

Monterey Bay Area Self Insurance Authority

**An Actuarial Review of the
Liability Self-Insurance Program**

**BAY ACTUARIAL CONSULTANTS
Moraga, California
March 26, 2018**

Bay Actuarial Consultants

March 26, 2018

Mr. Conor Boughey
Vice President
Alliant Insurance Services
100 Pine Street, 11th Floor
San Francisco, CA 94111

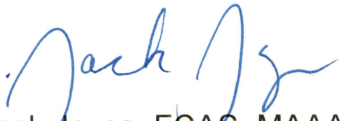
Dear Mr. Boughey:

We are pleased to present Bay Actuarial's Actuarial Review of the Monterey Bay Area Self Insurance Authority's General and Auto Liability self-insurance program. We appreciate the opportunity to serve the Authority.

If you have any questions, please call me at (925) 377-5269.

Respectfully,

BAY ACTUARIAL CONSULTANTS



Jack Joyce, FCAS, MAAA
Principal

Monterey Bay Area Self Insurance Authority

An Actuarial Review of the Liability Self-Insurance Program

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Monterey Bay Area Self Insurance Authority

An Actuarial Review of the Liability Self-Insurance Program

Introduction

Monterey Bay Area Self Insurance Authority

An Actuarial Review of the Liability Self-Insurance Program

Introduction

Background & Purpose

The Monterey Bay Area Self Insurance Authority (“MBASIA”) self-insures its general and auto liability claims. The Authority has asked Bay Actuarial Consultants to provide an actuarial report on its liability self-insurance program. The specific topics covered in this report include the following:

- 1) **Projected 2018-19 Loss Rate.** A projection of the losses expected to be incurred during 2018-19, expressed in terms of a rate of loss per \$100 of payroll.
- 2) **Unpaid Losses.** We estimated the Authority’s liability for unpaid losses as of December 31, 2017 and projected the June 30, 2018 liability.
- 3) **Discounting.** We discounted the projected 2018-19 losses and the liabilities to present value, assuming a 1.5% interest rate. The discounted estimates take into account the time value of money as general and auto liability costs discharge over an extended timeframe.
- 4) **Variability of Estimates.** We have included an analysis of items (1) and (2) above, in terms of “probability levels.”
- 5) **Short-Term versus Long-Term.** We broke out the liabilities into their short-term and long-term components.

Conditions & Limitations

We prepared this report for the Authority's internal use. The Authority may provide a copy to its financial auditors. Bay Actuarial does not authorize any other use. In particular, those interested in providing insurance to the Authority must perform their own actuarial analysis and may not rely upon our work.

Risk Management Services and Alliant Insurance Services provided the loss, payroll, and excess insurance information. We did not audit this data and are not responsible for its accuracy. In any actuarial analysis the accuracy and relevance of the conclusions and the reasonableness of the recommendations depend upon the accuracy and relevance of the underlying data.

The term "losses" refers to all costs that can be associated with a specific claim. These include loss payments, attorney's fees, and other expenses linked to a specific claim.

The actuarial projections in this report are uncertain estimates. Uncertainty is inherent and unavoidable because many of the events that will determine future claims costs have not yet taken place. These events include, but are not limited to, future legislation that may affect the tort liability system, changes in the rate of inflation, and the outcomes of current and future litigation and settlement negotiations. Our projections are based upon the Authority's historical experience. We did not anticipate any extraordinary changes in the various factors that might affect the future cost of claims. We used actuarial methods that should produce reasonable results given current information. There is no guarantee, express or implied, that losses will develop as projected in this report.

Organization of the Report

We divided the remainder of this report into seven sections: the *Management Summary*, the *Technical Approach* section, the *Summary Exhibits*, the *Fiscal Year End Exhibits*, the *Loss Projection Exhibits*, the *Future Loss Exhibits*, and the *Discounting Exhibits*.

The *Management Summary* gives an overview of the results of our analysis. The *Technical Approach* section explains and discusses the assumptions and details underlying our calculations. The *Exhibits* document the actual calculations used in developing our results.

Monterey Bay Area Self Insurance Authority

An Actuarial Review of the Liability Self-Insurance Program

Management Summary

Monterey Bay Area Self Insurance Authority

An Actuarial Review of the Liability Self-Insurance Program

Management Summary

Projected 2018-19 Losses and Loss Rates

Tables I and II shows the projected 2018-19 losses and loss rates at various probability levels, discounted and undiscounted. The rates in Table I are gross of the \$10,000 per loss deductible, while those in Table II are net. The rates are discounted at 1.5% interest. The items in Tables I and II do not include claims handling fees (“ULAE”), administrative costs, or the cost of excess insurance coverage. CARMA is assumed to cover any general and auto liability losses that exceed \$1,000,000, and the Employment Risk Management Authority (“ERMA”) is expected to cover any EPL losses that exceed \$500,000.

Tables I and II show actuarial central estimates, plus estimates at various probability levels. The probability level rates correspond to the estimated probabilities that the indicated rate will be adequate. For example, we estimate that there is a 70% probability that the actual 2018-19 discounted loss rate, gross of deductibles (Table I) will be less than **\$3.01**.

There is a table on page 12 that allows one to discount these loss rates at interest rates other than 1.5%.

Table I: Projected 2018-19 Losses and Loss Rates				
\$1M SIR (\$500K EPL SIR), Gross of \$10K Deductible, 1.5% Interest Rate				
<u>Probability Level</u>	<u>Undiscounted Losses</u>	<u>Discounted Losses</u>	<u>Undiscounted Loss Rate</u>	<u>Discounted Loss Rate</u>
Central Estimate	\$1,496,574	\$1,444,194	\$2.73	\$2.63
70%	1,795,889	1,733,033	3.28	3.16
80%	2,110,169	2,036,313	3.85	3.71
90%	2,604,039	2,512,897	4.75	4.58
2017-18 C.E.	\$1,285,526	\$1,240,533	\$2.54	\$2.45
% Change from 17-18	+16.4%	+16.4%	+7.5%	+7.3%

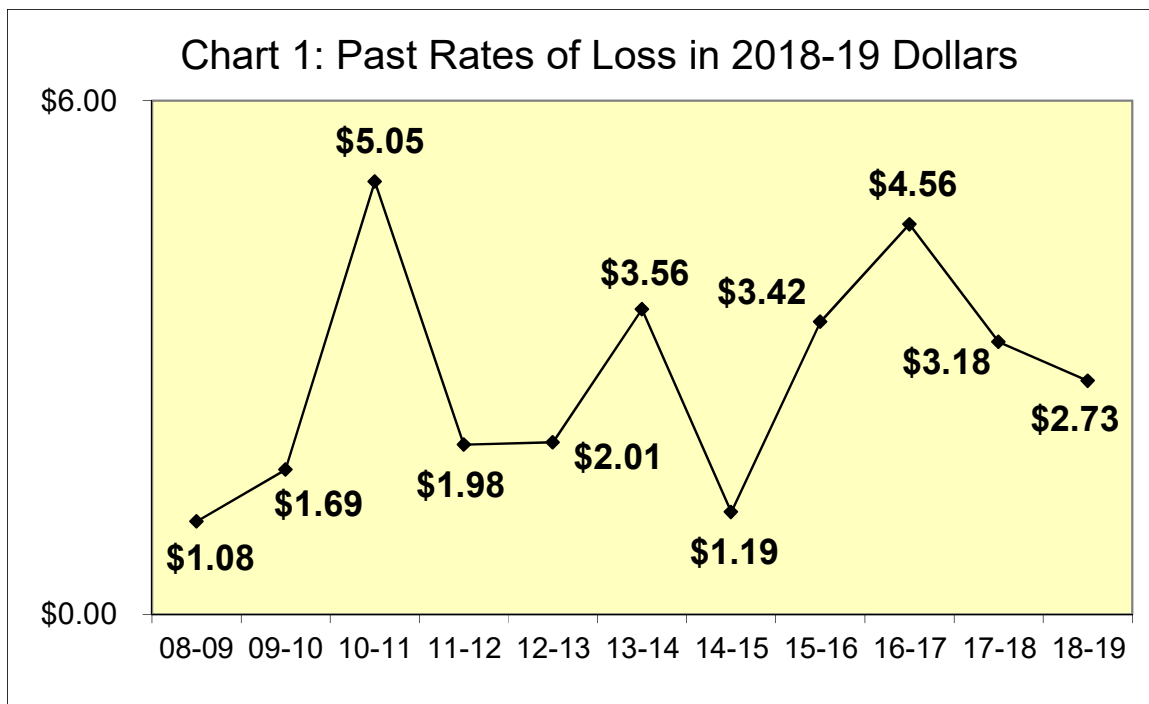
The large discrepancy between the increase in the central estimates and the corresponding rates is due to the facts that 2017-18 payroll is 4.9% higher than projected last year and that 2018-19 payroll is expected to increase by another 3.4%. Adjusting for this equalizes the rate and central estimate changes.

