	272,161	259,063	88,811	56,520	304,453	283,884	91,978	64,502	331,929	309,504
Police Department	8,468,518	7,059,908	15,528,426	14,781,088	3,486,909	3,145,762	15,869,573	14,797,428	3,611,254	3,303,012	16,177,815	15,084,845
Seattle Center	98,118	443,089	541,207	515,160	147,759	110,950	578,016	538,965	153,028	121,380	609,664	568,475
Seattle Employees' Retirement Fund	0	13,730	13,730	13,069	46,120	4,933	54,917	51,207	47,764	13,193	89,488	83,442
Solid Waste Fund (Seattle Public Utilities)	0	82,173	82,173	78,218	69,620	19,205	132,588	123,630	72,103	29,693	174,998	163,175
Transportation	10,818,390	7,320,032	18,138,422	17,265,472	5,914,033	3,766,550	20,285,905	18,915,394	6,124,930	4,297,640	22,113,195	20,619,233
Water Fund (Seattle Public Utilities)	3,746,608	2,136,933	5,883,541	5,600,384	1,544,925	1,203,082	6,225,385	5,804,799	1,600,018	1,304,889	6,520,514	6,079,990
All Other General Fund	35,000	88,998	123,998	118,030	54,023	26,429	151,592	141,351	55,949	32,624	174,917	163,100
Total City	\$35,968,655	\$27,403,634	\$63,372,289	\$60,322,366	\$17,891,000	\$13,021,051	\$68,242,238	\$63,631,807	\$18,529,000	\$14,353,586	\$72,417,651	\$67,525,131

1. Case reserves in column (1) are net reserve amounts per the City's December 31, 2016 database.
2. A per occurrence self-insured retention of \$10 million is assumed for 2017 and 2018.
3. Column (2) includes IBNR and reopened claims. It is allocated to departments based on the distribution presented on Exhibit 1-5, column (2).
4. Totals for columns (3), (5), (6), (9) and (10) are from Exhibit 2-4.
5. Columns (5) and (9) are from Exhibit 1-5, columns (8) and (12), respectively.
6. Columns (4), (8) and (12) assume an annual effective interest rate of 1.45% as specified by the City.

City of Seattle
Liability Losses

Loss Allocation for 2017 and 2018

As of December 31, 2016

Department	Incurred Loss (1)	Expected	Experience	Experience	2017 Loss	2017 Loss	2017 Loss	2017 Loss	2018 Loss	2018 Loss	2018 Loss	2018 Loss
		Loss Distribution	Window Limited	Window of Losses	Allocation Assuming \$5M SIR	Allocation Assuming \$6.5M SIR	Allocation Assuming \$7.5M SIR	Allocation Assuming \$10M SIR	Allocation Assuming \$5M SIR	Allocation Assuming \$6.5M SIR	Allocation Assuming \$7.5M SIR	Allocation Assuming \$10M SIR
	(1) / Total (1)	(2)	(3) / Total (3)	(4)	(4) x Total (5)	(4) x Total (6)	(4) x Total (7)	(4) x Total (8)	(4) x Total (9)	(4) x Total (10)	(4) x Total (11)	(4) x Total (12)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
City Budget Office	\$526,014	0.21%	\$1,360	0.01%	\$1,206	\$1,225	\$1,235	\$1,254	\$1,249	\$1,269	\$1,279	\$1,299
City Light	23,267,432	9.34%	2,248,000	11.59%	1,993,111	2,024,867	2,041,672	2,073,544	2,064,156	2,097,188	2,114,457	2,147,488
Department of Information Technology	209,729	0.08%	17,185	0.09%	15,237	15,480	15,608	15,852	15,780	16,032	16,164	16,417
Drainage and Waste Water Fund (Seattle Public Utilities)	30,926,380	12.42%	2,966,066	15.29%	2,629,759	2,671,659	2,693,832	2,735,885	2,723,499	2,767,081	2,789,866	2,833,448
FAS	2,309,029	0.93%	248,797	1.28%	220,587	224,102	225,962	229,489	228,450	232,106	234,017	237,673
Fire Department	10,297,999	4.13%	528,011	2.72%	468,143	475,601	479,549	487,035	484,830	492,588	496,644	504,403
Fire Pension Board	1,235	0.00%	-	0.00%	0	0	0	0	0	0	0	0
Human Services	3,470,115	1.39%	54,904	0.28%	48,679	49,454	49,865	50,643	50,414	51,221	51,642	52,449
Law Department	744,005	0.30%	500	0.00%	443	450	454	461	459	466	470	478
Legislative	1,093,067	0.44%	50,015	0.26%	44,344	45,051	45,424	46,134	45,925	46,660	47,044	47,779
Library	740,724	0.30%	91,263	0.47%	80,915	82,204	82,886	84,180	83,799	85,140	85,841	87,182
Mayor's Office	201,015	0.08%	47,165	0.24%	41,818	42,484	42,836	43,505	43,308	44,001	44,364	45,057
Municipal Court	7,155,812	2.87%	56,033	0.29%	49,680	50,471	50,890	51,684	51,450	52,274	52,704	53,528
Neighborhoods	69,470	0.03%	118	0.00%	105	106	107	109	108	110	111	113
Parks & Recreation	9,664,742	3.88%	779,497	4.02%	691,114	702,125	707,952	719,004	715,749	727,202	733,190	744,644
Personnel	324,113	0.13%	21	0.00%	19	19	19	20	20	20	20	20
Planning & Development	2,245,128	0.90%	96,283	0.50%	85,366	86,726	87,446	88,811	88,409	89,824	90,563	91,978
Police Department	64,170,279	25.76%	3,780,277	19.49%	3,351,651	3,405,052	3,433,313	3,486,909	3,471,123	3,526,668	3,555,708	3,611,254
Seattle Center	4,027,409	1.62%	160,190	0.83%	142,027	144,290	145,488	147,759	147,090	149,443	150,674	153,028
Seattle Employees' Retirement Fund	124,800	0.05%	50,000	0.26%	44,331	45,037	45,411	46,120	45,911	46,646	47,030	47,764
Solid Waste Fund (Seattle Public Utilities)	746,903	0.30%	75,477	0.39%	66,919	67,985	68,550	69,620	69,305	70,414	70,993	72,103
Transportation	66,534,649	26.71%	6,411,604	33.06%	5,684,625	5,775,199	5,823,130	5,914,033	5,887,258	5,981,468	6,030,721	6,124,930
Water Fund (Seattle Public Utilities)	19,423,429	7.80%	1,674,906	8.64%	1,484,997	1,508,658	1,521,179	1,544,925	1,537,931	1,562,541	1,575,408	1,600,018
All Other General Fund	808,939	0.32%	58,568	0.30%	51,927	52,755	53,192	54,023	53,778	54,639	55,089	55,949
Total City	\$249,082,416		\$19,396,240		\$17,197,000	\$17,471,000	\$17,616,000	\$17,891,000	\$17,810,000	\$18,095,000	\$18,244,000	\$18,529,000

1. Losses in Column (1) are net incurred losses per the City's December 31, 2016 database for losses incurred between 1996 and 2016.
2. Column (2) presents the expected percentage of losses for each department based on prior experience.
3. Losses in column (3) are the City's incurred losses for accident years 2011 through 2015, limited to \$50,000 per claim.

City of Seattle
Liability Losses

Summary of Losses and Reserves Limited to \$5 Million

As of December 31, 2016

<u>Year</u>	<u>Accident Year Ultimate Loss</u> (1)	<u>Projected Calendar Year Payments</u> (2)	<u>Accident Year Outstanding Reserves</u> (3)
Prior	\$ -	\$ -	\$0
1996	6,290,416	-	0
1997	6,931,581	-	0
1998	15,045,478	-	0
1999	10,812,791	-	0
2000	7,473,306	-	0
2001	7,915,915	-	0
2002	8,086,649	-	0
2003	18,818,211	-	0
2004	12,605,624	-	0
2005	14,731,618	-	0
2006	19,466,423	-	0
2007	16,039,589	-	21,049
2008	7,706,023	-	94,722
2009	12,507,179	-	551,214
2010	11,727,770	-	431,118
2011	9,858,480	-	338,844
2012	12,589,000	-	4,258,047
2013	18,686,000	-	12,419,226
2014	24,540,000	-	14,829,541
2015	18,742,000	-	15,246,883
2016	15,912,000	-	15,181,645
2017	17,197,000	12,986,351	
2018	17,810,000	14,251,012	
2019	18,447,000	15,207,382	
2020	19,108,000	15,990,106	
Total			\$63,372,289

1. Loss includes allocated loss adjustment expense.
2. A per occurrence self-insured retention of \$5 million is assumed for years 2017 through 2020.

City of Seattle
Liability Losses

Summary of Losses and Reserves Limited to \$6.5 Million

As of December 31, 2016

<u>Year</u>	<u>Accident Year Ultimate Loss</u> (1)	<u>Projected Calendar Year Payments</u> (2)	<u>Accident Year Outstanding Reserves</u> (3)
Prior	\$ -	\$ -	\$0
1996	6,290,416	-	0
1997	6,931,581	-	0
1998	15,045,478	-	0
1999	10,812,791	-	0
2000	7,473,306	-	0
2001	7,915,915	-	0
2002	8,086,649	-	0
2003	18,818,211	-	0
2004	12,605,624	-	0
2005	14,731,618	-	0
2006	19,466,423	-	0
2007	16,039,589	-	21,049
2008	7,706,023	-	94,722
2009	12,507,179	-	551,214
2010	11,727,770	-	431,118
2011	9,858,480	-	338,844
2012	12,589,000	-	4,258,047
2013	18,686,000	-	12,419,226
2014	24,540,000	-	14,829,541
2015	18,742,000	-	15,246,883
2016	15,912,000	-	15,181,645
2017	17,471,000	13,000,051	
2018	18,095,000	14,291,566	
2019	18,742,000	15,277,988	
2020	19,414,000	16,109,946	
Total			\$63,372,289

1. Loss includes allocated loss adjustment expense.
2. A per occurrence self-insured retention of \$6.5 million is assumed for years 2017 through 2020.

City of Seattle
Liability Losses

Summary of Losses and Reserves Limited to \$7.5 Million

As of December 31, 2016

<u>Year</u>	<u>Accident Year Ultimate Loss</u> (1)	<u>Projected Calendar Year Payments</u> (2)	<u>Accident Year Outstanding Reserves</u> (3)
Prior	\$ -	\$ -	\$0
1996	6,290,416	-	0
1997	6,931,581	-	0
1998	15,045,478	-	0
1999	10,812,791	-	0
2000	7,473,306	-	0
2001	7,915,915	-	0
2002	8,086,649	-	0
2003	18,818,211	-	0
2004	12,605,624	-	0
2005	14,731,618	-	0
2006	19,466,423	-	0
2007	16,039,589	-	21,049
2008	7,706,023	-	94,722
2009	12,507,179	-	551,214
2010	11,727,770	-	431,118
2011	9,858,480	-	338,844
2012	12,589,000	-	4,258,047
2013	18,686,000	-	12,419,226
2014	24,540,000	-	14,829,541
2015	18,742,000	-	15,246,883
2016	15,912,000	-	15,181,645
2017	17,616,000	13,007,301	
2018	18,244,000	14,312,936	
2019	18,897,000	15,315,122	
2020	19,574,000	16,172,972	
Total			\$63,372,289

1. Loss includes allocated loss adjustment expense.
2. A per occurrence self-insured retention of \$7.5 million is assumed for years 2017 through 2020.

City of Seattle
Liability Losses

Summary of Losses and Reserves Limited to \$10 Million

As of December 31, 2016

<u>Year</u>	<u>Accident Year Ultimate Loss</u> (1)	<u>Projected Calendar Year Payments</u> (2)	<u>Accident Year Outstanding Reserves</u> (3)
Prior	\$ -	\$ -	\$0
1996	6,290,416	-	0
1997	6,931,581	-	0
1998	15,045,478	-	0
1999	10,812,791	-	0
2000	7,473,306	-	0
2001	7,915,915	-	0
2002	8,086,649	-	0
2003	18,818,211	-	0
2004	12,605,624	-	0
2005	14,731,618	-	0
2006	19,466,423	-	0
2007	16,039,589	-	21,049
2008	7,706,023	-	94,722
2009	12,507,179	-	551,214
2010	11,727,770	-	431,118
2011	9,858,480	-	338,844
2012	12,589,000	-	4,258,047
2013	18,686,000	-	12,419,226
2014	24,540,000	-	14,829,541
2015	18,742,000	-	15,246,883
2016	15,912,000	-	15,181,645
2017	17,891,000	13,021,051	
2018	18,529,000	14,353,586	
2019	19,192,000	15,385,832	
2020	19,880,000	16,292,982	
Total			\$63,372,289

1. Loss includes allocated loss adjustment expense.
2. A per occurrence self-insured retention of \$10 million is assumed for years 2017 through 2020.

City of Seattle
Liability Losses

Future Payments Assuming Various Retention Assumptions
Broken Out for SPU, City Light and All Other General Fund
As of December 31, 2016

	Estimated Percentage of Loss	2017 Payments Assuming a \$5 million SIR	2018 Payments Assuming a \$5 million SIR	2019 Payments Assuming a \$5 million SIR	2020 Payments Assuming a \$5 million SIR
SPU	12.53%	1,626,569	1,784,970	1,904,757	2,002,795
City Light	18.40%	2,388,867	2,621,504	2,797,431	2,941,414
All Other	69.08%	8,970,915	9,844,538	10,505,193	11,045,896
Total	100.00%	12,986,351	14,251,012	15,207,382	15,990,106

	Estimated Percentage of Loss	2017 Payments Assuming a \$6.5 million SIR	2018 Payments Assuming a \$6.5 million SIR	2019 Payments Assuming a \$6.5 million SIR	2020 Payments Assuming a \$6.5 million SIR
SPU	12.53%	1,628,285	1,790,050	1,913,601	2,017,806
City Light	18.40%	2,391,387	2,628,964	2,810,419	2,963,459
All Other	69.08%	8,980,379	9,872,552	10,553,968	11,128,681
Total	100.00%	13,000,051	14,291,566	15,277,988	16,109,946

	Estimated Percentage of Loss	2017 Payments Assuming a \$7.5 million SIR	2018 Payments Assuming a \$7.5 million SIR	2019 Payments Assuming a \$7.5 million SIR	2020 Payments Assuming a \$7.5 million SIR
SPU	12.53%	1,629,193	1,792,726	1,918,252	2,025,700
City Light	18.40%	2,392,721	2,632,895	2,817,250	2,975,053
All Other	69.08%	8,985,388	9,887,315	10,579,620	11,172,219
Total	100.00%	13,007,301	14,312,936	15,315,122	16,172,972

	Estimated Percentage of Loss	2017 Payments Assuming a \$10.0 million SIR	2018 Payments Assuming a \$10.0 million SIR	2019 Payments Assuming a \$10.0 million SIR	2020 Payments Assuming a \$10.0 million SIR
SPU	12.53%	1,630,915	1,797,818	1,927,109	2,040,731
City Light	18.40%	2,395,250	2,640,373	2,830,257	2,997,129
All Other	69.08%	8,994,886	9,915,396	10,628,466	11,255,121
Total	100.00%	13,021,051	14,353,586	15,385,832	16,292,982

1. Total payment amounts are from Exhibit 2-6.
2. Estimated percentage of loss is based on the respective department's net incurred loss experience over the 2011 through 2015 experience window.