Table II: Projected 2018-19 Losses and Loss Rates \$1M SIR (\$500K EPL SIR), NET of \$10K Deductible, 1.5% Interest Rate				
Probability Level	Undiscounted Losses	Discounted Losses	Undiscounted Loss Rate	Discounted Loss Rate
Central Estimate	\$1,329,061	\$1,282,544	\$2.42	\$2.34
70%	1,594,873	1,539,053	2.90	2.81
80%	1,873,976	1,808,387	3.41	3.30
90%	2,312,566	2,231,626	4.21	4.07
2017-18 C.E.	\$1,138,079	\$1,097,108	\$2.25	\$2.17
% Change from 17-18	+16.8%	+16.9%	+7.6%	+7.8%

The \$10,000 deductible rates in Table II are about 11.5% lower than the Table I rates.

The Authority's Past Rates of Loss

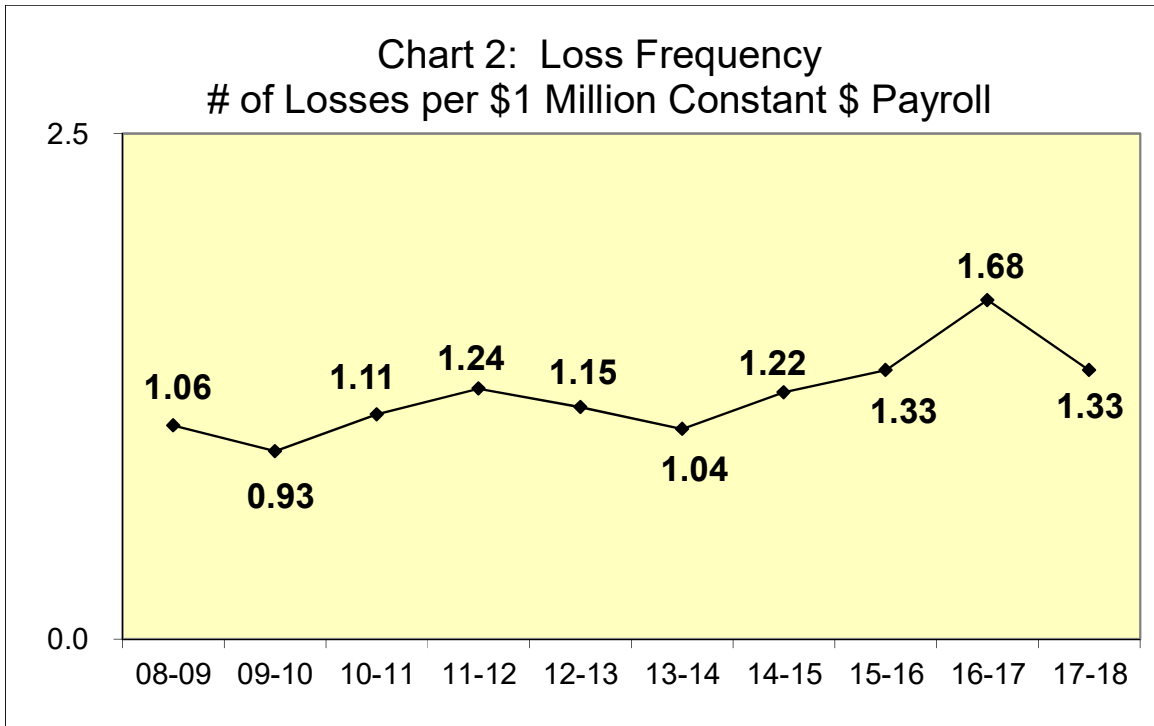
Chart 1 shows the Authority's estimated past rates of loss. The rate is equal to the estimated total losses for the year divided by the total insured payroll measured in hundreds of dollars. These rates are not discounted. The rate of **\$2.73** projected for 2018-19 in Chart 1 matches the undiscounted central estimate rate in Table I.



The average of the rates shown in this chart, excluding 2018-19's projected rate of \$2.73, is \$2.77.

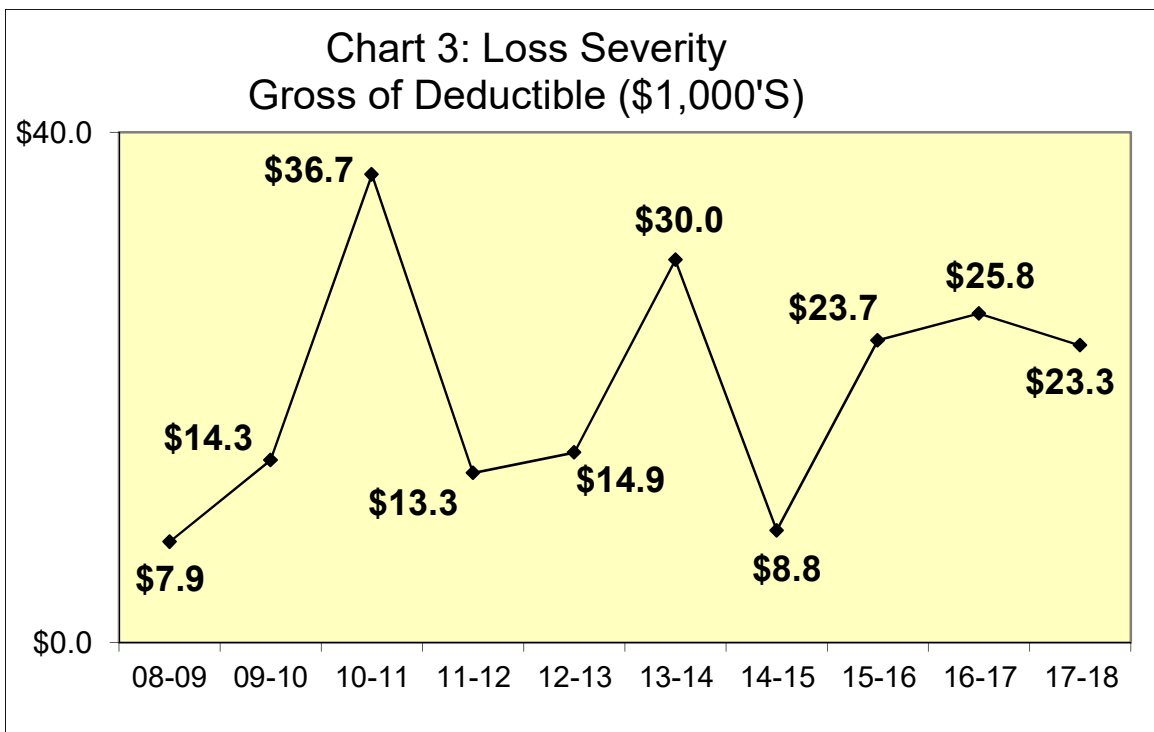
Loss Frequency

Loss “frequency” is the number of losses divided by 2018-19 payroll. Chart 2 shows historical loss frequency by program year.