City of Seattle
Liability Losses

Future Payments of Indicated Loss Reserves
As of December 31, 2016

Accident Year	Estimated Loss Reserves (1)	Calendar Year			
		2017 (2)	2018 (3)	2019 (4)	2020 (5)
Prior	\$0	\$0	\$0	\$0	\$0
1996	0	0	0	0	0
1997	0	0	0	0	0
1998	0	0	0	0	0
1999	0	0	0	0	0
2000	0	0	0	0	0
2001	0	0	0	0	0
2002	0	0	0	0	0
2003	0	0	0	0	0
2004	0	0	0	0	0
2005	0	0	0	0	0
2006	0	0	0	0	0
2007	21,049	10,875	7,016	702	351
2008	94,722	37,889	29,364	18,944	1,894
2009	551,214	173,670	151,018	117,039	75,509
2010	431,118	131,388	94,435	82,118	63,641
2011	338,844	101,653	72,287	51,956	45,179
2012	4,258,047	1,064,512	958,061	681,288	489,675
2013	12,419,226	3,854,243	2,141,246	1,927,121	1,370,397
2014	14,829,541	3,361,363	3,559,090	1,977,272	1,779,545
2015	15,246,883	1,856,763	3,035,094	3,213,629	1,785,349
2016	15,181,645	1,534,145	1,661,991	2,716,715	2,876,522
Subtotal	63,372,289	12,126,501	11,709,600	10,786,784	8,488,064
Assuming \$5 million SIR for 2017 through 2020					
2017	17,197,000	859,850	1,650,912	1,788,488	2,923,490
2018	17,810,000		890,500	1,709,760	1,852,240
2019	18,447,000			922,350	1,770,912
2020	19,108,000				955,400
Total	135,934,289	12,986,351	14,251,012	15,207,382	15,990,106
Assuming \$6.5 million SIR for 2017 through 2020					
2017	17,471,000	873,550	1,677,216	1,816,984	2,970,070
2018	18,095,000		904,750	1,737,120	1,881,880
2019	18,742,000			937,100	1,799,232
2020	19,414,000				970,700
Total	137,094,289	13,000,051	14,291,566	15,277,988	16,109,946
Assuming \$7.5 million SIR for 2017 through 2020					
2017	17,616,000	880,800	1,691,136	1,832,064	2,994,720
2018	18,244,000		912,200	1,751,424	1,897,376
2019	18,897,000			944,850	1,814,112
2020	19,574,000				978,700
Total	210,265,289	13,007,301	14,312,936	15,315,122	16,172,972
Assuming \$10 million SIR for 2017 through 2020					
2017	17,891,000	894,550	1,717,536	1,860,664	3,041,470
2018	18,529,000		926,450	1,778,784	1,927,016
2019	19,192,000			959,600	1,842,432
2020	19,880,000				994,000
Total	138,864,289	13,021,051	14,353,586	15,385,832	16,292,982

1. Amounts are net of self-insured retentions.
2. Reserves in column (1) are from Exhibit 2-10, column (6); projected losses in column (1) are from Exhibit 2-9.

City of Seattle
Liability Losses

Payment Pattern

As of December 31, 2016

<u>Months of Development</u>	<u>Payment Pattern</u> (1)		<u>Cumulative Payment Pattern</u> (2)	
12	5.000	%	5.000	%
24	9.600		14.600	
36	10.400		25.000	
48	17.000		42.000	
60	18.000		60.000	
72	10.000		70.000	
84	9.000		79.000	
96	6.400		85.400	
108	4.600		90.000	
120	4.000		94.000	
132	3.100		97.100	
144	2.000		99.100	
156	0.200		99.300	
168	0.100		99.400	
180	0.100		99.500	
192	0.100		99.600	
204	0.100		99.700	
216	0.100		99.800	
228	0.100		99.900	
240	0.050		99.950	
252	0.030		99.980	
264	0.010		99.990	
276	0.005		99.995	
288	0.003		99.998	
300	0.002		100.000	

1. Payment pattern is based on the historical relationship between cumulative paid loss and ultimate loss and on industry statistics.

City of Seattle
Liability Losses

Estimated Net Ultimate Loss for Accident Years 2017 through 2020
Broken Out for SPU, City Light and All Other General Fund
As of December 31, 2016

	Estimated Percentage of Loss	2017 Estimated Ultimate Loss Assuming a \$5 million SIR	2018 Estimated Ultimate Loss Assuming a \$5 million SIR	2019 Estimated Ultimate Loss Assuming a \$5 million SIR	2020 Estimated Ultimate Loss Assuming a \$5 million SIR
SPU	12.53%	2,153,961	2,230,741	2,310,527	2,393,318
City Light	18.40%	3,163,425	3,276,188	3,393,365	3,514,958
All Other	69.08%	11,879,613	12,303,071	12,743,108	13,199,724
Total	100.00%	17,197,000	17,810,000	18,447,000	19,108,000

	Estimated Percentage of Loss	2017 Estimated Ultimate Loss Assuming a \$6.5 million SIR	2018 Estimated Ultimate Loss Assuming a \$6.5 million SIR	2019 Estimated Ultimate Loss Assuming a \$6.5 million SIR	2020 Estimated Ultimate Loss Assuming a \$6.5 million SIR
SPU	12.53%	2,188,281	2,266,438	2,347,476	2,431,646
City Light	18.40%	3,213,828	3,328,614	3,447,631	3,571,247
All Other	69.08%	12,068,891	12,499,948	12,946,893	13,411,107
Total	100.00%	17,471,000	18,095,000	18,742,000	19,414,000

	Estimated Percentage of Loss	2017 Estimated Ultimate Loss Assuming a \$7.5 million SIR	2018 Estimated Ultimate Loss Assuming a \$7.5 million SIR	2019 Estimated Ultimate Loss Assuming a \$7.5 million SIR	2020 Estimated Ultimate Loss Assuming a \$7.5 million SIR
SPU	12.53%	2,206,442	2,285,100	2,366,890	2,451,686
City Light	18.40%	3,240,501	3,356,023	3,476,144	3,600,679
All Other	69.08%	12,169,057	12,602,876	13,053,966	13,521,635
Total	100.00%	17,616,000	18,244,000	18,897,000	19,574,000

	Estimated Percentage of Loss	2017 Estimated Ultimate Loss Assuming a \$10.0 million SIR	2018 Estimated Ultimate Loss Assuming a \$10.0 million SIR	2019 Estimated Ultimate Loss Assuming a \$10.0 million SIR	2020 Estimated Ultimate Loss Assuming a \$10.0 million SIR
SPU	12.53%	2,240,886	2,320,797	2,403,840	2,490,013
City Light	18.40%	3,291,088	3,408,449	3,530,410	3,656,969
All Other	69.08%	12,359,026	12,799,753	13,257,751	13,733,018
Total	100.00%	17,891,000	18,529,000	19,192,000	19,880,000

1. Total ultimate loss amounts are from Exhibit 2-9.
2. Estimated percentage of loss is based on the respective department's net incurred loss experience over the 2011 through 2015 experience window.

City of Seattle
Liability Losses

Estimated Net Ultimate Loss and Loss Rate for Accident Years 2017 through 2020

As of December 31, 2016

Accident Year	Estimated Ultimate Loss Limited to \$1 million (1)	Exposures (2)	Estimated Loss Rate (1)/(2) (3)	On-Level Factor to AY 2017 (4)	Loss Rate at AY 2017 Cost Level (3) x (4) (5)
1996	\$6,290,416	10,471	\$601	1.860	\$1,118
1997	6,252,812	10,595	590	1.806	1,066
1998	8,529,242	11,137	766	1.754	1,343
1999	8,807,431	11,227	784	1.702	1,336
2000	7,473,306	11,555	647	1.653	1,069
2001	7,131,888	11,692	610	1.605	979
2002	7,139,338	11,476	622	1.558	969
2003	10,423,608	11,189	932	1.513	1,409
2004	10,544,000	10,996	959	1.469	1,408
2005	10,139,961	11,036	919	1.426	1,310
2006	14,944,502	11,285	1,324	1.384	1,833
2007	13,040,000	11,547	1,129	1.344	1,518
2008	7,100,000	11,954	594	1.305	775
2009	10,230,000	12,329	830	1.267	1,051
2010	9,800,000	11,143	879	1.230	1,082
2011	8,300,000	11,652	712	1.194	851
2012	11,150,000	11,705	953	1.159	1,104
2013	8,050,000	12,052	668	1.126	752
2014	14,300,000	12,381	1,155	1.093	1,262
2015	16,350,000	12,755	1,282	1.061	1,360
2016	13,750,000	13,263	1,037	1.030	1,068
Total	\$209,746,504	243,440			

Ten Year Volume Weighted Average:	\$1,083
Nine Year Volume Weighted Average:	1,037
Eight Year Volume Weighted Average:	1,070
Seven Year Volume Weighted Average:	1,072
Six Year Volume Weighted Average:	1,071
Five Year Volume Weighted Average:	1,112
Four Year Volume Weighted Average:	1,114
Three Year Volume Weighted Average:	1,227
Bornhuetter-Ferguson Seed:	1,164
Selected ILF to \$5 million SIR:	1.189
Selected ILF to \$6.5 million SIR:	1.208
Selected ILF to \$7.5 million SIR:	1.218
Selected ILF to \$10 million SIR:	1.237

Accident Year	Selected Loss Rate at \$1 million SIR (6)	Estimated Exposure (7)	Estimated Ultimate Loss at \$5 million SIR (6)x(7)xILF (8)	Estimated Ultimate Loss at \$6.5 million SIR (6)x(7)xILF (9)	Estimated Ultimate Loss at \$7.5 million SIR (6)x(7)xILF (10)	Estimated Ultimate Loss at \$10 million SIR (6)x(7)xILF (11)
2017	\$1,085	13,330	\$17,197,000	\$17,471,000	\$17,616,000	\$17,891,000
2018	1,118	13,398	17,810,000	18,095,000	18,244,000	18,529,000
2019	1,152	13,468	18,447,000	18,742,000	18,897,000	19,192,000
2020	1,187	13,539	19,108,000	19,414,000	19,574,000	19,880,000

- Exposures are based on a relative index developed from Seattle population and worker hours; both population and worker hours were provided by the City.
- Column (1) is from Exhibit 2-11, column (5).
- The selected ILFs are based on a distribution of the City's losses at various limits using a PwC model which is supplemented with industry information.
- Columns (8), (9), (10) and (11) are rounded to the nearest thousand.

City of Seattle
Liability Losses

Summary of Net Losses and Reserves
As of December 31, 2016

Accident Year	Paid Loss	Case Loss Reserve	Incurred Loss (1) + (2)	IBNR Loss Reserves	Ultimate Loss (3) + (4)	Total Loss Reserves (2) + (4)
	(1)	(2)	(3)	(4)	(5)	(6)
1996	\$ 6,290,416	\$ -	\$ 6,290,416	\$ -	\$ 6,290,416	\$ -
1997	6,931,581	-	6,931,581	-	6,931,581	-
1998	15,045,478	-	15,045,478	-	15,045,478	-
1999	10,812,791	-	10,812,791	-	10,812,791	-
2000	7,473,306	-	7,473,306	-	7,473,306	-
2001	7,915,915	-	7,915,915	-	7,915,915	-
2002	8,086,649	-	8,086,649	-	8,086,649	-
2003	18,818,211	-	18,818,211	-	18,818,211	-
2004	12,605,624	-	12,605,624	-	12,605,624	-
2005	14,731,618	-	14,731,618	-	14,731,618	-
2006	19,466,423	-	19,466,423	-	19,466,423	-
2007	16,018,540	-	16,018,540	21,049	16,039,589	21,049
2008	7,611,301	1,000	7,612,301	93,722	7,706,023	94,722
2009	11,955,965	430,000	12,385,965	121,214	12,507,179	551,214
2010	11,296,652	195,000	11,491,652	236,118	11,727,770	431,118
2011	9,519,636	35,000	9,554,636	303,844	9,858,480	338,844
2012	8,330,953	3,284,999	11,615,952	973,048	12,589,000	4,258,047
2013	6,266,774	11,295,427	17,562,201	1,123,799	18,686,000	12,419,226
2014	9,710,459	11,117,148	20,827,607	3,712,393	24,540,000	14,829,541
2015	3,495,117	7,346,420	10,841,537	7,900,463	18,742,000	15,246,883
2016	730,355	2,263,660	2,994,015	12,917,985	15,912,000	15,181,645
Total	\$213,113,764	\$35,968,654	\$249,082,418	\$27,403,635	\$ 276,486,053	\$ 63,372,289

1. Column (5) is from Exhibit 2-11.

City of Seattle
Liability Losses

Estimated Ultimate Loss Limited to Retention
As of December 31, 2016

Accident Year	Paid Loss Development	Incurred Loss Development	Bornhuetter-Ferguson Using Exposures and Paid Loss	Bornhuetter-Ferguson Using Exposures and Incurred Loss	Selected Ultimate Loss Limited to \$1 Million	ILF to SIR	Expected Net Loss in Excess of \$1 Million (5) x [(6) - 1]	Percent Incurred of Net Loss in Excess of \$1 Million	Estimated IBNR in Excess of \$1 Million (7) x [1 - (8)]	Actual Net Incurred Loss in Excess of \$1 Million	Selected Net Loss in Excess of \$1 Million	Estimated Ultimate Loss Limited to Retention (5)+(11)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1996	\$ 6,290,416	\$ 6,290,416	\$ 6,290,416	\$ 6,290,416	\$ 6,290,416	1.268	\$ 1,685,831	1.000 %	\$ -	\$ -	\$ -	\$ 6,290,416
1997	6,252,812	6,252,812	6,252,812	6,252,812	6,252,812	1.269	1,682,006	1.000	-	678,769	678,769	6,931,581
1998	8,529,242	8,529,242	8,529,242	8,529,242	8,529,242	1.270	2,302,895	1.000	-	6,516,236	6,516,236	15,045,478
1999	8,807,431	8,807,431	8,807,431	8,807,431	8,807,431	1.103	907,165	1.000	-	2,005,360	2,005,360	10,812,791
2000	7,473,306	7,473,306	7,473,306	7,473,306	7,473,306	1.104	777,224	1.000	-	-	-	7,473,306
2001	7,131,888	7,131,888	7,131,888	7,131,888	7,131,888	1.105	748,848	1.000	-	784,027	784,027	7,915,915
2002	7,139,338	7,139,338	7,139,338	7,139,338	7,139,338	1.173	1,235,105	1.000	-	947,311	947,311	8,086,649
2003	10,423,608	10,423,608	10,423,608	10,423,608	10,423,608	1.174	1,813,708	1.000	-	8,394,603	8,394,603	18,818,211
2004	10,554,544	10,544,000	10,552,711	10,544,000	10,544,000	1.175	1,845,200	1.000	-	2,061,624	2,061,624	12,605,624
2005	10,170,401	10,139,961	10,166,914	10,139,961	10,139,961	1.176	1,784,633	1.000	-	4,591,657	4,591,657	14,731,618
2006	15,034,333	14,944,502	15,001,210	14,944,502	14,944,502	1.177	2,645,177	1.000	-	4,521,921	4,521,921	19,466,423
2007	13,162,694	13,044,989	13,128,153	13,038,910	13,040,000	1.179	2,334,160	1.000	-	2,999,589	2,999,589	16,039,589
2008	7,153,450	7,055,392	7,226,144	7,080,505	7,100,000	1.180	1,278,000	1.000	-	606,023	606,023	7,706,023
2009	10,002,109	10,230,547	10,045,045	10,243,636	10,230,000	1.192	1,964,160	1.000	-	2,277,179	2,277,179	12,507,179
2010	9,904,535	9,727,475	9,938,971	9,741,161	9,800,000	1.201	1,969,800	1.000	-	1,927,770	1,927,770	11,727,770
2011	8,929,720	8,197,996	9,193,397	8,275,864	8,300,000	1.203	1,684,900	1.000	-	1,558,480	1,558,480	9,858,480
2012	10,456,503	11,151,066	10,719,809	11,171,658	11,150,000	1.204	2,274,600	0.740	591,396	847,121	1,439,000	12,589,000
2013	7,607,262	7,824,007	9,312,171	8,027,324	8,050,000	1.205	1,650,250	0.664	554,484	10,081,194	10,636,000	18,686,000
2014	16,103,543	14,533,647	14,492,218	14,293,926	14,300,000	1.206	2,945,800	0.538	1,360,960	8,878,768	10,240,000	24,540,000
2015	13,707,074	18,130,855	13,919,523	16,388,409	16,350,000	1.207	3,384,450	0.395	2,047,592	344,154	2,392,000	18,742,000
2016	8,718,900	10,399,280	14,462,115	13,666,303	13,750,000	1.208	2,860,000	0.244	2,162,160	-	2,162,000	15,912,000
Total	\$203,553,109	\$207,971,758	\$ 210,206,422	\$ 209,604,200	\$ 209,746,504		\$39,773,912		\$ 6,716,592	\$ 60,021,786	\$66,739,549	\$ 276,486,053

1. Column (1) is from Exhibit 2-12.
2. Column (2) is from Exhibit 2-15.
3. Column (3) is from Exhibit 2-19.
4. Column (4) is from Exhibit 2-20.
5. Column (6) is based on the City's losses at various limits supplemented by industry size-of-loss information.
6. Column (8) is based on the City's loss experience from the net layer in excess \$1 million and on industry excess loss development patterns.
7. Column (10) was provided by the City.
8. Selected amounts in column (11) are based on a review of the actual experience and the excess experience that is expected to develop.

City of Seattle
Liability Losses

Ultimate Loss Based on Paid Loss Development
As of December 31, 2016

Accident Year	Cumulative Paid Loss	Selected Development Factors	Cumulative Development Factors	Ultimate Loss (1) x (3)
	(1)	(2)	(3)	(4)
1996	\$ 6,290,416	1.000	1.000	\$ 6,290,416
1997	6,252,812	1.000	1.000	6,252,812
1998	8,529,242	1.000	1.000	8,529,242
1999	8,807,431	1.000	1.000	8,807,431
2000	7,473,306	1.000	1.000	7,473,306
2001	7,131,888	1.000	1.000	7,131,888
2002	7,139,338	1.000	1.000	7,139,338
2003	10,423,608	1.000	1.000	10,423,608
2004	10,544,000	1.001	1.001	10,554,544
2005	10,139,961	1.002	1.003	10,170,401
2006	14,944,502	1.003	1.006	15,034,333
2007	13,018,951	1.005	1.011	13,162,694
2008	7,005,278	1.010	1.021	7,153,450
2009	9,678,786	1.012	1.033	10,002,109
2010	9,368,882	1.023	1.057	9,904,535
2011	7,961,156	1.061	1.122	8,929,720
2012	8,330,953	1.119	1.255	10,456,503
2013	4,935,580	1.228	1.541	7,607,262
2014	7,210,459	1.449	2.233	16,103,543
2015	3,495,117	1.756	3.922	13,707,074
2016	730,355	3.044	11.938	8,718,900
Total	\$169,412,021			\$203,553,109

1. Loss amounts are limited to \$1 million per occurrence.
2. Loss amounts include allocated loss adjustment expenses.

City of Seattle
Liability Losses

Cumulative Paid Loss
As of December 31, 2016

Accident Year	12	24	36	48	60	72	84	96	108	120	132	144	156	168	180	192	204	216	228	240	252	
1996	387,689	1,257,248	2,193,384	3,234,657	4,488,805	5,437,059	5,670,375	5,670,276	5,878,843	6,062,077	6,171,395	6,173,577	6,173,577	6,290,416	6,290,416	6,290,416	6,290,416	6,290,416	6,290,416	6,290,416	6,290,416	6,290,416
1997	446,515	1,133,877	1,682,105	2,646,776	3,905,542	5,214,451	5,342,427	5,769,675	5,769,695	5,769,695	5,769,695	5,769,695	5,769,695	5,769,695	5,769,695	5,769,695	5,769,695	5,769,695	5,769,695	5,768,193	5,768,193	
1998	466,218	1,085,460	1,675,410	5,971,675	6,689,644	6,905,384	7,491,550	7,503,598	7,504,789	7,504,789	7,504,794	7,505,830	7,505,860	7,505,860	7,505,860	7,505,860	7,505,860	7,505,860	7,505,860	7,505,860	7,505,860	7,505,860
1999	589,346	1,818,179	3,668,256	5,558,282	7,987,616	8,404,237	8,451,540	8,576,270	8,587,882	7,672,433	7,735,746	7,735,802	7,735,867	7,735,867	7,735,941	7,735,941	7,735,941	7,735,941	7,735,941	7,705,195		
2000	543,300	1,463,153	2,477,592	3,871,898	4,782,330	5,427,661	5,640,290	6,023,189	6,185,859	6,204,753	6,263,962	6,277,747	6,292,729	6,292,779	6,292,779	6,292,779	6,292,779	6,292,779	6,292,779	6,292,779	6,292,779	6,292,779
2001	809,975	2,957,677	4,361,091	5,126,957	5,970,652	6,121,104	6,075,518	6,078,995	6,079,026	6,085,671	6,085,671	6,085,731	6,085,718	6,085,718	6,085,718	6,085,718	6,085,718	6,085,718	6,085,718	6,085,718	6,085,718	6,085,718
2002	733,610	1,598,463	2,440,858	3,552,323	4,304,380	4,632,245	5,653,157	5,807,418	5,807,610	5,940,761	5,953,161	5,958,278	5,958,278	5,958,278	5,958,278	5,958,278	5,958,278	5,958,278	5,958,278	5,958,278	5,958,278	5,958,278
2003	560,094	1,674,793	2,354,124	5,309,730	6,164,701	6,759,212	8,667,226	9,603,371	9,603,866	9,603,866	9,603,866	9,603,812	9,603,812	9,603,812	9,603,812	9,603,812	9,603,812	9,603,812	9,603,812	9,603,812	9,603,812	9,603,812
2004	1,115,053	2,999,382	5,512,125	6,791,278	8,178,176	9,848,113	9,920,085	9,940,297	9,996,164	10,060,483	10,113,657	10,084,790	10,084,790	10,084,790	10,084,790	10,084,790	10,084,790	10,084,790	10,084,790	10,084,790	10,084,790	10,084,790
2005	775,380	2,560,325	3,898,355	6,790,905	8,552,608	8,824,354	9,779,507	9,805,610	10,025,096	10,082,979	10,015,102	10,017,651	10,017,651	10,017,651	10,017,651	10,017,651	10,017,651	10,017,651	10,017,651	10,017,651	10,017,651	10,017,651
2006	1,206,041	6,308,195	10,023,237	11,565,382	12,677,795	13,904,902	14,469,789	14,970,000	14,924,586	14,944,414	14,944,502	14,944,502	14,944,502	14,944,502	14,944,502	14,944,502	14,944,502	14,944,502	14,944,502	14,944,502	14,944,502	14,944,502
2007	836,271	3,773,678	7,305,914	9,751,059	12,476,323	12,703,512	12,997,803	13,070,385	12,849,174	13,018,951	13,018,951	13,018,951	13,018,951	13,018,951	13,018,951	13,018,951	13,018,951	13,018,951	13,018,951	13,018,951	13,018,951	13,018,951
2008	688,471	2,122,591	3,134,554	4,718,405	5,297,107	6,872,970	7,090,865	7,005,278	7,005,278	7,005,278	7,005,278	7,005,278	7,005,278	7,005,278	7,005,278	7,005,278	7,005,278	7,005,278	7,005,278	7,005,278	7,005,278	7,005,278
2009	1,542,850	3,692,597	5,368,958	6,567,088	7,530,450	8,687,059	9,515,002	9,678,882	9,678,882	9,678,882	9,678,882	9,678,882	9,678,882	9,678,882	9,678,882	9,678,882	9,678,882	9,678,882	9,678,882	9,678,882	9,678,882	9,678,882
2010	896,865	2,427,520	4,549,795	7,096,988	8,299,085	9,103,959	9,368,882	9,368,882	9,368,882	9,368,882	9,368,882	9,368,882	9,368,882	9,368,882	9,368,882	9,368,882	9,368,882	9,368,882	9,368,882	9,368,882	9,368,882	9,368,882
2011	851,148	1,582,235	3,715,166	5,232,983	6,893,030	7,961,156	7,961,156	7,961,156	7,961,156	7,961,156	7,961,156	7,961,156	7,961,156	7,961,156	7,961,156	7,961,156	7,961,156	7,961,156	7,961,156	7,961,156	7,961,156	7,961,156
2012	1,004,855	3,304,933	4,664,516	6,407,983	8,330,953	8,330,953	8,330,953	8,330,953	8,330,953	8,330,953	8,330,953	8,330,953	8,330,953	8,330,953	8,330,953	8,330,953	8,330,953	8,330,953	8,330,953	8,330,953	8,330,953	8,330,953
2013	798,562	2,608,143	3,511,377	4,935,580	4,935,580	4,935,580	4,935,580	4,935,580	4,935,580	4,935,580	4,935,580	4,935,580	4,935,580	4,935,580	4,935,580	4,935,580	4,935,580	4,935,580	4,935,580	4,935,580	4,935,580	4,935,580
2014	1,068,812	2,954,633	7,210,459	7,210,459	7,210,459	7,210,459	7,210,459	7,210,459	7,210,459	7,210,459	7,210,459	7,210,459	7,210,459	7,210,459	7,210,459	7,210,459	7,210,459	7,210,459	7,210,459	7,210,459	7,210,459	7,210,459
2015	1,372,231	3,495,117	3,495,117	3,495,117	3,495,117	3,495,117	3,495,117	3,495,117	3,495,117	3,495,117	3,495,117	3,495,117	3,495,117	3,495,117	3,495,117	3,495,117	3,495,117	3,495,117	3,495,117	3,495,117	3,495,117	3,495,117
2016	730,355	730,355	730,355	730,355	730,355	730,355	730,355	730,355	730,355	730,355	730,355	730,355	730,355	730,355	730,355	730,355	730,355	730,355	730,355	730,355	730,355	730,355

1. Loss amounts are limited to \$1 million per occurrence and exclude amounts related to Claim #319-2002.
2. Loss amounts include allocated loss adjustment expenses.

City of Seattle
Liability Losses

Ultimate Loss Based on Incurred Loss Development
As of December 31, 2016

Accident Year	Cumulative Incurred Loss	Selected Development Factors	Cumulative Development Factors	Ultimate Loss (1) x (3)
	(1)	(2)	(3)	(4)
1996	\$ 6,290,416	1.000	1.000	\$ 6,290,416
1997	6,252,812	1.000	1.000	6,252,812
1998	8,529,242	1.000	1.000	8,529,242
1999	8,807,431	1.000	1.000	8,807,431
2000	7,473,306	1.000	1.000	7,473,306
2001	7,131,888	1.000	1.000	7,131,888
2002	7,139,338	1.000	1.000	7,139,338
2003	10,423,608	1.000	1.000	10,423,608
2004	10,544,000	1.000	1.000	10,544,000
2005	10,139,961	1.000	1.000	10,139,961
2006	14,944,502	1.000	1.000	14,944,502
2007	13,018,951	1.002	1.002	13,044,989
2008	7,006,278	1.005	1.007	7,055,392
2009	10,108,786	1.005	1.012	10,230,547
2010	9,563,882	1.005	1.017	9,727,475
2011	7,996,156	1.008	1.025	8,197,996
2012	10,768,831	1.010	1.035	11,151,066
2013	7,481,007	1.010	1.046	7,824,007
2014	11,948,839	1.163	1.216	14,533,647
2015	10,497,383	1.420	1.727	18,130,855
2016	2,994,015	2.011	3.473	10,399,280
Total	\$189,060,632			\$ 207,971,758

1. Loss amounts are limited to \$1 million per occurrence.
2. Loss amounts include allocated loss adjustment expenses.

City of Seattle
Liability Losses

Cumulative Incurred Loss
As of December 31, 2016

Accident Year	12	24	36	48	60	72	84	96	108	120	132	144	156	168	180	192	204	216	228	240	252	
1996	3,086,582	5,152,541	5,527,909	10,195,828	9,613,799	7,575,559	5,713,875	5,710,276	5,955,793	6,112,077	6,206,395	6,208,577	6,208,577	6,290,416	6,290,416	6,290,416	6,290,416	6,290,416	6,290,416	6,290,416	6,290,416	6,290,416
1997	1,943,811	3,633,102	4,057,610	5,102,388	5,557,018	5,964,451	5,422,427	5,769,675	5,769,695	5,769,695	5,769,695	5,769,695	5,769,695	5,769,695	5,769,695	5,769,695	5,769,695	5,769,695	5,769,695	5,769,695	5,768,193	5,768,193
1998	2,865,065	4,700,788	7,590,796	11,068,745	11,193,245	7,169,884	7,505,550	7,512,598	7,509,789	7,509,789	7,509,794	7,510,830	7,510,830	7,505,860	7,505,860	7,505,860	7,505,860	7,505,860	7,505,860	7,505,860	7,505,826	7,505,826
1999	1,732,998	6,127,618	8,877,061	10,505,020	9,032,616	8,784,237	9,607,071	9,092,570	9,567,056	8,072,433	7,735,746	7,735,802	7,735,867	7,735,867	7,735,867	7,735,941	7,735,941	7,735,941	7,735,941	7,705,195		
2000	1,888,048	3,336,294	5,934,835	7,189,608	6,896,648	6,457,720	6,376,734	6,324,189	6,185,859	6,204,753	6,463,962	6,477,747	6,324,258	6,324,308	6,292,779	6,292,779	6,292,779	6,292,779	6,292,779			
2001	2,579,470	5,810,627	6,355,485	7,003,757	7,529,949	6,513,104	6,319,718	6,290,995	6,084,026	6,085,671	6,085,671	6,085,731	6,085,718	6,085,718	6,085,718	6,078,378	6,078,378	6,078,378				
2002	2,098,190	3,513,073	4,331,399	6,534,004	9,880,790	7,399,153	7,318,791	6,692,418	6,137,610	6,070,761	5,998,161	5,973,278	5,968,278	5,968,248	5,958,248							
2003	2,312,356	5,572,195	6,998,508	10,594,191	9,903,970	8,986,992	9,787,309	9,758,310	9,618,866	9,603,866	9,603,812	9,603,812	9,603,701	9,603,701								
2004	4,219,090	8,612,125	11,109,942	14,093,545	11,736,480	10,862,829	11,074,791	10,200,297	10,246,164	10,560,483	10,113,657	10,084,790	10,084,790									
2005	2,448,065	6,475,630	9,442,761	11,388,046	11,691,875	10,847,016	10,942,611	11,105,811	10,070,096	10,082,979	10,015,102	10,017,651										
2006	8,427,308	14,064,671	16,042,580	16,817,942	16,705,295	15,501,271	15,267,116	15,213,775	15,164,343	15,132,067	14,944,502											
2007	8,168,220	9,591,698	12,945,115	16,841,118	14,382,675	13,007,512	13,199,303	13,230,385	12,999,174	13,018,951												
2008	2,300,003	4,969,529	7,837,947	8,761,537	8,894,735	7,817,970	7,090,865	7,005,278	7,006,278													
2009	5,190,041	8,509,479	9,192,237	10,559,126	11,436,776	10,509,014	10,721,582	10,108,786														
2010	3,335,016	7,186,866	10,160,558	12,418,904	9,957,085	9,213,959	9,563,882															
2011	3,186,071	5,209,662	8,951,641	9,300,226	8,309,780	7,996,156																
2012	3,981,234	7,023,801	9,818,587	12,744,791	10,768,831																	
2013	3,336,097	6,082,853	7,018,265	7,481,007																		
2014	3,781,596	8,229,871	11,948,839																			
2015	3,586,835	10,497,383																				
2016	2,994,015																					

1. Loss amounts are limited to \$1 million per occurrence and exclude amounts related to Claim #319-2002.
2. Loss amounts include allocated loss adjustment expenses.