Average Loss Amount

The average loss amount is the estimated ultimate losses divided by the number of losses. Chart 3 shows the estimated average cost per loss.



Liability for Unpaid Losses

We estimate that the Authority's liability for unpaid losses was **\$4,124,000** on December 31, 2017. This is an undiscounted estimate and does not include the portion of the losses that the members will pay under their \$10,000 deductibles. Table III shows this central estimate plus the corresponding discounted amount. The Table also includes higher probability estimates for the liability.

Table III: Estimated Liability for Unpaid Losses as of December 31, 2017 – Net of Deductibles		
<u>Probability Level</u>	<u>Undiscounted Losses</u>	<u>Discounted at 1.5%</u>
Central Estimate	\$4,123,571	\$4,054,889
60%	4,206,042	4,135,987
70%	4,453,457	4,379,280
80%	4,783,342	4,703,671
90%	5,278,171	5,190,258

Table IV shows the estimated liability gross of deductibles.

Table IV: Estimated Liability for Unpaid Losses as of December 31, 2017 – Gross of Deductibles		
<u>Probability Level</u>	<u>Undiscounted Losses</u>	<u>Discounted at 1.5%</u>
Central Estimate	\$4,297,496	\$4,224,438
60%	4,383,445	4,308,927
70%	4,641,295	4,562,393
80%	4,985,095	4,900,348
90%	5,500,794	5,407,281

Table V shows the projected June 30, 2018 liability net of deductibles.

Table V: Projected Liability for Unpaid Losses as of June 30, 2018 – Net of Deductibles		
Probability Level	Undiscounted Losses	Discounted at 1.5%
Central Estimate	\$3,707,093	\$3,645,348
60%	4,264,649	4,192,150
70%	4,635,488	4,556,685
80%	5,117,579	5,030,580
90%	5,859,257	5,759,650

Table VI shows the projected June 30, 2018 liability gross of deductibles.

Table VI: Projected Liability for Unpaid Losses as of June 30, 2018 – Gross of Deductibles		
Probability Level	Undiscounted Losses	Discounted at 1.5%
Central Estimate	\$3,880,038	\$3,814,077
60%	4,463,604	4,386,188
70%	4,851,744	4,767,596
80%	5,356,325	5,263,426
90%	6,132,605	6,026,242

The 90% probability level is 28% higher than the central estimate at December 31 but 58% higher at June 30. This is because both estimates are based on December 31 data. The June 30 projections include six months of payment projections and six months of projected new loss occurrences so the uncertainty is currently much higher. If the liabilities were to re-estimated at June 30 using current data that 58% “probability loading” would then fall back toward the 28% level.

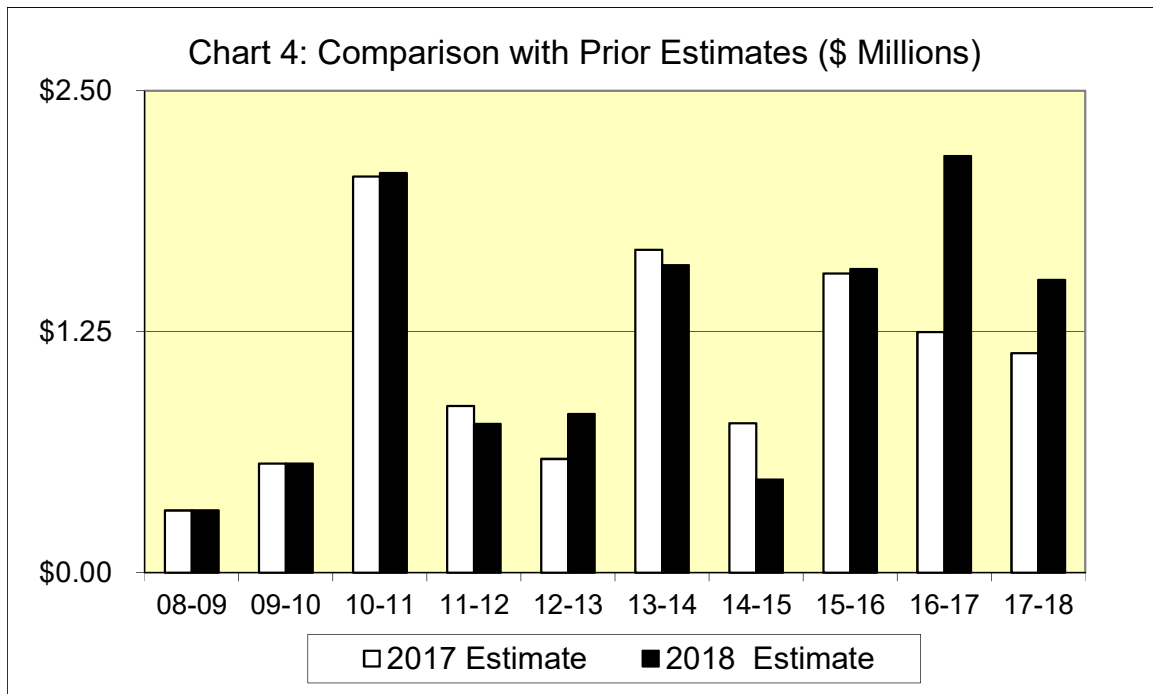
The liability is projected to drop by over \$400,000 between December 31 and June 30. That is because most of the projected claims expenditures over the next six months come from program years that currently have unusually high levels of liability – 2015-16 and 2016-17. Of course projecting the timing of claims payments has an extremely high level of uncertainty, contributing to those high probability level numbers at June 30.

ULAE Liability

We estimate the liability for unpaid unallocated loss adjustment expenses (“ULAE”) at \$223,000 on both December 31, 2017 and June 30, 2018. This is shown on page 22.

Comparison with 2017 Estimates

Chart 4 compares the prior estimates of the net losses by program year with the new estimates.



The overall increase in the estimates for all years through 2016-17 was \$722,000.