City of Seattle
Liability Losses

Ultimate Loss Based on Bornhuetter-Ferguson Using Exposures and Paid Loss
As of December 31, 2016

Accident Year	Exposures	Selected Loss Rate	Expected Ultimate Loss (1) x (2)	Selected Development Factors	Cumulative Development Factors	Ratio of Cumulative Paid Loss to Ultimate Loss 1 / (5)	Ratio of Undeveloped Paid Loss to Ultimate Loss 1 - (6)	Undeveloped Paid Loss (3) x (7)	Cumulative Paid Loss	Ultimate Loss (8) + (9)	Calculated Loss Rate (10) / (1)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1996	10,471	\$ 626.000	\$ 6,554,846	1.000	1.000	1.000	0.000	\$ -	\$ 6,290,416	\$ 6,290,416	600.746
1997	10,595	644.000	6,823,180	1.000	1.000	1.000	0.000	-	6,252,812	6,252,812	590.166
1998	11,137	664.000	7,394,968	1.000	1.000	1.000	0.000	-	8,529,242	8,529,242	765.847
1999	11,227	684.000	7,679,268	1.000	1.000	1.000	0.000	-	8,807,431	8,807,431	784.487
2000	11,555	704.000	8,134,720	1.000	1.000	1.000	0.000	-	7,473,306	7,473,306	646.759
2001	11,692	725.000	8,476,700	1.000	1.000	1.000	0.000	-	7,131,888	7,131,888	609.980
2002	11,476	747.000	8,572,572	1.000	1.000	1.000	0.000	-	7,139,338	7,139,338	622.110
2003	11,189	769.000	8,604,341	1.000	1.000	1.000	0.000	-	10,423,608	10,423,608	931.594
2004	10,996	793.000	8,719,828	1.001	1.001	0.999	0.001	8,711	10,544,000	10,552,711	959.686
2005	11,036	816.000	9,005,376	1.002	1.003	0.997	0.003	26,953	10,139,961	10,166,914	921.250
2006	11,285	841.000	9,490,685	1.003	1.006	0.994	0.006	56,708	14,944,502	15,001,210	1,329.305
2007	11,547	866.000	9,999,702	1.005	1.011	0.989	0.011	109,202	13,018,951	13,128,153	1,136.932
2008	11,954	892.000	10,662,968	1.010	1.021	0.979	0.021	220,866	7,005,278	7,226,144	604.496
2009	12,329	919.000	11,330,351	1.012	1.033	0.968	0.032	366,259	9,678,786	10,045,045	814.749
2010	11,143	946.000	10,541,278	1.023	1.057	0.946	0.054	570,089	9,368,882	9,938,971	891.947
2011	11,652	975.000	11,360,700	1.061	1.122	0.892	0.108	1,232,241	7,961,156	9,193,397	788.997
2012	11,705	1,004.000	11,751,820	1.119	1.255	0.797	0.203	2,388,856	8,330,953	10,719,809	915.832
2013	12,052	1,034.000	12,461,768	1.228	1.541	0.649	0.351	4,376,591	4,935,580	9,312,171	772.666
2014	12,381	1,065.000	13,185,765	1.449	2.233	0.448	0.552	7,281,759	7,210,459	14,492,218	1,170.521
2015	12,755	1,097.000	13,992,235	1.756	3.922	0.255	0.745	10,424,406	3,495,117	13,919,523	1,091.299
2016	13,263	1,130.000	14,987,190	3.044	11.938	0.084	0.916	13,731,760	730,355	14,462,115	1,090.411
Total	243,440		\$ 209,730,261					\$ 40,794,401	\$ 169,412,021	\$ 210,206,422	

1. Loss amounts are limited to \$1 million per occurrence.
2. Exposures are based on a relative index developed from Seattle population and worker hours.

City of Seattle
Liability Losses

Ultimate Loss Based on Bornhuetter-Ferguson Using Exposures and Incurred Loss
As of December 31, 2016

Accident Year	Exposures	Selected Loss Rate	Expected Ultimate Loss (1) x (2)	Selected Development Factors	Cumulative Development Factors	Ratio of Cumulative Incurred Loss to Ultimate Loss 1 / (5)	Ratio of Undeveloped Incurred Loss to Ultimate Loss 1 - (6)	Undeveloped Incurred Loss (3) x (7)	Cumulative Incurred Loss	Ultimate Loss (8) + (9)	Calculated Loss Rate (10) / (1)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1996	10,471	\$ 626.000	\$ 6,554,846	1.000	1.000	1.000	0.000	\$ -	\$ 6,290,416	\$ 6,290,416	600.746
1997	10,595	644.000	6,823,180	1.000	1.000	1.000	0.000	-	6,252,812	6,252,812	590.166
1998	11,137	664.000	7,394,968	1.000	1.000	1.000	0.000	-	8,529,242	8,529,242	765.847
1999	11,227	684.000	7,679,268	1.000	1.000	1.000	0.000	-	8,807,431	8,807,431	784.487
2000	11,555	704.000	8,134,720	1.000	1.000	1.000	0.000	-	7,473,306	7,473,306	646.759
2001	11,692	725.000	8,476,700	1.000	1.000	1.000	0.000	-	7,131,888	7,131,888	609.980
2002	11,476	747.000	8,572,572	1.000	1.000	1.000	0.000	-	7,139,338	7,139,338	622.110
2003	11,189	769.000	8,604,341	1.000	1.000	1.000	0.000	-	10,423,608	10,423,608	931.594
2004	10,996	793.000	8,719,828	1.000	1.000	1.000	0.000	-	10,544,000	10,544,000	958.894
2005	11,036	816.000	9,005,376	1.000	1.000	1.000	0.000	-	10,139,961	10,139,961	918.808
2006	11,285	841.000	9,490,685	1.000	1.000	1.000	0.000	-	14,944,502	14,944,502	1,324.280
2007	11,547	866.000	9,999,702	1.002	1.002	0.998	0.002	19,959	13,018,951	13,038,910	1,129.203
2008	11,954	892.000	10,662,968	1.005	1.007	0.993	0.007	74,227	7,006,278	7,080,505	592.313
2009	12,329	919.000	11,330,351	1.005	1.012	0.988	0.012	134,850	10,108,786	10,243,636	830.857
2010	11,143	946.000	10,541,278	1.005	1.017	0.983	0.017	177,279	9,563,882	9,741,161	874.196
2011	11,652	975.000	11,360,700	1.008	1.025	0.975	0.025	279,708	7,996,156	8,275,864	710.253
2012	11,705	1,004.000	11,751,820	1.010	1.035	0.966	0.034	402,827	10,768,831	11,171,658	954.435
2013	12,052	1,034.000	12,461,768	1.010	1.046	0.956	0.044	546,317	7,481,007	8,027,324	666.057
2014	12,381	1,065.000	13,185,765	1.163	1.216	0.822	0.178	2,345,087	11,948,839	14,293,926	1,154.505
2015	12,755	1,097.000	13,992,235	1.420	1.727	0.579	0.421	5,891,026	10,497,383	16,388,409	1,284.862
2016	13,263	1,130.000	14,987,190	2.011	3.473	0.288	0.712	10,672,288	2,994,015	13,666,303	1,030.408
Total	243,440		\$ 209,730,261					\$ 20,543,568	\$189,060,632	\$ 209,604,200	

1. Loss amounts are limited to \$1 million per occurrence.
2. Exposures are based on a relative index developed from Seattle population and worker hours.

City of Seattle
Liability Losses

Bornhuetter-Ferguson Seed Calculation
As of December 31, 2016

Accident Year	Limited to \$1 million		On-Level Factor to 2016 (3)	On-Level Paid Loss (1)x(3) (4)	On-Level Incurred Loss (2)x(3) (5)	Exposures (6)	Paid Loss CDF (7)	Incurred Loss CDF (8)	Paid Burned Exposures (6)/(7) (9)	Incurred Burned Exposures (6)/(8) (10)	Paid Loss Per Exposure (4)/(9) (11)	Incurred Loss Per Exposure (5)/(10) (12)	Selected Loss Per Exposure (13)
	Paid Loss (1)	Incurred Loss (2)											
1996	6,290,416	6,290,416	1.806	11,361,191	11,361,191	10,471	1.000	1.000	10,471	10,471	1,085	1,085	626
1997	6,252,812	6,252,812	1.754	10,964,344	10,964,344	10,595	1.000	1.000	10,595	10,595	1,035	1,035	644
1998	8,529,242	8,529,242	1.702	14,520,464	14,520,464	11,137	1.000	1.000	11,137	11,137	1,304	1,304	664
1999	8,807,431	8,807,431	1.653	14,557,341	14,557,341	11,227	1.000	1.000	11,227	11,227	1,297	1,297	684
2000	7,473,306	7,473,306	1.605	11,992,462	11,992,462	11,555	1.000	1.000	11,555	11,555	1,038	1,038	704
2001	7,131,888	7,131,888	1.558	11,111,249	11,111,249	11,692	1.000	1.000	11,692	11,692	950	950	725
2002	7,139,338	7,139,338	1.513	10,798,889	10,798,889	11,476	1.000	1.000	11,476	11,476	941	941	747
2003	10,423,608	10,423,608	1.469	15,307,420	15,307,420	11,189	1.000	1.000	11,189	11,189	1,368	1,368	769
2004	10,544,000	10,544,000	1.426	15,033,223	15,033,223	10,996	1.001	1.000	10,985	10,996	1,369	1,367	793
2005	10,139,961	10,139,961	1.384	14,036,077	14,036,077	11,036	1.003	1.000	11,003	11,036	1,276	1,272	816
2006	14,944,502	14,944,502	1.344	20,084,161	20,084,161	11,285	1.006	1.000	11,218	11,285	1,790	1,780	841
2007	13,018,951	13,018,951	1.305	16,986,778	16,986,778	11,547	1.011	1.002	11,421	11,524	1,487	1,474	866
2008	7,005,278	7,006,278	1.267	8,874,077	8,875,343	11,954	1.021	1.007	11,706	11,871	758	748	892
2009	9,678,786	10,108,786	1.230	11,903,686	12,432,532	12,329	1.033	1.012	11,930	12,182	998	1,021	919
2010	9,368,882	9,563,882	1.194	11,186,935	11,419,775	11,143	1.057	1.017	10,540	10,956	1,061	1,042	946
2011	7,961,156	7,996,156	1.159	9,229,162	9,269,736	11,652	1.122	1.025	10,388	11,365	888	816	975
2012	8,330,953	10,768,831	1.126	9,376,561	12,120,414	11,705	1.255	1.035	9,326	11,304	1,005	1,072	1,004
2013	4,935,580	7,481,007	1.093	5,393,242	8,174,698	12,052	1.541	1.046	7,819	11,524	690	709	1,034
2014	7,210,459	11,948,839	1.061	7,649,576	12,676,523	12,381	2.233	1.216	5,544	10,179	1,380	1,245	1,065
2015	3,495,117	10,497,383	1.030	3,599,971	10,812,304	12,755	3.922	1.727	3,252	7,385	1,107	1,464	1,097
2016	730,355	2,994,015	1.000	730,355	2,994,015	13,263	11.938	3.473	1,111	3,818	657	784	1,130
Total	169,412,021	189,060,632		234,697,163	255,528,942	243,440			205,586	224,767	1,142	1,137	
10 Yr Avg	71,735,517	91,384,128		84,930,341	105,762,120	120,781			83,038	102,108	1,023	1,036	
9 Yr Avg	58,716,566	78,365,177		67,943,563	88,775,342	109,234			71,617	90,584	949	980	
8 Yr Avg	51,711,288	71,358,899		59,069,487	79,899,999	97,280			59,911	78,713	986	1,015	
7 Yr Avg	42,032,502	61,250,113		47,165,801	67,467,467	84,951			47,981	66,531	983	1,014	
6 Yr Avg	32,663,620	51,686,231		35,978,866	56,047,692	73,808			37,440	55,575	961	1,009	
5 Yr Avg	24,702,464	43,690,075		26,749,704	46,777,955	62,156			27,052	44,210	989	1,058	
4 Yr Avg	16,371,511	32,921,244		17,373,143	34,657,541	50,451			17,726	32,906	980	1,053	
3 Yr Avg	11,435,931	25,440,237		11,979,901	26,482,843	38,399			9,907	21,382	1,209	1,239	

Selected Loss per Exposure: 1,130

1. Exposures in column (6) are based on a relative index developed from Seattle population and worker hours.
2. Columns (7) and (8) are from Exhibits 2-12 and 2-15, respectively.
3. Loss amounts include allocated loss adjustment expenses.
4. Loss rates in column (13) are the selected loss rate based on the averages columns (11) and (12) divided by the loss trend in column (3).
5. Losses are limited to \$1 million per occurrence.

City of Seattle
Liability Losses
Summary Financial Data

As of December 31, 2016

Current Year Losses

(1) Estimated Claim Payments	\$730,355
(2) Estimated Unpaid Reserves	15,181,645
(3) Ultimate Loss [(1)+(2)]	15,912,000

Current Year Payments on Prior Year Losses

(4) 1996-2015 Paid Loss @ 12/2016	212,383,409
(5) 1996-2015 Paid Loss @ 12/2015	197,157,083
(6) Difference [(4)-(5)]	15,226,326

Accident Year	Ultimate Loss As of 12/31/2016 (7)	Ultimate Loss As of 12/31/2015 (8)	Change in Provision for Prior Year Ultimate Loss (7)-(8) (9)
1996	6,290,416	6,290,416	0
1997	6,931,581	6,931,581	0
1998	15,045,478	15,045,478	0
1999	10,812,791	10,812,791	0
2000	7,473,306	7,473,306	0
2001	7,915,915	7,915,915	0
2002	8,086,649	8,096,649	(10,000)
2003	18,818,211	18,859,603	(41,392)
2004	12,605,624	12,647,000	(41,376)
2005	14,731,618	14,772,000	(40,382)
2006	19,466,423	23,697,000	(4,230,577)
2007	16,039,589	16,100,000	(60,411)
2008	7,706,023	7,806,000	(99,977)
2009	12,507,179	13,511,000	(1,003,821)
2010	11,727,770	11,881,000	(153,230)
2011	9,858,480	10,811,000	(952,520)
2012	12,589,000	15,380,000	(2,791,000)
2013	18,686,000	16,290,000	2,396,000
2014	24,540,000	16,497,000	8,043,000
2015	18,742,000	16,043,000	2,699,000
2016	15,912,000		
Total	276,486,053	256,860,739	3,713,314

Purpose

City of Seattle has retained PricewaterhouseCoopers LLP (“PwC”) to provide an actuarial review of the liabilities of its Industrial Insurance Fund. In this section of the report, we provide estimates of:

1. Outstanding claim obligations as of December 31, 2016;
2. Projected future self-insured losses for years 2017 through 2020;
3. Projected future payments for years 2017 through 2020;
4. Allocation of the City’s losses to departments for future years; and
5. Summary financial data to meet the City’s financial reporting requirements.

Each of these issues is estimated as of the December 31, 2016 accounting date based on data valued as of December 31, 2016. We continued to receive information and supplemental data from the City through March 17, 2017; none of this additional information and data reflects activity between the valuation date of the data and the date it was provided. The estimates in this report are actuarial central estimates which represent the expected value over the range of reasonably possible outcomes. This report and supporting work-papers document the procedures and results of PwC’s analysis.

Key findings

Overview - outstanding claim obligations

The City's net undiscounted outstanding claim liability for workers' compensation losses as of December 31, 2016 is approximately \$41.5 million. This estimate is \$4.4 million (12%) higher than the estimate of outstanding claim liability noted in PwC's prior December 31, 2015 year-end actuarial review (\$37.1 million). The components of this change since the prior year-end are summarized in the table below.

Change in Outstanding Claim Obligations Dec-15 to Dec-16 (\$000s)	
Beginning Reserve (Dec-15)	37,104
Payments During Period	-15,697
New Losses Incurred	+18,107
Change in Reserves from Prior Years	-395
Change in Reserves for Supplemental Benefits	+385
<u>Change in Prior Year Ultimate Loss Estimates</u>	<u>+2,025</u>
Ending Reserve (Dec-16)	41,531

There are two primary reasons for the increase in claim liability:

1. Accident year 2016 appears to be an unfavorable loss year. The incurred loss after twelve months of development, is roughly \$14.4 million; this is the largest incurred loss over the first twelve months of a year since 2010. In addition, the City's initial claim settlement rate for 2016 (based on one year of loss development) is much lower than other recent years.

Initial Claim Settlement Rates (After Twelve Months of Development)			
Year	<u>Reported Claims</u> (1)	<u>Closed Claims</u> (2)	Settlement Rate <u>(2) / (1)</u> (3)
2011	1,182	722	61.1%
2012	1,215	590	48.6%
2013	1,138	568	49.9%
2014	1,151	604	52.5%
2015	1,092	572	52.4%
2016	1,178	456	38.7%

2. Incurred loss from several prior years developed more than anticipated. Accident years 2000, 2008, 2013 and 2014 in particular had larger than expected growth in incurred loss. As such, ultimate losses were increased accordingly.

PwC's current estimate of outstanding claim liability represents the City's undiscounted outstanding claim obligations for industrial insurance losses as of the December 31, 2016 balance sheet date, for claims incurred on or before that date. The reserves for outstanding claim liability include a provision for outstanding loss and allocated loss adjustment expenses. Allocated loss adjustment expenses ("ALAE") are those expenses that can be associated directly with specific claims, such as legal fees. In this report no provision has been made for unallocated loss adjustment expenses ("ULAE"); ULAE are the expenses that are normally associated with the overhead costs of administering claims. In addition, the outstanding reserve estimate does *not* include a provision for the City's outstanding Washington State Department of Labor and Industries (L&I) self-insurer assessments. The City's current L&I assessment rate is approximately 16.8%; while this rate will vary over time, L&I assessments are applied quarterly to all industrial insurance payments made by the City.