Reconciliation of 12/31/16 & 12/31/17 Estimates

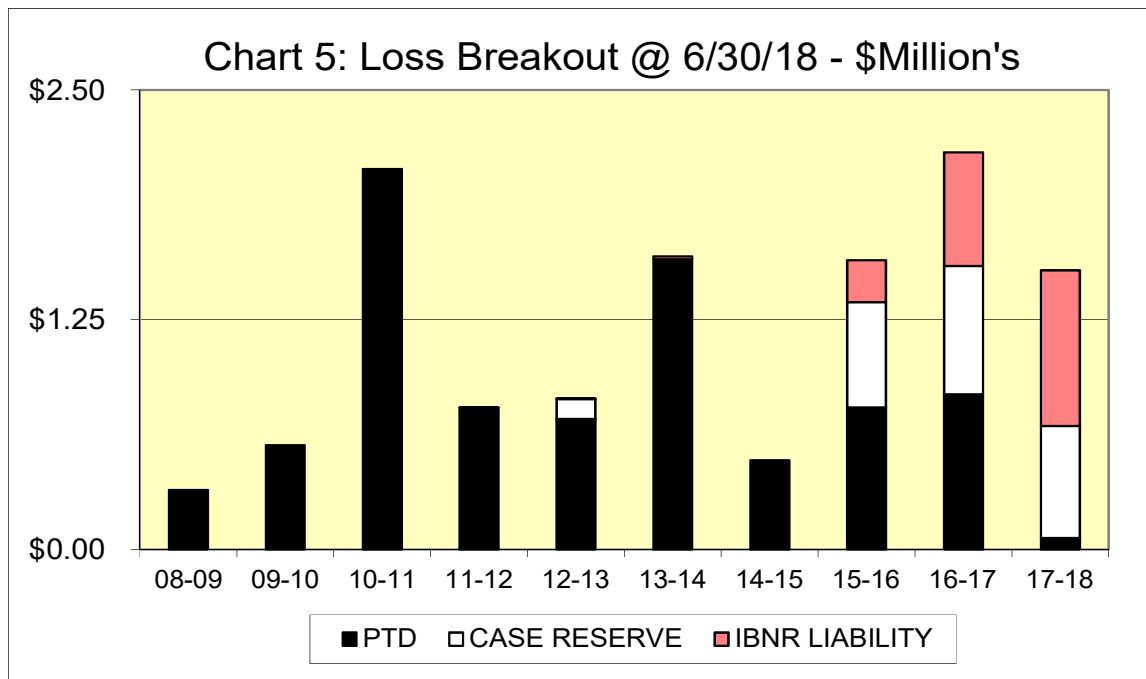
These estimates are based on analysis of the 12/31/17 data. Last year we used 12/31/16 data and estimated a net liability of \$2,698,000 on that date. Claims expenditures were \$680,000 during 2017. We increased the loss estimates for 12/31/16 and prior by \$266,000 in this report. We estimate the losses incurred during 2017 at \$1,840,000.

Therefore starting with last year's 12/31/16 liability estimate, subtracting the claims payments, adding the change in the estimates, and then adding the 2017 losses produces \$4,124,000 as the indicated liability on 12/31/17. This matched the central estimate in Table III on page 9.

Therefore the bulk of the increase in the liability is explained by the large amount of losses incurred during calendar year 2017.

Loss Breakout as of 6/30/187

In Table V we projected that the Authority's 6/30/18 liability, net of deductibles, would be **\$3,707,000**. This comprises **\$1,991,000** in case reserves for known claims and an IBNR liability of **\$1,716,000**. Chart 5 breaks out the projected total program year losses into their components: losses paid, case reserves, and IBNR liability. The actual amounts are shown on page 24. There is \$0.86 of IBNR liability for every \$1.00 of case reserves. Total IBNR is unchanged from last year while case reserves have more than doubled.



Short-Term Liability

Short-term liabilities are those expected to be discharged within twelve months. The total projected 6/30/18 liability of **\$3,707,000** comprises **\$1,871,000** of short-term and **\$1,836,000** of long-term liabilities.

Interest Rates

The discounted liabilities and rates in this report were discounted at 1.5% interest. Here are the adjustments to make for different interest rate assumptions:

Interest Rate	0.0%	1.0%	1.5%	2.00%	2.30%
Gross Rates	+3.6%	+1.2%	0.0%	-1.1%	-1.8%
Net Rates	+3.6%	+1.1%	0.0%	-1.1%	-1.9%
Liabilities	+1.7%	+0.6%	0.0%	-0.5%	-0.8%

The Table includes columns for 2.00% and 2.30% interest rates. Those are the “risk-free buy-and-hold” interest rates. We obtained them by calculating the overall yield on a hypothetical portfolio of US Treasuries selected to mature to match the future claims expenditures. The portfolio that matches the payments on the 2018-19 losses yields 2.00% and the portfolio matching the 6/30/18 liability expenditures yields 2.30%.

Monterey Bay Area Self Insurance Authority

An Actuarial Review of the Liability Self-Insurance Program

Technical Approach

Monterey Bay Area Self Insurance Authority

An Actuarial Review of the Liability Self-Insurance Program

Technical Approach

This section describes the actuarial calculations.

Exhibits

Summary Exhibits

These exhibits summarize the analysis and conclusions. Summary Exhibits 1 and 2 show the liabilities for unpaid losses as of December 31, 2017 and June 30, 2018. Summary Exhibit 3 shows the projected rate for the 2018-19 program year, which runs from July 1, 2018 to June 30, 2019. Summary Exhibit 4 shows the projected unpaid losses as of June 30, 2018 by program year on both discounted and non-discounted bases. Summary Exhibit 5 shows the projected ULAE liability.

Fiscal Year End Exhibits

These exhibits show the calculation of the projected unpaid losses as of June 30, 2018.

Loss Projection Exhibits

These exhibits show the various actuarial projection methods and summarize the results for each program year.

We used five different actuarial methods:

- 1) Reported loss projection method;
- 2) Paid loss projection method;
- 3) IBNR to Case Reserves Ratio method;
- 4) Bornhuetter-Ferguson method using reported losses; and
- 5) Frequency times Severity method.

Loss Projection Exhibit 1 summarizes the results of these methods.

Limited Loss Exhibits - \$250,000 Limit

These exhibits show the estimated ultimate losses limited to \$250,000 per loss. We use this limited loss analysis to calculate the projected 2018-19 loss rate.

Future Loss Exhibits

These exhibits show the projection of the expected rate for 2018-19.

Discounting Exhibits

These exhibits show the discounting of the remaining unpaid losses and the projected future loss rate. They also include the Program Information Exhibit.

Deductibles Exhibits

These exhibits show the estimation of the losses that fall under the \$10,000 deductible.

Claims Data

We included development triangles for reported losses, paid losses, and number of claims reported, plus a Program Information Exhibit.

Monterey Bay Area Self Insurance Authority

**Actuarial Analysis of the
General and Auto Liability Program**

Summary Exhibits

Monterey Bay Area Self Insurance Authority
General and Auto Liability Program

Unpaid Losses as of 12/31/17
Losses Limited to SIR, NET of \$10K Deductible

	<u>12/31/17</u>
(1) Estimated Unpaid Losses:	\$4,123,571
(2) Discounted Value of Unpaid Losses: (Assuming 1.5% Interest Rate)	\$4,054,889

Probability Levels for 12/31/17 Liabilities

Probability Level <u>(3)</u>	Probability Factor <u>(4)</u>	Discounted * Liability <u>(5)</u>
Central Estimate	1.00	\$4,054,889
60%	1.02	4,135,986
70%	1.08	4,379,280
80%	1.16	4,703,671
90%	1.28	5,190,258
* Multiply by 1.017 to obtain undiscounted values.		

Notes:

- (1) Page 25, Column (6).
- (2) (1), discounted at 1.50% interest.
- (3) Estimated probability that funding will be adequate.
- (4) Estimated by BAC.
- (5) (2) x (4).

Monterey Bay Area Self Insurance Authority
General and Auto Liability Program

Unpaid Losses as of 6/30/18
Losses Limited to SIR, NET of \$10K Deductible

	<u>06/30/18</u>
(1) Projected Unpaid Losses:	\$3,707,093
(2) Discounted Value of Unpaid Losses: (Assuming 1.5% Interest Rate)	\$3,645,348

Probability Levels for 6/30/18 Liabilities

Probability Level <u>(3)</u>	Probability Factor <u>(4)</u>	Discounted * Liability <u>(5)</u>
Central Estimate	1.00	\$3,645,348
60%	1.15	4,192,150
70%	1.25	4,556,685
80%	1.38	5,030,580
90%	1.58	5,759,650

* Multiply by 1.017 to obtain undiscounted values.