The City increased its retention limit from \$3 million to \$10 million per occurrence on July 17, 2009 and again to \$15 million per occurrence on December 15, 2009. As such, the higher retention level exposes the City to greater volatility in its claims experience. Per City management, these changes were made based on the assumption that the likely incidence of such a large workers' compensation claim is very small. Historically, the City has had eleven claims greater than \$1 million; five of these claims were greater than \$1.5 million.

The City's loss reserves are broken out by accident year on Exhibit 2-5. This exhibit also includes reserves for supplemental benefits.

Ultimate loss estimates

Current ultimate loss estimates are roughly \$2.0 million higher than those presented in the prior actuarial report. There have been large swings in loss estimates since last past year: accident year 2000 increased by roughly \$502,000 while accident years 2013 and 2014 increased by roughly \$800,000 and \$639,000, respectively. Accident years 2006, 2009 and 2012 each decreased by \$325,000 or more. The City's historic retained losses for the Industrial Insurance Fund are presented by accident year on Exhibit 2-5 of the report. Annual loss experience has ranged between \$6.1 million and \$18.1 million. A comparison of the current and prior ultimate loss estimates is presented on Exhibit 3-1.

Projected losses and payments

Future losses

The estimated future losses from the Industrial Insurance Fund for accident years 2017 through 2020 are approximately \$18.3 million, \$18.4 million, \$18.5 million and \$18.7 million, respectively. The calculation of these estimates is presented on Exhibit 2-4 of this section. The projected losses are estimates at the expected value; they do not account for the variability associated with these estimated values.

Future payments

The estimated Industrial Insurance Fund payments to be made during 2017 through 2020 are approximately \$17.5 million, \$17.6 million, \$17.8 million and \$17.9 million, respectively. These estimates are presented in greater detail on Exhibit 2-2. Similar to the future ultimate loss estimates, future payment estimates are highly variable due to the timing and volatility of potential settlement amounts.

Discounted claim reserves

The estimated discounted outstanding claim obligations for industrial insurance fund losses limited to the per-occurrence retention are \$39.8 million, assuming an annual effective interest rate of 1.45%. This interest rate assumption is based on information from the City regarding its investment yield.

Allocation

The allocation estimate by department is presented on Exhibit 1-1. In addition to the departmental allocation, the allocation exhibit presents both the undiscounted and the discounted total reserve estimates as of December 31, 2016, 2017 and 2018. The aggregate credit for investment income for the City's Industrial Insurance Fund as of December 31, 2016 is approximately \$1.8 million.

Disclosures and methodology

Background

The program costs paid out of the Industrial Insurance Fund include state mandated medical and time loss payments (statutory benefits) to workers as well as supplemental benefits added by City Ordinance or Labor Contract. Supplemental benefits consist of an additional time loss benefit to injured workers up to 80% of their regular pay for one year.

The City has historically purchased excess coverage for its workers' compensation exposures. Claims are administered by the City. The following table shows the City's recent self-insured retention history for workers' compensation:

Coverage Period	Retention
5/1/85 - 4/30/87	250,000
5/1/87 - 4/30/88	300,000
5/1/88 - 2/28/02	500,000
3/1/02 - 12/14/04	N/A
12/15/04 - 7/16/09	3,000,000
7/17/09 - 12/14/09	10,000,000
12/15/09 - Present	15,000,000

Due to market conditions the City's excess insurance coverage was not renewed between March 1, 2002 and December 14, 2004. As of December 31, 2016, ten claims have exceeded the self-insured retention levels.

Distribution and use

This report was prepared for internal use by the management of the City. Use of this report for other than the stated purpose may be inappropriate. The Actuarial Services staff of PwC is available to explain or elaborate upon the findings presented in this report, and it is assumed that users of this report will seek out such explanation. When interpreting the results of our analysis, this report should be considered only in its entirety. Further distribution of this report will not result in the creation of any duty or liability by PwC to a third party.

Reliance on data

The underlying data used in this analysis were provided by and are the responsibility of the City. PwC assumes no responsibility and makes no representations with respect to the accuracy or completeness of the information provided. While our work involved reviewing the data for reasonableness and consistency, our actuarial engagement does not include an audit in accordance with generally accepted auditing standards. To the extent that any changes are noted that could potentially have a material impact on our analysis, it is the responsibility of the City to notify us of these changes so that they may be properly reflected.

The loss data compiled included paid loss, incurred loss, accident date, claims status (open and closed), as well as other specific information for each reported claim.

Unless otherwise noted, references to the term "loss" should be understood to mean loss and allocated loss adjustment expense (ALAE). These expenses would include the costs of adjusting claims, such as legal expense, that are assigned to specific cases. References to the term "claims" or "claims cost" should be understood to mean claims in the generic, insurance industry sense. If "claims" are referred to with respect to the Judgment/Claims Fund (i.e. lawsuits/claims) a specific reference will be made to the Fund.

Data provided by the City included the following:

- 2016 Annual Report of Self-Insured Business;
- Quarterly Reports of Self-Insured Business for calendar year 2016;
- Loss and claim data by accident year at various valuation points;
- Specific departmental allocation information;
- Current investment yield; and
- A listing of departments with corresponding department codes.

References to the term "loss" should be understood to mean loss and allocated loss adjustment expense (ALAE).

Qualifications of the actuaries

Kevin Wick is a Managing Director with PricewaterhouseCoopers LLP and is a Fellow of the Casualty Actuarial Society. Steve Higgins is a Manager with PricewaterhouseCoopers LLP and is an Associate of the Casualty Actuarial Society. Brian Jones is a Principal with PricewaterhouseCoopers LLP and is a

Fellow of the Casualty Actuarial Society. All three are members in good standing of the American Academy of Actuaries. As such, Mr. Wick, Mr. Higgins and Mr. Jones each meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Limitations

The projected ultimate liabilities and associated reserves for loss shown in this report are actuarial central estimates. As estimates, these values are subject to inherent variability. Reserve estimates and projections of future loss costs are subject to significant variation due to the potential for large claims, the long periods between accident date and claim settlement, and their vulnerability to the effects of changes in the legal, social, and economic environments. Changes in claims handling and adjustment procedures can also have a significant impact on such estimates.

The variability is particularly high for the City due to the high retention limits and the volatile loss experience in the higher layers. In situations such as this, it is necessary to rely to some degree on relevant insurance industry statistics. The use of this data, however, introduces additional uncertainty because of the difficulties associated with finding and interpreting analogous external data. As such, no guarantee, either expressed or implied, should be inferred that losses and allocated loss adjustment expenses will develop as shown in this report.

Analysis

The actuarial analysis was divided into the following major work steps:

- Ultimate Loss and Reserve Estimation
- Future Losses
- Cash Flow Analysis
- Loss Allocation

Ultimate loss and reserve estimation

The first step of the analysis was to project paid and incurred losses limited to \$500,000 to estimated ultimate values for each accident year through December 31, 2016. This normal delay in payments creates a need to set aside funds each year to pay the future costs of already incurred claims. However, it is difficult to determine the exact amount of losses incurred during a year until sometime after the end of that year. One reason is that it is difficult to estimate ultimate costs for many claims when they are first reported. The claims adjuster makes estimates of the ultimate cost of individual claims based on the

information available about each case. The unpaid amount estimated for an individual claim is called a "case reserve."

In most insurance programs, case reserves somewhat understate the ultimate cost of claims because the reserves are generally based only on the most currently available information about the circumstances surrounding each known claim. The result is that total estimated costs for claims incurred in a year are often revised upward over time. Though many claims settle for less than originally expected, decreases in estimated costs are more than offset by newly reported claims and by increases in case reserves for other claims about which new information emerges. This phenomenon of progressively revising reserves is called "loss development."

Loss development is a normal and expected part of typical insurance programs. Even if it is substantial, loss development does not necessarily imply that claims are being administered improperly. For financial purposes, however, it is important to estimate the amount of future loss development to recognize the entire liability.

The application of several actuarial techniques is important in order to estimate the ultimate costs of claims. Each technique relies on a specific set of assumptions about the stability of the claims environment and thus provides additional insight into trends in claims costs. These methods will also give inapplicable results when the important assumptions on which they rely are violated. Thus, the methods applied act as checks and balances against each other, and, within reason, the more methods applied, the more likely it is that accurate loss estimates will be obtained.

Some methods may provide accurate results in some years and inaccurate results in others, depending on the situation in the local claims environment. Knowledge of the local environment and experience with the actuarial estimation methods is required to select the best results in each set of circumstances.

The actuarial methods used to estimate ultimate loss included the following:

- Paid loss development
- Incurred loss development
- Bornhuetter-Ferguson

For loss development purposes all losses have been limited to the \$500,000 retention level. Loss amounts include ALAE but do not include supplemental insurance benefits (benefits by City ordinance).

For workers' compensation insurance in the State of Washington, ALAE is generally very small. Per City management, the supplemental insurance benefits that are paid out through the City's Industrial Insurance Fund do not develop; they are limited to a maximum of 80% of regular pay for one year. In this analysis, the loss triangles were used to estimate the future development of the City's combined loss and ALAE experience. The loss triangles are based on December 31 evaluation dates, therefore no interpolation is necessary.

Paid loss development assumes that the ratio of losses paid in one period to losses paid in an earlier period is approximately constant over time. For example, if, on average, paid losses at 24 months after the start of the year were 150% of losses at 12 months, loss development from 12 to 24 months is projected to be 50%. Similarly if losses at 36 months were 120% of losses at 24 months, then the combined loss development from 12 to 36 months is projected to be 80% ($1.50 \times 1.20 = 1.80$). The process of estimating period-to-period development factors is normally continued until a level of maturity is reached at which point no additional movement is expected.

Incurred loss development is similar to paid loss development but uses incurred losses (paid loss plus case loss reserves) instead of paid losses.

The Bornhuetter-Ferguson technique based on exposures and paid loss is a variation on the traditional development approach. The basic premise underlying this technique is that loss varies proportionately with exposures. Losses per exposures are selected based on historical loss experience and resulting trends. This is balanced by assuming that only future losses will develop at this rate. The percent of paid loss to ultimate loss implied from the paid loss development method is used to determine what percentage of ultimate loss is yet to be developed. Current losses are added to losses yet to be developed, yielding an estimate for each year. This method is also performed using incurred losses instead of paid losses.

The Bornhuetter-Ferguson approaches are particularly useful for the more recent years because of their relative stability compared with that of development techniques. Paid loss development factors, in particular, can be very large for the most recent years; a relatively small change in the reporting or payment pattern could significantly distort the calculated result.

Based on a review of the results of each of the methods, ultimate losses for each fiscal year were selected. For workers' compensation claims, increased limit factors were used to estimate the expected portion of losses in excess of \$500,000 but limited to the City's self-insured retention. The selected losses in the

layer excess of \$500,000 were estimated based on a review of the expected losses in this layer, the actual amount of incurred loss experience in the layer, and the maturity of each individual accident year.

Estimated loss reserves as of December 31, 2016 were then calculated as ultimate losses at retention minus losses paid to date. For workers' compensation, the supplemental benefit insurance reserves were added to the calculated statutory reserves to estimate the total net outstanding liability for the Industrial Insurance Fund.

Future losses

The projected ultimate losses for accident years 2017 through 2020 were estimated based on a loss per exposure approach. In this approach, the ultimate loss estimates limited to \$500,000 and exposures from prior accident years are used to calculate historical loss rates. Because the exposure base (worker hours) is not inflation-sensitive, a trend using historic State of Washington benefit level changes was used to adjust loss rates to the 2017 cost level. Based on these indications and trends, a loss rate was selected for accident year 2017. Multiplying the estimated loss rate by the projected exposure estimate and applying the appropriate increased limits factor resulted in the projected ultimate loss estimate for accident year 2017. A similar technique was used to calculate the projected ultimate loss estimates for accident years 2018 through 2020.

Cash flow analysis

The cash flow analysis is the basis for estimating the credit for investment income. It also provides useful information regarding the timing and level of expected future payments. The timing of future payments was based on a payment pattern established by reviewing the historical relationship between cumulative paid loss and estimated ultimate loss.

The discounted loss reserves mentioned in this report are based on the assumptions that the credit for investment income is earned at the rate of 1.45%, the self-insured liability is fully funded, payments are made in the middle of each successive year on average, and the assumed payment pattern continues to apply.

Loss allocation

Loss allocations are based on each department's percentage of total incurred loss limited to \$50,000 per occurrence over the accident period 2011 through 2015. The City chose a "rolling" five year loss experience period because it provides an appropriate mix of allocation level stability and responsiveness

to changing loss experience. The allocation was performed assuming the \$15.0 million retention level will continue in the future.

City of Seattle
Industrial Insurance Fund

Allocation of Estimates by Department

As of December 31, 2016

Department	Undiscounted						Undiscounted		Discounted			Undiscounted		Discounted	
	Case Loss	Additional Loss	Total Loss	Discounted	2017		Total Loss	12/31/2017	Total Loss	2018		Total Loss	12/31/2018	Total Loss	12/31/2018
	Reserves	Reserves	(1)+(2)	Reserves	Ultimate Loss	Payments	Reserves	Total Loss	Reserves	Ultimate Loss	Payments	Reserves	Total Loss	Reserves	Total Loss
	(1)	(2)	(3)	(4)	(5)	(6)	(3)+(5)-(6)	(8)	(9)	(10)	(11)	(7)+(9)-(10)	(12)	(12)	(12)
City Budget Office	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
City Light	6,172,680	2,284,411	8,457,091	8,097,897	3,063,247	3,369,582	8,150,756	7,821,575	3,085,567	3,263,996	7,972,327	7,650,352			
Seattle Information Technology	178,999	33,709	212,709	203,674	35,330	72,235	175,803	168,703	35,587	61,111	150,279	144,210			
Drainage and Waste Water Fund (Seattle Public Utilities)	859,722	503,722	1,363,445	1,305,536	913,589	669,161	1,607,872	1,542,936	920,245	737,347	1,790,770	1,718,447			
FAS	935,013	543,708	1,478,721	1,415,916	480,315	572,583	1,386,453	1,330,459	483,815	542,897	1,327,372	1,273,764			
Fire Department	9,447,133	3,149,664	12,596,796	12,061,779	5,018,450	5,155,704	12,459,543	11,956,345	5,055,017	5,090,956	12,423,605	11,921,858			
Fire Pension Board	0	0	0	0	0	0	0	0	0	0	0	0			
Human Services	0	0	0	0	0	0	0	0	0	0	0	0			
Law Department	0	1,553	1,553	1,487	680	654	1,579	1,515	685	658	1,605	1,541			
Legislative	3,932	5,401	9,333	8,937	14,284	6,990	16,628	15,956	14,388	9,087	21,929	21,044			
Library	242,041	84,239	326,280	312,422	158,754	142,172	342,862	329,015	159,910	146,335	356,437	342,042			
Mayor's Office	0	0	0	0	0	0	0	0	0	0	0	0			
Municipal Court	10,834	29,476	40,310	38,598	18,719	17,297	41,733	40,048	18,856	17,629	42,960	41,225			
Neighborhoods	0	8,054	8,054	7,712	2,824	3,181	7,697	7,386	2,844	3,061	7,480	7,178			
Parks & Recreation	2,286,588	1,380,321	3,666,909	3,511,166	1,873,179	1,624,512	3,915,576	3,757,439	1,886,828	1,689,367	4,113,037	3,946,926			
Seattle Dept of Human Resources	277,121	106,016	383,137	366,865	123,723	148,139	358,722	344,235	124,625	140,299	343,048	329,193			
Planning & Community Development	57,498	54,403	111,900	107,148	127,575	70,698	168,778	161,962	128,505	86,971	210,312	201,818			
Police Department	4,995,548	2,576,474	7,572,022	7,250,419	3,461,303	3,232,533	7,800,792	7,485,745	3,486,524	3,283,884	8,003,432	7,680,201			
Seattle Center	902,407	438,474	1,340,882	1,283,931	752,526	614,305	1,479,103	1,419,367	758,009	651,735	1,585,378	1,521,350			
Seattle Employees' Retirement Fund	0	405	405	388	0	117	288	276	0	83	205	197			
Solid Waste Fund (Seattle Public Utilities)	299,903	175,717	475,620	455,419	318,694	233,428	560,886	538,233	321,016	257,214	624,687	599,458			
Transportation	1,379,303	769,396	2,148,698	2,057,438	997,205	921,789	2,224,115	2,134,290	1,004,471	939,406	2,289,181	2,196,729			
Water Fund (Seattle Public Utilities)	839,729	492,008	1,331,737	1,275,175	892,342	653,600	1,570,480	1,507,053	898,844	720,200	1,749,124	1,678,483			
All Other General Fund	0	4,898	4,898	4,690	259	1,497	3,660	3,512	261	1,128	2,793	2,680			
Seattle Department of Construction and Inspections	0	0	0	0	0	0	0	0	0	0	0	0			
Total City	28,888,451	12,642,050	41,530,501	39,766,597	18,253,000	17,510,177	42,273,324	40,566,050	18,386,000	17,643,364	43,015,961	41,278,696			

1. Case reserves in column (1) are net reserve amounts for accident years 1996 through 2016 per the City's December 31, 2016 database. The City has indicated that their database is not reliable for departmental allocation of claims incurred prior to 1996. Case loss reserve amounts for temporary employment services have been excluded from the allocation.
2. Column (2) includes IBNR and reopened claims as well as the remaining unallocated case reserves. It is allocated to departments based on the distribution presented on Exhibit 1-2, column (2).
3. Totals for columns (3), (5), (6), (9) and (10) are from Exhibit 2-1 in our report.
4. Columns (5) and (9) are from Exhibit 1-2, columns (5) and (6), respectively.
5. Columns (4), (8) and (12) assume an annual effective interest rate of 1.45% as specified by the City.

City of Seattle
Industrial Insurance Fund

Loss Allocation for 2017 and 2018

As of December 31, 2016

<u>Department</u>	Net	Expected	Experience	Experience	2017	2018
	Incurring Loss	Loss	Window	Window	Loss	Loss
	1996 to 2016	(1) / Total (1)	Limited	Distribution	Allocation	Allocation
	(1)	(2)	(3)	(3) / Total (3)	(4) x Total (5)	(4) x Total (6)
				(4)	(5)	(6)
City Budget Office	\$0	0.00%	\$0	0.00%	\$0	\$0
City Light	49,034,117	18.07%	8,158,855	16.78%	3,063,247	3,085,567
Seattle Information Technology	723,558	0.27%	94,100	0.19%	35,330	35,587
Drainage and Waste Water Fund (Seattle Public Utilities)	10,812,233	3.98%	2,433,312	5.01%	913,589	920,245
FAS	11,670,520	4.30%	1,279,304	2.63%	480,315	483,815
Fire Department	67,606,490	24.91%	13,366,474	27.49%	5,018,450	5,055,017
Fire Pension Board	0	0.00%	0	0.00%	0	0
Human Services	0	0.00%	0	0.00%	0	0
Law Department	33,334	0.01%	1,811	0.00%	680	685
Legislative	115,934	0.04%	38,046	0.08%	14,284	14,388
Library	1,808,163	0.67%	422,835	0.87%	158,754	159,910
Mayor's Office	0	0.00%	0	0.00%	0	0
Municipal Court	632,699	0.23%	49,858	0.10%	18,719	18,856
Neighborhoods	172,871	0.06%	7,521	0.02%	2,824	2,844
Parks & Recreation	29,628,133	10.92%	4,989,150	10.26%	1,873,179	1,886,828
Seattle Dept of Human Resources	2,275,609	0.84%	329,533	0.68%	123,723	124,625
Planning & Community Development	1,167,738	0.43%	339,793	0.70%	127,575	128,505
Police Department	55,303,160	20.38%	9,219,065	18.96%	3,461,303	3,486,524
Seattle Center	9,411,709	3.47%	2,004,328	4.12%	752,526	758,009
Seattle Employees' Retirement Fund	8,703	0.00%	0	0.00%	0	0
Solid Waste Fund (Seattle Public Utilities)	3,771,709	1.39%	848,830	1.75%	318,694	321,016
Transportation	16,514,828	6.09%	2,656,023	5.46%	997,205	1,004,471
Water Fund (Seattle Public Utilities)	10,560,786	3.89%	2,376,724	4.89%	892,342	898,844
All Other General Fund	105,132	0.04%	690	0.00%	259	261
Seattle Department of Construction and Inspections	0	0.00%	0	0.00%	0	0
Total	271,357,424		48,616,252		18,253,000	18,386,000

1. Losses in Column (1) are the City's net incurred losses for accident years 1996 through 2016.
2. Column (2) presents the expected percentage of losses for each department based on prior experience.
3. Losses in column (3) are the City's incurred losses for accident years 2011 through 2015, limited to \$50,000 per claim.

City of Seattle
Industrial Insurance Fund
Summary of Net Losses and Reserves

As of December 31, 2016

<u>Year</u>	<u>Accident Year Ultimate Loss</u> (1)	<u>Projected Calendar Year Payments</u> (2)	<u>Accident Year Outstanding Reserves</u> (3)
Prior	\$ -	\$ -	\$649,343
1996	8,359,000	-	109,854
1997	7,129,000	-	82,533
1998	6,898,000	-	14,200
1999	7,172,000	-	50,960
2000	10,988,000	-	312,137
2001	9,466,000	-	37,169
2002	12,740,000	-	843,083
2003	11,438,000	-	468,157
2004	12,834,000	-	179,630
2005	13,327,000	-	290,122
2006	11,982,000	-	724,030
2007	11,761,000	-	510,372
2008	15,755,000	-	1,254,817
2009	16,513,000	-	1,473,260
2010	18,074,000	-	2,975,460
2011	14,637,000	-	1,410,337
2012	15,507,000	-	3,016,420
2013	15,766,000	-	2,702,405
2014	13,946,000	-	3,138,872
2015	15,718,000	-	6,860,657
2016	18,107,000	-	14,426,683
2017	18,253,000	17,510,177	
2018	18,386,000	17,643,364	
2019	18,518,000	17,802,837	
2020	18,650,000	17,899,784	
Total			\$41,530,501

1. Loss includes allocated loss adjustment expense.

City of Seattle
Industrial Insurance Fund

Future Payments of Indicated Loss Reserves

As of December 31, 2016

Accident Year	Estimated Loss Reserves (1)	Calendar Year			
		<u>2017</u> (2)	<u>2018</u> (3)	<u>2019</u> (4)	<u>2020</u> (5)
Prior	\$346,736	\$92,463	\$92,463	\$69,347	\$69,347
1992	167,117	111,411	27,853	16,712	11,141
1993	32,209	12,884	12,884	3,221	1,933
1994	86,991	43,496	17,398	17,398	4,350
1995	16,290	8,145	4,073	1,629	1,629
1996	109,854	36,618	36,618	18,309	7,324
1997	82,533	20,633	20,633	20,633	10,317
1998	14,200	2,840	2,840	2,840	2,840
1999	50,960	8,493	8,493	8,493	8,493
2000	312,137	44,591	44,591	44,591	44,591
2001	37,169	4,646	4,646	4,646	4,646
2002	843,083	93,676	93,676	93,676	93,676
2003	468,157	46,816	46,816	46,816	46,816
2004	179,630	16,330	16,330	16,330	16,330
2005	290,122	44,634	22,317	22,317	22,317
2006	724,030	96,537	96,537	48,269	48,269
2007	510,372	204,149	40,830	40,830	20,415
2008	1,254,817	358,519	358,519	71,704	71,704
2009	1,473,260	441,978	294,652	294,652	58,930
2010	2,975,460	1,322,427	495,910	330,607	330,607
2011	1,410,337	503,692	402,953	151,108	100,738
2012	3,016,420	793,795	793,795	635,036	238,138
2013	2,702,405	648,577	540,481	540,481	432,385
2014	3,138,872	896,821	538,092	448,410	448,410
2015	6,860,657	2,058,197	1,372,131	823,279	686,066
2016	14,426,683	4,121,909	3,091,432	2,060,955	1,236,573
Subtotal	41,530,501	12,034,277	8,476,964	5,832,287	4,017,984
2017	18,253,000	5,475,900	3,650,600	2,737,950	1,825,300
2018	18,386,000	-	5,515,800	3,677,200	2,757,900
2019	18,518,000	-	-	5,555,400	3,703,600
2020	18,650,000	-	-	-	5,595,000
Total	115,337,501	17,510,177	17,643,364	17,802,837	17,899,784

1. Reserves in column (1) are from Exhibit 2-5; projected losses in column (1) are from Exhibit 2-4.
2. Columns (2) through (5) are based on the payment pattern presented on Exhibit 2-3.

City of Seattle
Industrial Insurance Fund

Payment Pattern

As of December 31, 2016

<u>Months of Development</u>	<u>Payment Pattern</u> (1)	<u>Cumulative Payment Pattern</u> (2)
12	30.000 %	30.000 %
24	20.000	50.000
36	15.000	65.000
48	10.000	75.000
60	6.000	81.000
72	5.000	86.000
84	5.000	91.000
96	4.000	95.000
108	1.500	96.500
120	1.000	97.500
132	1.000	98.500
144	0.200	98.700
156	0.200	98.900
168	0.100	99.000
180	0.100	99.100
192	0.100	99.200
204	0.100	99.300
216	0.100	99.400
228	0.100	99.500
240	0.100	99.600
252	0.100	99.700
264	0.100	99.800
276	0.100	99.900
288	0.050	99.950
300	0.020	99.970
312	0.020	99.990
324	0.005	99.995
336	0.003	99.998
348	0.002	100.000

1. Payment pattern is based on the historical relationship between cumulative paid loss and ultimate loss.

City of Seattle
Industrial Insurance Fund

Estimated Ultimate Loss and Loss Rate for Accident Years 2017 through 2020

As of December 31, 2016

Accident Year	Estimated Ultimate Loss Limited to \$500,000 (1)	Exposure (2)	Estimated Loss Rate (1)/(2) (3)	On-Level Factor to AY 2017 (4)	Loss Rate at AY 2017 Cost Level (3)x(4) (5)
2003	\$10,305,000	20,281	\$508	1.227	\$624
2004	12,400,000	19,774	627	1.220	765
2005	12,850,000	19,863	647	1.192	771
2006	11,870,000	20,482	580	1.154	669
2007	11,450,000	20,903	548	1.113	610
2008	14,925,000	21,842	683	1.099	751
2009	15,750,000	22,665	695	1.094	760
2010	16,050,000	19,547	821	1.085	891
2011	14,000,000	20,792	673	1.065	717
2012	14,275,000	20,864	684	1.034	707
2013	14,700,000	21,602	680	1.029	700
2014	13,550,000	22,239	609	1.016	619
2015	15,100,000	22,873	660	1.014	670
2016	16,975,000	23,811	713	1.007	718
Total	\$194,200,000	297,538			

Ten Year Volume-Weighted Average:	\$713
Nine Year Volume-Weighted Average:	724
Eight Year Volume-Weighted Average:	720
Seven Year Volume-Weighted Average:	714
Six Year Volume-Weighted Average:	688
Five Year Volume-Weighted Average:	683
Four Year Volume-Weighted Average:	677
Three Year Volume-Weighted Average:	670
Bornhuetter-Ferguson Seed:	705

Accident Year	Selected Loss Rate (6)	Estimated Exposure (7)	Estimated Ultimate Loss Limited to \$500,000 (6)x(7) (8)	ILF to SIR (9)	Estimated Net Ultimate Loss (10)
2017	\$690	23,811	\$16,429,590	1.111	\$18,253,000
2018	695	23,811	16,548,645	1.111	18,386,000
2019	700	23,811	16,667,700	1.111	18,518,000
2020	705	23,811	16,786,755	1.111	18,650,000

1. Exposures are worker hours in thousands and were provided by the City.
2. Column (1) is from Exhibit 2-6, column (5).
3. Column (11) is based on a review of the City's losses at various limits and industry size-of-loss size-of-loss information. A self-insured retention of \$15 million is assumed for 2017 to 2020.
4. Column (10) is rounded to the nearest thousand.

City of Seattle
Industrial Insurance Fund

Summary of Losses and Reserves

As of December 31, 2016

Accident Year	Paid Loss (1)	Case Loss Reserves (2)	Incurred Loss (1)+(2) (3)	Indicated	Ultimate Loss (5)	Reserves for Supplemental Benefits (6)	Total Loss Reserves (2)+(4)+(6) (7)
				IBNR Loss Reserves (5)-(3) (4)			
Prior	\$ -	\$278,736	\$ -	\$68,000	\$ -	\$0	\$346,736
1992	6,241,883	154,240	6,396,123	12,877	6,409,000	0	167,117
1993	6,086,881	17,821	6,104,702	12,298	6,117,000	2,090	32,209
1994	7,912,763	66,577	7,979,340	15,660	7,995,000	4,754	86,991
1995	7,895,710	945	7,896,655	15,345	7,912,000	0	16,290
1996	8,249,146	93,856	8,343,002	15,998	8,359,000	0	109,854
1997	7,046,467	68,039	7,114,506	14,494	7,129,000	0	82,533
1998	6,883,800	0	6,883,800	14,200	6,898,000	0	14,200
1999	7,121,040	36,039	7,157,079	14,921	7,172,000	0	50,960
2000	10,677,303	293,709	10,971,012	16,988	10,988,000	1,440	312,137
2001	9,428,831	8,582	9,437,413	28,587	9,466,000	0	37,169
2002	11,897,787	760,665	12,658,452	81,548	12,740,000	870	843,083
2003	10,972,237	342,490	11,314,727	123,273	11,438,000	2,394	468,157
2004	12,656,179	121	12,656,300	177,700	12,834,000	1,809	179,630
2005	13,038,098	89,147	13,127,245	199,755	13,327,000	1,220	290,122
2006	11,268,815	498,359	11,767,174	214,826	11,982,000	10,845	724,030
2007	11,253,780	266,401	11,520,181	240,819	11,761,000	3,152	510,372
2008	14,505,396	963,768	15,469,164	285,836	15,755,000	5,213	1,254,817
2009	15,076,780	991,462	16,068,242	444,758	16,513,000	37,040	1,473,260
2010	15,211,330	2,324,025	17,535,355	538,645	18,074,000	112,790	2,975,460
2011	13,273,470	691,341	13,964,811	672,189	14,637,000	46,807	1,410,337
2012	12,600,545	2,126,288	14,726,833	780,167	15,507,000	109,965	3,016,420
2013	13,115,988	1,661,011	14,776,999	989,001	15,766,000	52,393	2,702,405
2014	10,936,555	1,626,718	12,563,273	1,382,727	13,946,000	129,427	3,138,872
2015	9,322,408	4,303,968	13,626,376	2,091,624	15,718,000	465,065	6,860,657
2016	4,694,837	9,754,258	14,449,095	3,657,905	18,107,000	1,014,520	14,426,683
Total	\$257,368,029	\$27,418,566	\$284,507,859	\$12,110,141	\$296,550,000	\$2,001,794	\$41,530,501

1. Amounts are net of self-insured retention levels.
2. Column (5) is from Exhibit 2-6, column (10).
3. IBNR reserves for the prior years are based on an industry IBNR to case reserve ratio.