Notes:

- (1) Page 21, Column (1).
- (2) Page 21, Column (2).
- (3) Estimated probability that funding will be adequate.
- (4) Estimated by BAC.
- (5) (2) x (4).

Monterey Bay Area Self Insurance Authority
 General and Auto Liability Program

Projected Loss Funding Rate for 2018-19
Losses Limited to \$1,000,000, NET of \$10K Deductible

(1) Discounted Loss Rate: Loss Rates
 (as of July 1, 2018, 1.5% interest rate) \$2.34

<u>Probability Levels</u>		
Probability Level <u>(2)</u>	Probability Factor <u>(3)</u>	Discounted * Rate <u>(4)</u>
50%	0.90	2.11
Central Estimate	1.00	\$2.34
60%	1.04	2.43
70%	1.20	2.81
80%	1.41	3.30
90%	1.74	4.07

* Multiply by 1.036 to obtain undiscounted values.

Notes:

- (1) [Page 54, Column] x [Page 60, Column (4)],
adjusted for \$10,000 deductible.
- (2) Estimated probability that funding will be adequate.
- (3) Estimated by BAC.
- (4) (1) x (3).

Monterey Bay Area Self Insurance Authority
General and Auto Liability Program

Projected Unpaid Losses as of June 30, 2018
Losses Limited to SIR, NET of \$10K Deductible

Program Year	Undiscounted Value: Claims Liabilities as of 6/30/18 <u>(1)</u>	Discounted (1.5% Interest) Claims Liabilities as of 6/30/18 <u>(2)</u>	Estimated Ultimate Losses <u>(3)</u>
2008-09	\$0	\$0	\$323,426
2009-10	0	0	566,348
2010-11	0	0	2,071,084
2011-12	39	38	770,896
2012-13	112,560	111,705	821,696
2013-14	16,460	16,229	1,595,000
2014-15	0	0	483,920
2015-16	802,191	793,505	1,574,000
2016-17	1,317,077	1,296,789	2,161,000
2017-18	1,458,767	1,427,082	1,519,000
Total	\$3,707,093	\$3,645,348	\$11,886,370

Notes:

- (1) Page 24, Column (6).
- (2) Page 58, Column (3).
- (3) Page 24, Column (1).

Monterey Bay Area Self Insurance Authority
 General and Auto Liability Program

ULAE Projections and Calculation of Unpaid ULAE

(1) Selected ULAE Ratio: **8.7%**

	Case Reserves with <u>Development</u>	"True" <u>IBNR</u>	<u>Total</u>
(2) ULAE Ratio:	4.3%	8.7%	
(3) Estimated Unpaid Losses as of 12/31/17:	\$3,423,207	\$874,289	\$4,297,496
(4) Estimated Unpaid ULAE as of 12/31/17:	\$147,198	\$75,872	\$223,070
(5) Discounted Unpaid ULAE as of 12/31/17: (1.5% interest rate)			\$219,278

We project that the 6/30/18 ULAE liability
 will equal the 12/31/17 ULAE liability.

Notes:

- (1) Estimated by BAC.
- (2) "50-50 Rule."
- (3) Page 31, assuming 50% of IBNR is
development on known claims.
- (4) (2) x [(3)].
- (5) (4) x [Page 58, Item].

Monterey Bay Area Self Insurance Authority

**Actuarial Analysis of the
General and Auto Liability Program**

Fiscal Year End Exhibits

Monterey Bay Area Self Insurance Authority
General and Auto Liability Program

Projected Unpaid Losses as of June 30, 2018
Losses Limited to SIR, NET of \$10K Deductible

Program Year	Estimated Ultimate Losses (1)	Projected Losses Paid as of 6/30/18 (2)	Projected Case Reserves 6/30/18 (3)	Projected Losses Reported as of 6/30/18 (4)	Projected IBNR as of 6/30/18 (5)	Projected Unpaid Losses as of 6/30/18 (6)
2008-09	\$323,426	\$323,426	\$0	\$323,426	\$0	\$0
2009-10	566,348	566,348	0	566,348	0	0
2010-11	2,071,084	2,071,084	0	2,071,084	0	0
2011-12	770,896	770,858	0	770,858	39	39
2012-13	821,696	709,135	109,484	818,619	3,077	112,560
2013-14	1,595,000	1,578,540	0	1,578,540	16,460	16,460
2014-15	483,920	483,920	0	483,920	0	0
2015-16	1,574,000	771,809	572,388	1,344,197	229,803	802,191
2016-17	2,161,000	843,923	697,966	1,541,888	619,112	1,317,077
2017-18	1,519,000	60,233	610,737	670,970	848,030	1,458,767
Total	\$11,886,370	\$8,179,276	\$1,990,574	\$10,169,851	\$1,716,519	\$3,707,093

Notes:

(1) through (6) Page 26 entries minus Page 29 entries.

Monterey Bay Area Self Insurance Authority
General and Auto Liability Program

Estimated Unpaid Losses as of December 31, 2017
Losses Limited to SIR, NET of \$10K Deductible

Program Year	Estimated Ultimate Losses (1)	Losses Paid as of 12/31/17 (2)	Case Reserves 12/31/17 (3)	Losses Reported as of 12/31/17 (4)	Estimated IBNR as of 12/31/17 (5)	Estimated Unpaid Losses as of 12/31/17 (6)
2008-09	\$323,426	\$323,426	\$0	\$323,426	\$0	\$0
2009-10	566,348	566,348	0	566,348	0	0
2010-11	2,071,084	2,071,084	0	2,071,084	0	0
2011-12	770,896	770,819	0	770,819	77	77
2012-13	821,696	597,947	217,667	815,613	6,082	223,749
2013-14	1,595,000	1,567,471	0	1,567,471	27,529	27,529
2014-15	483,920	483,920	0	483,920	0	0
2015-16	1,574,000	427,188	758,797	1,185,985	388,015	1,146,812
2016-17	2,161,000	194,854	1,256,336	1,451,189	709,811	1,966,146
2017-18	759,500	242	223,643	223,885	535,615	759,258
Total	\$11,126,870	\$7,003,299	\$2,456,443	\$9,459,741	\$1,667,128	\$4,123,571

Notes:

(1) through (6) Page 28 entries minus Page 31 entries.

Monterey Bay Area Self Insurance Authority
General and Auto Liability Program

Projected Unpaid Losses as of June 30, 2018
Losses Limited to SIR, Gross of \$10K Deductible

Program Year	Estimated Ultimate Losses (1)	Projected Losses Paid as of 6/30/18 (2)	Projected Case Reserves 6/30/18 (3)	Projected Losses Reported as of 6/30/18 (4)	Projected IBNR as of 6/30/18 (5)	Projected Unpaid Losses as of 6/30/18 (6)
2008-09	\$455,371	\$455,371	\$0	\$455,371	\$0	\$0
2009-10	729,487	729,487	0	729,487	0	0
2010-11	2,239,948	2,239,948	0	2,239,948	0	0
2011-12	902,000	901,961	0	901,961	39	39
2012-13	940,000	827,440	109,484	936,923	3,077	112,560
2013-14	1,710,000	1,693,269	0	1,693,269	16,731	16,731
2014-15	588,593	588,593	0	588,593	0	0
2015-16	1,730,000	921,173	576,929	1,498,102	231,898	808,827
2016-17	2,370,000	1,003,937	725,516	1,729,453	640,547	1,366,063
2017-18	1,700,000	124,181	651,960	776,141	923,859	1,575,819
Total	\$13,365,399	\$9,485,361	\$2,063,889	\$11,549,250	\$1,816,149	\$3,880,038

Notes:

- (1) Page 33, Column (6).
- (2) Page 27, Column (3).
- (3) (4) - (2).
- (4) Page 27, Column (6).
- (5) (1) - (4).
- (6) (3) + (5).