City of Seattle
Industrial Insurance Fund

Estimated Ultimate Loss Limited to Retention
As of December 31, 2016

Accident Year	Paid Loss Development	Incurred Loss Development	Bornhuetter-Ferguson Using Exposures and Paid Loss	Bornhuetter-Ferguson Using Exposures and Incurred Loss	Selected Ultimate Loss Limited to \$500,000	ILF to SIR	Expected Net Loss in Excess of \$500,000 (5) x [(6) - 1]	Percent Incurred of Net Loss in Excess of \$500,000	Estimated IBNR in Excess of \$500,000 (7) x [1 - (8)]	Actual Net Incurred Loss in Excess of \$500,000	Selected Net Loss in Excess of \$500,000	Estimated Ultimate Loss Limited to Retention (5)+(11)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1992	\$ 6,254,367	\$ 6,408,915	\$ 6,257,051	\$ 6,411,291	\$ 6,409,000	1.000	\$ -	1.000 %	\$ -	\$ -	\$ -	\$ 6,409,000
1993	6,099,055	6,116,911	6,102,432	6,120,253	6,117,000	1.000	-	1.000	-	-	-	6,117,000
1994	7,928,589	7,995,299	7,928,931	7,995,508	7,995,000	1.000	-	1.000	-	-	-	7,995,000
1995	7,911,501	7,912,448	7,912,625	7,913,570	7,912,000	1.000	-	1.000	-	-	-	7,912,000
1996	8,265,644	8,359,688	8,266,714	8,360,570	8,359,000	1.000	-	1.000	-	-	-	8,359,000
1997	7,060,560	7,128,735	7,065,063	7,133,102	7,129,000	1.000	-	1.000	-	-	-	7,129,000
1998	6,904,465	6,897,568	6,915,071	6,904,654	6,898,000	1.000	-	1.000	-	-	-	6,898,000
1999	7,149,560	7,171,393	7,165,171	7,179,161	7,172,000	1.000	-	1.000	-	-	-	7,172,000
2000	10,730,786	10,992,954	10,735,565	10,994,345	10,988,000	1.000	-	1.000	-	-	-	10,988,000
2001	9,485,536	9,465,744	9,500,466	9,473,278	9,466,000	1.000	-	1.000	-	-	-	9,466,000
2002	11,127,884	11,311,886	11,133,865	11,314,149	11,295,000	1.078	881,010	0.940	52,861	1,391,689	1,445,000	12,740,000
2003	10,325,078	10,304,350	10,339,464	10,311,014	10,305,000	1.099	1,020,195	0.930	71,414	1,061,734	1,133,000	11,438,000
2004	12,505,419	12,406,057	12,489,418	12,399,250	12,400,000	1.098	1,215,200	0.920	97,216	336,714	434,000	12,834,000
2005	12,912,646	12,848,941	12,888,711	12,839,183	12,850,000	1.072	925,200	0.910	83,268	393,330	477,000	13,327,000
2006	11,588,096	11,871,938	11,613,621	11,878,962	11,870,000	1.073	866,510	0.900	86,651	25,000	112,000	11,982,000
2007	11,439,720	11,450,400	11,502,920	11,473,386	11,450,000	1.074	847,300	0.890	93,203	217,543	311,000	11,761,000
2008	14,718,743	15,011,910	14,687,920	14,995,876	14,925,000	1.075	1,119,375	0.880	134,325	695,297	830,000	15,755,000
2009	15,772,785	15,805,261	15,702,370	15,780,170	15,750,000	1.084	1,323,000	0.870	171,990	590,991	763,000	16,513,000
2010	16,018,131	16,161,842	15,761,805	16,073,275	16,050,000	1.105	1,685,250	0.860	235,935	1,787,661	2,024,000	18,074,000
2011	14,476,101	13,979,502	14,403,136	13,972,945	14,000,000	1.106	1,484,000	0.848	225,568	411,302	637,000	14,637,000
2012	14,489,020	14,260,546	14,455,162	14,259,442	14,275,000	1.107	1,527,425	0.828	262,717	969,630	1,232,000	15,507,000
2013	15,392,849	14,607,706	15,292,935	14,615,311	14,700,000	1.108	1,587,600	0.804	311,170	755,000	1,066,000	15,766,000
2014	14,363,712	13,323,633	14,619,049	13,444,061	13,550,000	1.109	1,476,950	0.732	395,823	-	396,000	13,946,000
2015	14,570,056	15,043,572	15,047,881	15,123,945	15,100,000	1.110	1,661,000	0.628	617,892	-	618,000	15,718,000
2016	15,878,551	17,036,583	16,434,371	16,980,558	16,975,000	1.111	1,884,225	0.399	1,132,419	-	1,132,000	18,107,000
Total	\$283,368,854	\$283,873,782	\$ 284,221,717	\$ 283,947,259	\$ 283,940,000		\$19,504,240		\$ 3,972,452	\$ 8,635,891	\$12,610,000	\$ 296,550,000

1. Column (1) is from Exhibit 2-7.
2. Column (2) is from Exhibit 2-10.
3. Column (3) is from Exhibit 2-14.
4. Column (4) is from Exhibit 2-15.
5. Column (6) is based on a review of the City's losses at various limits and industry size-of-loss information.
6. Column (8) is based on the City's loss experience from the net layer in excess of \$500,000 and on industry excess loss development patterns.
7. Column (10) was provided by the City.
8. The selected amounts in column (11) are based on a review of the actual experience and the excess experience that is expected to develop.

City of Seattle
Industrial Insurance Fund

Ultimate Loss Based on Paid Loss Development
As of December 31, 2016

Accident Year	Cumulative Paid Loss	Selected Development Factors	Cumulative Development Factors	Ultimate Loss (1) x (3)
	(1)	(2)	(3)	(4)
1992	\$ 6,241,883	1.002	1.002	\$ 6,254,367
1993	6,086,881	1.000	1.002	6,099,055
1994	7,912,763	1.000	1.002	7,928,589
1995	7,895,710	1.000	1.002	7,911,501
1996	8,249,146	1.000	1.002	8,265,644
1997	7,046,467	1.000	1.002	7,060,560
1998	6,883,800	1.001	1.003	6,904,465
1999	7,121,040	1.001	1.004	7,149,560
2000	10,677,303	1.001	1.005	10,730,786
2001	9,428,831	1.001	1.006	9,485,536
2002	11,039,282	1.002	1.008	11,127,884
2003	10,212,232	1.003	1.011	10,325,078
2004	12,319,465	1.004	1.015	12,505,419
2005	12,644,768	1.006	1.021	12,912,646
2006	11,268,815	1.007	1.028	11,588,096
2007	11,036,237	1.008	1.037	11,439,720
2008	14,086,912	1.008	1.045	14,718,743
2009	14,828,789	1.018	1.064	15,772,785
2010	14,778,657	1.019	1.084	16,018,131
2011	12,992,168	1.028	1.114	14,476,101
2012	12,600,545	1.032	1.150	14,489,020
2013	12,810,115	1.045	1.202	15,392,849
2014	10,936,555	1.093	1.313	14,363,712
2015	9,322,408	1.190	1.563	14,570,056
2016	4,694,837	2.164	3.382	15,878,551
Total	\$253,115,609			\$283,368,854

1. Loss amounts are limited to \$500,000 per occurrence.
2. Loss amounts include allocated loss adjustment expenses.

City of Seattle
Industrial Insurance Fund

Paid Loss Development
As of December 31, 2016

Accident Year	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-132	132-144	144-156	156-168	168-180	180-192	192-204	204-216	216-228	228-240	240-252	252-264	264-276	276-288	288-300	300-Ult
1992																	1.002	1.002	1.011	1.009	1.006	1.003	1.001	1.007	
1993																1.008	1.001	1.000	1.000	1.000	1.001	1.001	1.001		
1994															1.003	1.008	1.003	1.006	1.001	1.000	1.002	1.000			
1995														1.006	1.005	1.000	1.001	1.000	1.001	1.000	1.000				
1996													1.003	1.002	1.003	1.002	1.002	1.001	1.001	1.001					
1997												1.013	1.004	1.001	1.009	1.001	1.001	1.017	1.003						
1998											1.000	1.000	1.001	1.000	1.002	1.001	1.000	1.000							
1999										1.009	1.002	1.000	1.001	1.001	1.000	1.001	1.001								
2000									1.006	1.001	1.000	1.001	1.004	1.000	1.001	1.020									
2001								1.007	1.002	1.007	1.004	1.004	1.002	1.000	1.001										
2002							1.020	1.025	1.027	1.015	1.050	1.021	1.050	1.011											
2003						1.039	1.019	1.012	1.004	1.002	1.000	1.000	1.003												
2004					1.050	1.018	1.026	1.012	1.003	1.001	1.002	1.010													
2005				1.045	1.009	1.050	1.032	1.007	1.004	1.015	1.007														
2006			1.087	1.029	1.029	1.011	1.021	1.008	1.008	1.004															
2007		1.171	1.088	1.040	1.026	1.013	1.015	1.027	1.010																
2008	2.131	1.163	1.092	1.034	1.024	1.032	1.024	1.035																	
2009	1.919	1.239	1.102	1.048	1.046	1.030	1.017																		
2010	1.573	1.184	1.107	1.053	1.048	1.027																			
2011	1.958	1.142	1.094	1.040	1.019																				
2012	2.072	1.204	1.083	1.050																					
2013	2.249	1.217	1.090																						
2014	2.130	1.198																							
2015	2.209																								
Avg	2.030	1.190	1.093	1.043	1.031	1.028	1.022	1.017	1.008	1.007	1.008	1.006	1.008	1.003	1.003	1.005	1.001	1.004	1.003	1.002	1.002	1.002	1.001	1.007	
Vol Wtd Avg	2.003	1.190	1.093	1.043	1.032	1.028	1.022	1.017	1.008	1.007	1.008	1.006	1.010	1.003	1.003	1.006	1.001	1.004	1.002	1.002	1.002	1.002	1.001	1.007	
7 Yr Vol Wtd Avg	1.986	1.192	1.094	1.043	1.030	1.026	1.022	1.018	1.008	1.006	1.009	1.006	1.010	1.003	1.003	1.006	1.001	1.004	1.002	1.002	1.002	1.002	1.001	1.007	
6 Yr Vol Wtd Avg	1.997	1.197	1.095	1.045	1.033	1.028	1.022	1.017	1.009	1.007	1.010	1.006	1.011	1.003	1.002	1.005	1.001	1.004	1.002	1.002	1.002	1.002	1.001	1.007	
5 Yr Vol Wtd Avg	2.117	1.189	1.095	1.045	1.033	1.024	1.022	1.018	1.006	1.007	1.012	1.007	1.013	1.003	1.002	1.006	1.001	1.005	1.001	1.002	1.002	1.002	1.001	1.007	
4 Yr Vol Wtd Avg	2.164	1.190	1.094	1.048	1.035	1.026	1.019	1.020	1.006	1.006	1.013	1.009	1.015	1.004	1.001	1.008	1.001	1.004	1.001	1.000	1.002	1.002	1.001	1.007	
3 Yr Vol Wtd Avg	2.196	1.206	1.089	1.048	1.038	1.029	1.019	1.024	1.007	1.007	1.003	1.010	1.019	1.004	1.000	1.009	1.001	1.006	1.001	1.000	1.001	1.002	1.001	1.007	
Selected	<u>2.164</u>	<u>1.190</u>	<u>1.093</u>	<u>1.045</u>	<u>1.032</u>	<u>1.028</u>	<u>1.019</u>	<u>1.018</u>	<u>1.008</u>	<u>1.008</u>	<u>1.007</u>	<u>1.006</u>	<u>1.004</u>	<u>1.003</u>	<u>1.002</u>	<u>1.001</u>	<u>1.001</u>	<u>1.001</u>	<u>1.001</u>	<u>1.000</u>	<u>1.000</u>	<u>1.000</u>	<u>1.000</u>	<u>1.002</u>	
Cumulative	3.382	1.563	1.313	1.202	1.150	1.114	1.084	1.064	1.045	1.037	1.028	1.021	1.015	1.011	1.008	1.006	1.005	1.004	1.003	1.002	1.002	1.002	1.002	1.002	
Ratio to Ultimate	0.296	0.640	0.761	0.832	0.870	0.897	0.923	0.940	0.957	0.965	0.972	0.979	0.985	0.989	0.992	0.994	0.995	0.996	0.997	0.998	0.998	0.998	0.998	0.998	

City of Seattle
Industrial Insurance Fund

Cumulative Paid Loss
As of December 31, 2016

Accident Year	12	24	36	48	60	72	84	96	108	120	132	144	156	168	180	192	204	216	228	240	252	264	276	288	300		
1992																											
1993																											
1994																											
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2015																											
2016																											

1. Loss amounts are limited to \$500,000 per occurrence.
2. Loss amounts include allocated loss adjustment expenses.

City of Seattle
Industrial Insurance Fund

Ultimate Loss Based on Incurred Loss Development
As of December 31, 2016

Accident Year	Cumulative Incurred Loss	Selected Development Factors	Cumulative Development Factors	Ultimate Loss (1) x (3)
	(1)	(2)	(3)	(4)
1992	\$ 6,396,123	1.002	1.002	\$ 6,408,915
1993	6,104,702	1.000	1.002	6,116,911
1994	7,979,340	1.000	1.002	7,995,299
1995	7,896,655	1.000	1.002	7,912,448
1996	8,343,002	1.000	1.002	8,359,688
1997	7,114,506	1.000	1.002	7,128,735
1998	6,883,800	1.000	1.002	6,897,568
1999	7,157,079	1.000	1.002	7,171,393
2000	10,971,012	1.000	1.002	10,992,954
2001	9,437,413	1.001	1.003	9,465,744
2002	11,266,763	1.001	1.004	11,311,886
2003	10,252,993	1.001	1.005	10,304,350
2004	12,319,586	1.002	1.007	12,406,057
2005	12,733,915	1.002	1.009	12,848,941
2006	11,742,174	1.002	1.011	11,871,938
2007	11,302,638	1.002	1.013	11,450,400
2008	14,773,867	1.003	1.016	15,011,910
2009	15,477,251	1.005	1.021	15,805,261
2010	15,747,694	1.005	1.026	16,161,842
2011	13,553,509	1.005	1.031	13,979,502
2012	13,757,203	1.005	1.037	14,260,546
2013	14,021,999	1.005	1.042	14,607,706
2014	12,563,273	1.018	1.061	13,323,633
2015	13,626,376	1.041	1.104	15,043,572
2016	14,449,095	1.068	1.179	17,036,583
Total	\$275,871,968			\$ 283,873,782

1. Loss amounts are limited to \$500,000 per occurrence.
2. Loss amounts include allocated loss adjustment expenses.

City of Seattle
Industrial Insurance Fund

Cumulative Incurred Loss
As of December 31, 2016

Accident Year	12	24	36	48	60	72	84	96	108	120	132	144	156	168	180	192	204	216	228	240	252	264	276	288	300
1992																	6,001,139	6,049,572	6,172,872	6,191,367	6,217,418	6,388,284	6,389,037	6,389,257	6,396,123
1993																6,180,264	6,062,921	6,081,897	6,068,703	6,068,787	6,069,053	6,076,846	6,092,654	6,104,702	
1994															8,129,396	8,134,913	8,021,469	7,859,176	7,945,193	7,948,685	7,955,240	7,932,951	7,979,340		
1995															7,839,254	7,901,216	7,901,605	7,908,212	7,926,698	7,902,112	7,895,239	7,896,655			
1996													8,202,397	8,353,244	8,311,922	8,361,269	8,354,721	8,342,907	8,342,907	8,342,907	8,342,907	8,343,002			
1997											6,984,073	6,885,749	6,876,732	6,834,005	6,985,275	6,996,454	7,161,081	7,166,661	7,114,506						
1998										6,853,626	6,854,487	6,852,810	6,858,558	6,860,080	6,871,035	6,881,243	6,881,725	6,883,800							
1999									7,081,360	7,087,676	7,092,014	7,095,159	7,100,712	7,108,725	7,110,428	7,119,399	7,157,079								
2000										11,155,871	10,869,221	10,423,716	10,430,122	10,455,314	10,454,234	10,458,768	10,464,829	10,971,012							
2001								9,313,676	9,294,887	9,351,171	9,434,381	9,463,135	9,505,153	9,473,800	9,423,361	9,437,413									
2002						9,453,154	10,163,346	9,839,304	9,969,738	10,049,211	10,567,197	10,730,521	11,063,772	11,266,763											
2003					11,688,533	9,779,175	10,346,271	10,436,554	10,293,471	10,197,019	10,178,781	10,178,756	10,199,558	10,252,993											
2004						11,937,992	12,052,621	12,634,282	12,705,056	12,223,884	12,232,530	12,246,073	12,319,586												
2005				12,528,300	12,726,340	12,148,026	12,237,380	12,435,263	12,488,669	12,646,865	12,833,221	12,733,915													
2006			11,494,002	12,196,663	11,379,123	10,942,437	11,642,864	11,943,040	12,013,661	12,002,579	11,742,174														
2007		10,496,085	10,440,810	10,344,662	10,783,852	10,680,226	10,895,012	10,894,481	11,140,788	11,302,638															
2008	12,629,883	14,455,258	13,253,706	13,585,364	13,614,462	13,672,060	14,260,096	14,349,171	14,773,867																
2009	13,056,094	13,023,293	14,651,330	15,809,453	15,712,545	15,823,310	15,637,415	15,477,251																	
2010	12,128,163	14,749,960	14,670,287	15,625,264	15,964,148	15,427,514	15,747,694																		
2011	13,259,077	13,094,009	13,230,976	13,223,596	13,485,509	13,553,509																			
2012	13,408,419	13,718,132	13,424,518	13,986,516	13,757,203																				
2013	11,136,741	12,650,596	13,313,902	14,021,999																					
2014	11,615,384	11,501,394	12,563,273																						
2015	12,614,404	13,626,376																							
2016	14,449,095																								