Monterey Bay Area Self Insurance Authority
General and Auto Liability Program

Projected Paid and Reported Losses between 1/1/18 and 6/30/18
Losses Limited to SIR, Gross of \$10K Deductible

Program Year	Losses Paid as of 12/31/17 (1)	Projected Losses Paid 1/1/18 - 6/30/18 (2)	Projected Losses Paid as of 6/30/18 (3)	Losses Reported as of 12/31/17 (4)	Projected Losses Reported 1/1/18 - 6/30/18 (5)	Projected Losses Reported as of 6/30/18 (6)
2008-09	\$455,371	\$0	\$455,371	\$455,371	\$0	\$455,371
2009-10	729,487	0	729,487	729,487	0	729,487
2010-11	2,239,948	0	2,239,948	2,239,948	0	2,239,948
2011-12	901,923	39	901,961	901,923	39	901,961
2012-13	716,251	111,189	827,440	933,918	3,005	936,923
2013-14	1,681,927	11,341	1,693,269	1,681,927	11,341	1,693,269
2014-15	588,593	0	588,593	588,593	0	588,593
2015-16	574,573	346,601	921,173	1,339,354	158,748	1,498,102
2016-17	309,221	694,717	1,003,937	1,619,163	110,290	1,729,453
2017-18	20,610	103,572	124,181	277,137	499,005	776,141
Total	\$8,217,903	\$1,267,458	\$9,485,361	\$10,766,821	\$782,429	\$11,549,250

Notes:

- (1) Page 35, Column (1).
- (2) Projected by BAC.
- (3) (1) + (2).
- (4) Page 34, Column (1).
- (5) Projected by BAC.
- (6) (4) + (5).

Monterey Bay Area Self Insurance Authority
General and Auto Liability Program

Estimated Unpaid Losses as of December 31, 2017
Losses Limited to SIR, Gross of \$10K Deductible

Program Year	Estimated Ultimate Losses <u>(1)</u>	Losses Paid as of 12/31/17 <u>(2)</u>	Case Reserves 12/31/17 <u>(3)</u>	Losses Reported as of 12/31/17 <u>(4)</u>	Estimated IBNR as of 12/31/17 <u>(5)</u>	Estimated Unpaid Losses as of 12/31/17 <u>(6)</u>
2008-09	\$455,371	\$455,371	\$0	\$455,371	\$0	\$0
2009-10	729,487	729,487	0	729,487	0	0
2010-11	2,239,948	2,239,948	0	2,239,948	0	0
2011-12	902,000	901,923	0	901,923	77	77
2012-13	940,000	716,251	217,667	933,918	6,082	223,749
2013-14	1,710,000	1,681,927	0	1,681,927	28,073	28,073
2014-15	588,593	588,593	0	588,593	0	0
2015-16	1,730,000	574,573	764,782	1,339,354	390,646	1,155,427
2016-17	2,370,000	309,221	1,309,942	1,619,163	750,837	2,060,779
2017-18	850,000	20,610	256,527	277,137	572,863	829,390
Total	\$12,515,399	\$8,217,903	\$2,548,918	\$10,766,821	\$1,748,578	\$4,297,496

Notes:

- (1) Page 33, Column (6).
2017-18 entry adjusted for incomplete year through 12/31/17.
- (2) Page 35, Column (1).
- (3) (4) - (2).
- (4) Page 34, Column (1).
- (5) (1) - (4).
- (6) (1) - (2).

Monterey Bay Area Self Insurance Authority
General and Auto Liability Program

Projected Unpaid Deductibles as of June 30, 2018
Losses Limited to \$10K Deductible

Program Year	Estimated Ultimate Deductibles (1)	Projected Ded Paid as of 6/30/18 (2)	Projected Case Reserves 6/30/18 (3)	Projected Ded Reported as of 6/30/18 (4)	Projected Deductible IBNR as of 6/30/18 (5)	Projected Deductible Losses as of 6/30/18 (6)
2008-09	\$131,945	\$131,945	\$0	\$131,945	\$0	\$0
2009-10	163,139	163,139	0	163,139	0	0
2010-11	168,864	168,864	0	168,864	0	0
2011-12	131,104	131,104	0	131,104	0	0
2012-13	118,304	118,304	0	118,304	0	0
2013-14	115,000	114,728	0	114,728	272	272
2014-15	104,673	104,673	0	104,673	0	0
2015-16	156,000	149,365	4,541	153,906	2,094	6,635
2016-17	209,000	160,015	27,550	187,565	21,435	48,985
2017-18	181,000	63,948	41,223	105,171	75,829	117,052
Total	\$1,479,029	\$1,306,085	\$73,314	\$1,379,399	\$99,630	\$172,944

Notes:

- (1) Page 62, Column (3).
- (2) Page 30, Column (3).
- (3) (4) - (2).
- (4) Page 30, Column (6).
- (5) (1) - (4).
- (6) (3) + (5).

Monterey Bay Area Self Insurance Authority
General and Auto Liability Program

Projected Paid and Reported Deductibles between 1/1/18 and 6/30/18
Losses Limited to \$10K Deductible

Program Year	Ded Paid as of 12/31/17 (1)	Projected Losses Paid 1/1/18 - 6/30/18 (2)	Projected Losses Paid as of 6/30/18 (3)	Losses Reported as of 12/31/17 (4)	Projected Losses Reported 1/1/18 - 6/30/18 (5)	Projected Losses Reported as of 6/30/18 (6)
2008-09	\$131,945	\$0	\$131,945	\$131,945	\$0	\$131,945
2009-10	163,139	0	163,139	163,139	0	163,139
2010-11	168,864	0	168,864	168,864	0	168,864
2011-12	131,104	0	131,104	131,104	0	131,104
2012-13	118,304	0	118,304	118,304	0	118,304
2013-14	114,456	272	114,728	114,456	272	114,728
2014-15	104,673	0	104,673	104,673	0	104,673
2015-16	147,385	1,980	149,365	153,369	536	153,906
2016-17	114,367	45,648	160,015	167,974	19,591	187,565
2017-18	20,368	43,580	63,948	53,251	51,920	105,171
Total	\$1,214,605	\$91,480	\$1,306,085	\$1,307,080	\$72,319	\$1,379,399

Notes:

- (1) Page 31, Column (2).
- (2) Projected by BAC.
- (3) (1) + (2).
- (4) Page 31, Column (4).
- (5) Projected by BAC.
- (6) (4) + (5).

Monterey Bay Area Self Insurance Authority
General and Auto Liability Program

Estimated Unpaid Deductibles as of December 31, 2017
Losses Limited to \$10K Deductible

Program Year	Estimated Ultimate Deductibles (1)	Ded Paid as of 12/31/17 (2)	Case Reserves 12/31/17 (3)	Ded Reported as of 12/31/17 (4)	Estimated Deductible IBNR as of 12/31/17 (5)	Estimated Deductible Losses as of 12/31/17 (6)
2008-09	\$131,945	\$131,945	\$0	\$131,945	\$0	\$0
2009-10	163,139	163,139	0	163,139	0	0
2010-11	168,864	168,864	0	168,864	0	0
2011-12	131,104	131,104	0	131,104	0	0
2012-13	118,304	118,304	0	118,304	0	0
2013-14	115,000	114,456	0	114,456	544	544
2014-15	104,673	104,673	0	104,673	0	0
2015-16	156,000	147,385	5,985	153,369	2,631	8,615
2016-17	209,000	114,367	53,607	167,974	41,026	94,633
2017-18	90,500	20,368	32,884	53,251	37,249	70,132
Total	\$1,388,529	\$1,214,605	\$92,475	\$1,307,080	\$81,449	\$173,925

Notes:

- (1) Page 62, Column (3).
2017-18 adjusted for partial year through 12/31/17.
- (2) Provided by Risk Management Services.
- (3) (4) - (2).
- (4) Page 63, Column (1).
- (5) (1) - (4).
- (6) (1) - (2).

Monterey Bay Area Self Insurance Authority

**Actuarial Analysis of the
General and Auto Liability Program**

Loss Projection Exhibits

Monterey Bay Area Self Insurance Authority
General and Auto Liability Program

Selected Ultimate Losses
Losses Limited to SIR, Gross of \$10K Deductible

Program Year	Reported Projection (1)	Paid Projection (2)	IBNR to Case Reserves Ratio (3)	B-F Method Using Reported (4)	Frequency Times Severity (5)	Selected Ultimate Losses (6)
2008-09	\$455,371	\$455,371	\$455,371	\$455,371	\$1,030,886	\$455,371
2009-10	729,487	729,487	729,487	729,487	930,989	729,487
2010-11	2,239,948	2,241,299	2,239,948	2,239,948	1,143,657	2,239,948
2011-12	901,923	902,102	901,923	901,923	1,309,383	902,000
2012-13	940,113	729,635	1,056,029	943,184	1,245,920	940,000
2013-14	1,721,173	1,739,819	1,681,927	1,713,209	1,157,754	1,710,000
2014-15	623,720	679,933	588,593	666,791	1,397,681	588,593
2015-16	1,693,737	1,212,981	1,844,110	1,639,103	1,564,040	1,730,000
2016-17	3,319,262	2,365,644	3,497,620	2,373,615	2,024,438	2,370,000
2017-18	9,379,710	5,312,109	9,976,425	1,744,626	1,649,800	1,700,000
Total	\$22,004,444	\$16,368,380	\$22,971,433	\$13,407,257	\$13,454,548	\$13,365,399

Notes:

- (1) Page 34, Column (3).
- (2) Page 35, Column (3).
- (3) Page 36, Column (6).
- (4) Page 37, Column (6).
- (5) Page 41, Column (4).
- (6) Selected on the basis of (1) - (5).

Monterey Bay Area Self Insurance Authority
General and Auto Liability Program

Reported Loss Development
Losses Limited to SIR, Gross of \$10K Deductible

Program Year	Cumulative Reported Losses as of 12/31/17 (1)	Reported Development Factor as of 12/31/17 (2)	Projected Ultimate Losses (3)
2008-09	\$455,371	1.000	\$455,371
2009-10	729,487	1.000	729,487
2010-11	2,239,948	1.000	2,239,948
2011-12	901,923	1.000	901,923
2012-13	933,918	1.007	940,113
2013-14	1,681,927	1.023	1,721,173
2014-15	588,593	1.060	623,720
2015-16	1,339,354	1.265	1,693,737
2016-17	1,619,163	2.050	3,319,262
2017-18	277,137	33.845	9,379,710
Total	\$10,766,821		\$22,004,444

Notes:

- (1) Provided by Risk Management Services.
- (2) Page 66.
- (3) (1) x (2), rounded.

Monterey Bay Area Self Insurance Authority
General and Auto Liability Program

Paid Loss Projection
Losses Limited to SIR, Gross of \$10K Deductible

Program Year	Cumulative Paid Losses as of 12/31/17 (1)	Paid Development Factor as of 12/31/17 (2)	Projected Ultimate Losses (3)
2008-09	\$455,371	1.000	\$455,371
2009-10	729,487	1.000	729,487
2010-11	2,239,948	1.001	2,241,299
2011-12	901,923	1.000	902,102
2012-13	716,251	1.019	729,635
2013-14	1,681,927	1.034	1,739,819
2014-15	588,593	1.155	679,933
2015-16	574,573	2.111	1,212,981
2016-17	309,221	7.650	2,365,644
2017-18	20,610	257.750	5,312,109
Total	\$8,217,903		\$16,368,380

Notes:

- (1) Provided by Risk Management Services.
- (2) Page 67.
- (3) (1) x (2), rounded.

Monterey Bay Area Self Insurance Authority
General and Auto Liability Program

IBNR to Case Reserves Ratio Method
Losses Limited to SIR, Gross of \$10K Deductible

Program Year	Reported Development Factor as of 12/31/17 (1)	Paid Development Factor as of 12/31/17 (2)	IBNR to Case Reserves Ratio (3)	Case Reserves 12/31/17 (4)	Estimated IBNR as of 12/31/17 (5)	Estimated Ultimate Losses (6)
2008-09	1.000	1.000	0.000	\$0	\$0	\$455,371
2009-10	1.000	1.000	0.000	0	0	729,487
2010-11	1.000	1.001	0.000	0	0	2,239,948
2011-12	1.000	1.000	0.000	0	0	901,923
2012-13	1.007	1.019	0.561	217,667	122,111	1,056,029
2013-14	1.023	1.034	2.177	0	0	1,681,927
2014-15	1.060	1.155	0.722	0	0	588,593
2015-16	1.265	2.111	0.660	764,782	504,756	1,844,110
2016-17	2.050	7.650	1.434	1,309,942	1,878,457	3,497,620
2017-18	33.845	257.750	37.810	256,527	9,699,288	9,976,425
Total				\$2,548,918	\$12,204,612	\$22,971,433

Notes:

- (1) Page 34, Column (2).
- (2) Page 35, Column (2).
- (3) $[(1) - 1.000] \times (2) / [(2) - (1)]$.
- (4) Page 34, Column (1) - Page 35, Column (1).
- (5) (3) x (4), rounded.
- (6) (5) + Page 34, Column (1).

Monterey Bay Area Self Insurance Authority
General and Auto Liability Program

Bornhuetter-Ferguson Using Reported Losses
Losses Limited to SIR, Gross of \$10K Deductible

Program Year	<i>A Priori</i> Ultimate Losses (1)	Cumulative Reported Loss Development Factors (2)	Percentage of Losses Not Yet Reported (3)	Expected Unreported Losses (4)	Losses Reported as of 12/31/17 (5)	Estimated Ultimate Losses (6)
2008-09	\$1,189,120	1.000	0.0%	\$0	\$455,371	\$455,371
2009-10	1,222,403	1.000	0.0%	0	729,487	729,487
2010-11	1,255,686	1.000	0.0%	0	2,239,948	2,239,948
2011-12	1,288,970	1.000	0.0%	0	901,923	901,923
2012-13	1,323,766	1.007	0.7%	9,266	933,918	943,184
2013-14	1,360,075	1.023	2.3%	31,282	1,681,927	1,713,209
2014-15	1,396,384	1.060	5.6%	78,198	588,593	666,791
2015-16	1,434,206	1.265	20.9%	299,749	1,339,354	1,639,103
2016-17	1,473,540	2.050	51.2%	754,452	1,619,163	2,373,615
2017-18	1,512,875	33.845	97.0%	1,467,489	277,137	1,744,626
	\$13,457,025			\$2,640,436	\$10,766,821	\$13,407,257

Notes:

- (1) Page 38, Column (3).
- (2) Page 34, Column (2).
- (3) $100\% - [1.000 / (2)]$.
- (4) (1) x (3).
- (5) Page 34, Column (1).
- (6) (4) + (5).