1. Loss amounts are limited to \$500,000 per occurrence.
2. Loss amounts include allocated loss adjustment expenses.

City of Seattle
Industrial Insurance Fund

Ultimate Loss Based on Bornhuetter-Ferguson Using Exposures and Paid Loss
As of December 31, 2016

Accident Year	Exposures	Selected Loss Rate	Expected Ultimate Loss (1) x (2)	Selected Development Factors	Cumulative Development Factors	Ratio of Cumulative Paid Loss to Ultimate Loss 1 / (5)	Ratio of Undeveloped Paid Loss to Ultimate Loss 1 - (6)	Undeveloped Paid Loss (3) x (7)	Cumulative Paid Loss	Ultimate Loss (8) + (9)	Calculated Loss Rate (10) / (1)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1992	17,839	\$ 426.000	\$ 7,599,414	1.002	1.002	0.998	0.002	\$ 15,168	\$ 6,241,883	\$ 6,257,051	350.751
1993	18,119	430.000	7,791,170	1.000	1.002	0.998	0.002	15,551	6,086,881	6,102,432	336.797
1994	18,536	437.000	8,100,232	1.000	1.002	0.998	0.002	16,168	7,912,763	7,928,931	427.758
1995	18,707	453.000	8,474,271	1.000	1.002	0.998	0.002	16,915	7,895,710	7,912,625	422.977
1996	18,767	469.000	8,801,723	1.000	1.002	0.998	0.002	17,568	8,249,146	8,266,714	440.492
1997	19,013	490.000	9,316,370	1.000	1.002	0.998	0.002	18,596	7,046,467	7,065,063	371.591
1998	20,327	514.000	10,448,078	1.001	1.003	0.997	0.003	31,271	6,883,800	6,915,071	340.191
1999	20,487	540.000	11,062,980	1.001	1.004	0.996	0.004	44,131	7,121,040	7,165,171	349.742
2000	21,254	550.000	11,689,700	1.001	1.005	0.995	0.005	58,262	10,677,303	10,735,565	505.108
2001	21,591	555.000	11,983,005	1.001	1.006	0.994	0.006	71,635	9,428,831	9,500,466	440.020
2002	21,025	565.000	11,879,125	1.002	1.008	0.992	0.008	94,583	11,039,282	11,133,865	529.554
2003	20,281	574.000	11,641,294	1.003	1.011	0.989	0.011	127,232	10,212,232	10,339,464	509.810
2004	19,774	578.000	11,429,372	1.004	1.015	0.985	0.015	169,953	12,319,465	12,489,418	631.608
2005	19,863	592.000	11,758,896	1.006	1.021	0.979	0.021	243,943	12,644,768	12,888,711	648.880
2006	20,482	611.000	12,514,502	1.007	1.028	0.972	0.028	344,806	11,268,815	11,613,621	567.016
2007	20,903	633.000	13,231,599	1.008	1.037	0.965	0.035	466,683	11,036,237	11,502,920	550.300
2008	21,842	641.000	14,000,722	1.008	1.045	0.957	0.043	601,008	14,086,912	14,687,920	672.462
2009	22,665	644.000	14,596,260	1.018	1.064	0.940	0.060	873,581	14,828,789	15,702,370	692.803
2010	19,547	650.000	12,705,550	1.019	1.084	0.923	0.077	983,148	14,778,657	15,761,805	806.354
2011	20,792	662.000	13,764,304	1.028	1.114	0.897	0.103	1,410,968	12,992,168	14,403,136	692.725
2012	20,864	682.000	14,229,248	1.032	1.150	0.870	0.130	1,854,617	12,600,545	14,455,162	692.828
2013	21,602	685.000	14,797,370	1.045	1.202	0.832	0.168	2,482,820	12,810,115	15,292,935	707.941
2014	22,239	694.000	15,433,866	1.093	1.313	0.761	0.239	3,682,494	10,936,555	14,619,049	657.361
2015	22,873	695.000	15,896,735	1.190	1.563	0.640	0.360	5,725,473	9,322,408	15,047,881	657.888
2016	23,811	700.000	16,667,700	2.164	3.382	0.296	0.704	11,739,534	4,694,837	16,434,371	690.201
Total	513,203		\$ 299,813,486					\$ 31,106,108	\$ 253,115,609	\$ 284,221,717	

1. Exposures are worker hours in thousands.
2. Loss amounts are limited to \$500,000 per occurrence.
3. Loss amounts include allocated loss adjustment expenses.

City of Seattle
Industrial Insurance Fund

Ultimate Loss Based on Bornhuetter-Ferguson Using Exposures and Incurred Loss
As of December 31, 2016

Accident Year	Exposures	Selected Loss Rate	Expected Ultimate Loss (1) x (2)	Selected Development Factors	Cumulative Development Factors	Ratio of Cumulative Incurred Loss to Ultimate Loss 1 / (5)	Ratio of Undeveloped Incurred Loss to Ultimate Loss 1 - (6)	Undeveloped Incurred Loss (3) x (7)	Cumulative Incurred Loss	Ultimate Loss (8) + (9)	Calculated Loss Rate (10) / (1)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1992	17,839	\$ 426.000	\$ 7,599,414	1.002	1.002	0.998	0.002	\$ 15,168	\$ 6,396,123	\$ 6,411,291	359.397
1993	18,119	430.000	7,791,170	1.000	1.002	0.998	0.002	15,551	6,104,702	6,120,253	337.781
1994	18,536	437.000	8,100,232	1.000	1.002	0.998	0.002	16,168	7,979,340	7,995,508	431.350
1995	18,707	453.000	8,474,271	1.000	1.002	0.998	0.002	16,915	7,896,655	7,913,570	423.027
1996	18,767	469.000	8,801,723	1.000	1.002	0.998	0.002	17,568	8,343,002	8,360,570	445.493
1997	19,013	490.000	9,316,370	1.000	1.002	0.998	0.002	18,596	7,114,506	7,133,102	375.170
1998	20,327	514.000	10,448,078	1.000	1.002	0.998	0.002	20,854	6,883,800	6,904,654	339.679
1999	20,487	540.000	11,062,980	1.000	1.002	0.998	0.002	22,082	7,157,079	7,179,161	350.425
2000	21,254	550.000	11,689,700	1.000	1.002	0.998	0.002	23,333	10,971,012	10,994,345	517.284
2001	21,591	555.000	11,983,005	1.001	1.003	0.997	0.003	35,865	9,437,413	9,473,278	438.761
2002	21,025	565.000	11,879,125	1.001	1.004	0.996	0.004	47,386	11,266,763	11,314,149	538.128
2003	20,281	574.000	11,641,294	1.001	1.005	0.995	0.005	58,021	10,252,993	10,311,014	508.408
2004	19,774	578.000	11,429,372	1.002	1.007	0.993	0.007	79,664	12,319,586	12,399,250	627.048
2005	19,863	592.000	11,758,896	1.002	1.009	0.991	0.009	105,268	12,733,915	12,839,183	646.387
2006	20,482	611.000	12,514,502	1.002	1.011	0.989	0.011	136,788	11,742,174	11,878,962	579.971
2007	20,903	633.000	13,231,599	1.002	1.013	0.987	0.013	170,748	11,302,638	11,473,386	548.887
2008	21,842	641.000	14,000,722	1.003	1.016	0.984	0.016	222,009	14,773,867	14,995,876	686.561
2009	22,665	644.000	14,596,260	1.005	1.021	0.979	0.021	302,919	15,477,251	15,780,170	696.235
2010	19,547	650.000	12,705,550	1.005	1.026	0.974	0.026	325,581	15,747,694	16,073,275	822.289
2011	20,792	662.000	13,764,304	1.005	1.031	0.970	0.030	419,436	13,553,509	13,972,945	672.035
2012	20,864	682.000	14,229,248	1.005	1.037	0.965	0.035	502,239	13,757,203	14,259,442	683.447
2013	21,602	685.000	14,797,370	1.005	1.042	0.960	0.040	593,312	14,021,999	14,615,311	676.572
2014	22,239	694.000	15,433,866	1.018	1.061	0.943	0.057	880,788	12,563,273	13,444,061	604.526
2015	22,873	695.000	15,896,735	1.041	1.104	0.906	0.094	1,497,569	13,626,376	15,123,945	661.214
2016	23,811	700.000	16,667,700	1.068	1.179	0.848	0.152	2,531,463	14,449,095	16,980,558	713.139
Total	513,203		\$ 299,813,486					\$ 8,075,291	\$275,871,968	\$ 283,947,259	

1. Exposures are worker hours in thousands.
2. Loss amounts are limited to \$500,000 per occurrence.
3. Loss amounts include allocated loss adjustment expenses.

City of Seattle
Industrial Insurance Fund

Bornhuetter-Ferguson Seed Calculation
As of December 31, 2016

Accident <u>Year</u>	Limited <u>Paid Loss</u> (1)	Limited <u>Incurred Loss</u> (2)	On-Level Factor <u>to 2016</u> (3)	On-Level Paid Loss <u>(1)x(3)</u> (4)	On-Level Incurred Loss <u>(2)x(3)</u> (5)	<u>Exposures</u> (6)	Paid Loss <u>CDF</u> (7)	Incurred Loss <u>CDF</u> (8)	Paid Burned Exposures <u>(6)/(7)</u> (9)	Incurred Burned Exposures <u>(6)/(8)</u> (10)	Paid Loss Per Exposure <u>(4)/(9)</u> (11)	Incurred Loss Per Exposure <u>(5)/(10)</u> (12)	Selected Loss Per Exposure (13)
1992	6,241,883	6,396,123	1.643	10,252,613	10,505,961	17,839	1.002	1.002	17,803	17,803	576	590	426
1993	6,086,881	6,104,702	1.628	9,907,268	9,936,274	18,119	1.002	1.002	18,083	18,083	548	549	430
1994	7,912,763	7,979,340	1.600	12,661,216	12,767,746	18,536	1.002	1.002	18,499	18,499	684	690	437
1995	7,895,710	7,896,655	1.547	12,214,292	12,215,754	18,707	1.002	1.002	18,670	18,670	654	654	453
1996	8,249,146	8,343,002	1.493	12,314,924	12,455,039	18,767	1.002	1.002	18,730	18,730	658	665	469
1997	7,046,467	7,114,506	1.430	10,075,177	10,172,460	19,013	1.002	1.002	18,975	18,975	531	536	490
1998	6,883,800	6,883,800	1.362	9,372,714	9,372,714	20,327	1.003	1.002	20,266	20,286	462	462	514
1999	7,121,040	7,157,079	1.296	9,226,313	9,273,006	20,487	1.004	1.002	20,446	20,446	452	454	540
2000	10,677,303	10,971,012	1.273	13,587,837	13,961,608	21,254	1.005	1.002	21,148	21,212	643	658	550
2001	9,428,831	9,437,413	1.261	11,889,151	11,899,973	21,591	1.006	1.003	21,462	21,526	554	553	555
2002	11,039,282	11,266,763	1.238	13,668,449	13,950,108	21,025	1.008	1.004	20,858	20,941	655	666	565
2003	10,212,232	10,252,993	1.219	12,447,041	12,496,722	20,281	1.011	1.005	20,059	20,180	621	619	574
2004	12,319,465	12,319,586	1.212	14,927,487	14,927,634	19,774	1.015	1.007	19,480	19,636	766	760	578
2005	12,644,768	12,733,915	1.183	14,963,138	15,068,630	19,863	1.021	1.009	19,451	19,685	769	765	592
2006	11,268,815	11,742,174	1.146	12,912,508	13,454,912	20,482	1.028	1.011	19,918	20,258	648	664	611
2007	11,036,237	11,302,638	1.106	12,201,789	12,496,325	20,903	1.037	1.013	20,166	20,633	605	606	633
2008	14,086,912	14,773,867	1.091	15,374,433	16,124,175	21,842	1.045	1.016	20,904	21,496	735	750	641
2009	14,828,789	15,477,251	1.086	16,111,346	16,815,894	22,665	1.064	1.021	21,309	22,195	756	758	644
2010	14,778,657	15,747,694	1.078	15,924,010	16,968,147	19,547	1.084	1.026	18,034	19,046	883	891	650
2011	12,992,168	13,553,509	1.057	13,736,950	14,330,471	20,792	1.114	1.031	18,661	20,158	736	711	662
2012	12,600,545	13,757,203	1.026	12,931,992	14,119,075	20,864	1.150	1.037	18,145	20,128	713	701	682
2013	12,810,115	14,021,999	1.022	13,088,610	14,326,841	21,602	1.202	1.042	17,977	20,736	728	691	685
2014	10,936,555	12,563,273	1.008	11,029,367	12,669,890	22,239	1.313	1.061	16,933	20,970	651	604	694
2015	9,322,408	13,626,376	1.007	9,388,779	13,723,389	22,873	1.563	1.104	14,635	20,718	642	662	695
2016	4,694,837	14,449,095	1.000	4,694,837	14,449,095	23,811	3.382	1.179	7,040	20,195	667	715	700
Total	253,115,609	275,871,968		304,902,241	328,481,842	513,203			467,610	501,205	652	655	
10 Yr Avg	118,087,223	139,272,905		124,482,114	146,023,302	217,138			173,804	206,274	716	708	
9 Yr Avg	107,050,986	127,970,267		112,280,324	133,526,977	196,235			153,638	185,641	731	719	
8 Yr Avg	92,964,074	113,196,400		96,905,891	117,402,802	174,393			132,734	164,145	730	715	
7 Yr Avg	78,135,285	97,719,149		80,794,545	100,586,907	151,728			111,425	141,951	725	709	
6 Yr Avg	63,356,628	81,971,455		64,870,535	83,618,760	132,181			93,391	122,905	695	680	
5 Yr Avg	50,364,460	68,417,946		51,133,585	69,288,289	111,389			74,730	102,746	684	674	
4 Yr Avg	37,763,915	54,660,743		38,201,593	55,169,215	90,525			56,585	82,619	675	668	
3 Yr Avg	24,953,800	40,638,744		25,112,983	40,842,374	68,923			38,608	61,883	650	660	

Selected Loss per Exposure: 700

1. On-level factors in column (3) are Washington State benefit level factors derived from industry data.
2. Exposures in column (6) are worker hours in thousands which were provided by the City.
3. Columns (7) and (8) are from Exhibits 2-7 and 2-10, respectively.
4. Loss rates in column (13) are the selected loss rate based on the averages columns (11) and (12) divided by the loss trend in column (3).
5. Losses are limited to \$500,000 per occurrence.

City of Seattle
Industrial Insurance Fund
Summary Financial Data

As of December 31, 2016

Current Year Losses

(1) Estimated Claim Payments	\$4,694,837
(2) Estimated Unpaid Reserves	14,426,683
(3) Ultimate Loss [(1)+(2)]	19,121,520

Current Year Payments on Prior Year Losses

(4) 1992-2015 Paid Loss @ 12/2016	252,673,192
(5) 1992-2015 Paid Loss @ 12/2015	241,671,484
(6) Difference [(4)-(5)]	11,001,708

Accident Year	Ultimate Loss As of <u>12/31/2016</u> (7)	Ultimate Loss As of <u>12/31/2015</u> (8)	Change in Provision for Prior Year Ultimate Loss <u>(7)-(8)</u> (9)
1992	6,409,000	6,402,000	7,000
1993	6,117,000	6,106,000	11,000
1994	7,995,000	7,948,000	47,000
1995	7,912,000	7,911,000	1,000
1996	8,359,000	8,359,000	0
1997	7,129,000	7,184,000	(55,000)
1998	6,898,000	6,900,000	(2,000)
1999	7,172,000	7,138,000	34,000
2000	10,988,000	10,486,000	502,000
2001	9,466,000	9,445,000	21,000
2002	12,740,000	12,518,000	222,000
2003	11,438,000	11,365,000	73,000
2004	12,834,000	12,738,000	96,000
2005	13,327,000	13,388,000	(61,000)
2006	11,982,000	12,353,000	(371,000)
2007	11,761,000	11,614,000	147,000
2008	15,755,000	15,419,000	336,000
2009	16,513,000	16,838,000	(325,000)
2010	18,074,000	17,747,000	327,000
2011	14,637,000	14,444,000	193,000
2012	15,507,000	15,858,000	(351,000)
2013	15,766,000	14,966,000	800,000
2014	13,946,000	13,307,000	639,000
2015	15,718,000	15,984,000	(266,000)
2016	18,107,000		
Total	296,550,000	276,418,000	2,025,000