Monterey Bay Area Self Insurance Authority
General and Auto Liability Program

A Priori Losses for Bornhuetter-Ferguson
Losses Limited to SIR, Gross of \$10K Deductible

Program Year	<i>A Priori</i> 2017-18 Loss (1)	Factor to Remove Trend (2)	<i>A Priori</i> Ultimate Losses (3)
2008-09	\$1,512,875	0.786	\$1,189,120
2009-10	1,512,875	0.808	1,222,403
2010-11	1,512,875	0.830	1,255,686
2011-12	1,512,875	0.852	1,288,970
2012-13	1,512,875	0.875	1,323,766
2013-14	1,512,875	0.899	1,360,075
2014-15	1,512,875	0.923	1,396,384
2015-16	1,512,875	0.948	1,434,206
2016-17	1,512,875	0.974	1,473,540
2017-18	1,512,875	1.000	1,512,875
Total			\$13,457,025

Notes:

- (1) Page 39, Average of Column (3).
- (2) 1.000 / [Page 39, Column (2)].
- (3) (1) x (2).

Monterey Bay Area Self Insurance Authority
General and Auto Liability Program

A Priori Loss Rate for Bornhuetter-Ferguson Method
At \$1M SIR, Gross of \$10K Deductible

Program Year	<i>A Priori</i> Ultimate Losses (1)	Estimated Pure Premium Trend (2)	Constant Dollar Ultimate Losses (3)
2008-09	\$455,371	1.272	\$579,017
2009-10	729,487	1.238	903,133
2010-11	2,239,948	1.205	2,700,104
2011-12	901,923	1.174	1,058,571
2012-13	933,918	1.143	1,067,254
2013-14	1,681,927	1.113	1,871,433
2014-15	588,593	1.083	637,662
2015-16	1,513,637	1.055	1,596,634
2016-17	3,117,732	1.027	3,202,068
2017-18	8,907,589	1.000	8,907,589
Average			\$2,252,346
08/09-16/17			\$1,512,875
		(4) A Priori 2017-18 Losses:	\$1,512,875

Notes:

- (1) Page 40, Column (3).
- (2) Estimated by BAC.
- (3) (1) x (2).
- (4) Average of (3) excluding 2017-18.

Monterey Bay Area Self Insurance Authority
General and Auto Liability Program

A Priori Ultimate losses
Losses Limited to SIR, Gross of \$10K Deductible

Program Year	Reported Loss Projection (1)	Paid Loss Projection (2)	<i>A Priori</i> Selection (3)
2008-09	\$455,371	\$455,371	\$455,371
2009-10	729,487	729,487	729,487
2010-11	2,239,948	2,241,299	2,239,948
2011-12	901,923	902,102	901,923
2012-13	940,113	729,635	933,918
2013-14	1,721,173	1,739,819	1,681,927
2014-15	623,720	679,933	588,593
2015-16	1,693,737	1,212,981	1,513,637
2016-17	3,319,262	2,365,644	3,117,732
2017-18	9,379,710	5,312,109	8,907,589
Total	\$22,004,444	\$16,368,380	\$21,070,125

Notes:

- (1) Page 34, Column (3).
- (2) Page 35, Column (3).
- (3) Selected on the basis of (1) and (2).

Monterey Bay Area Self Insurance Authority
General and Auto Liability Program

Frequency Times Severity Method
Losses Limited to SIR, Gross of \$10K Deductible

Program Year	Selected Claim Severity (1)	Factor to Remove Trend (2)	Selected Ultimate Claims (3)	Estimated Ultimate Losses (4)
2008-09	\$22,600	0.786	58	\$1,030,886
2009-10	22,600	0.808	51	930,989
2010-11	22,600	0.830	61	1,143,657
2011-12	22,600	0.852	68	1,309,383
2012-13	22,600	0.875	63	1,245,920
2013-14	22,600	0.899	57	1,157,754
2014-15	22,600	0.923	67	1,397,681
2015-16	22,600	0.948	73	1,564,040
2016-17	22,600	0.974	92	2,024,438
2017-18	22,600	1.000	73	1,649,800
Total				\$13,454,548

Notes:

- (1) Page 42, Item (5).
- (2) $1.000 / [\text{Page 42, Column (2)}]$.
- (3) Page 43, Column (3).
- (4) $(1) \times (2) \times (3)$.

Monterey Bay Area Self Insurance Authority
General and Auto Liability Program

Calculation of Expected Claim Severity
Frequency Times Severity Method
At \$1M SIR, Gross of \$10K Deductible

Program Year	<i>A Priori</i> Ultimate Losses (1)	Estimated Severity Trend (2)	Selected Claim Count (3)	Trended Claim Severity (4)
2008-09	\$455,371	1.272	58	\$9,983
2009-10	729,487	1.238	51	17,708
2010-11	2,239,948	1.205	61	44,264
2011-12	901,923	1.174	68	15,567
2012-13	933,918	1.143	63	16,941
2013-14	1,681,927	1.113	57	32,832
2014-15	588,593	1.083	67	9,517
2015-16	1,513,637	1.055	73	21,872
2016-17	3,117,732	1.027	92	34,805
2017-18	8,907,589	1.000	73	122,022
Total	\$21,070,125		663	\$32,551
08/09-16/17	\$12,162,536		590	\$22,610
			(5) Selected Severity:	\$22,600

Notes:

- (1) Page 40, Column (3).
- (2) Estimated by BAC.
- (3) Page 43, Column (3).
- (4) $(1) \times (2) / (3)$.
- (5) Selected on the basis of (4).

Monterey Bay Area Self Insurance Authority
General and Auto Liability Program

Selected Claim Counts

Program Year	Reported Claim Count Projection (1)	Bornhuetter- Ferguson Method (2)	Selected Claim Count (3)
2008-09	58		58
2009-10	51		51
2010-11	61		61
2011-12	68		68
2012-13	63		63
2013-14	57		57
2014-15	67		67
2015-16	73		73
2016-17	92		92
2017-18	91	73	73
Total	681		663

Notes:

- (1) Page 44, Column (3).
- (2) Page 45, Column (6).
- (3) Selected on the basis of (1) and (2).

Monterey Bay Area Self Insurance Authority
General and Auto Liability Program

Projection of Ultimate Claim Counts
Projection of Reported Claims

Program Year	Total Claims Reported 12/31/17 <u>(1)</u>	Development Factors as of 12/31/17 <u>(2)</u>	Projected Ultimate Claims <u>(3)</u>
2008-09	58	1.000	58
2009-10	51	1.000	51
2010-11	61	1.000	61
2011-12	68	1.000	68
2012-13	63	1.000	63
2013-14	57	1.000	57
2014-15	67	1.000	67
2015-16	73	1.002	73
2016-17	89	1.031	92
2017-18	26	3.504	91
Average			68
08/09-16/17 Average			66

Notes:

- (1) Provided by Risk Management Services.
- (2) Page 66.
- (3) (1) x (2), rounded.

Monterey Bay Area Self Insurance Authority
General and Auto Liability Program

Projection of Ultimate Claim Counts
Bornhuetter-Ferguson Method

Program Year	A Priori Claim Count (1)	Claim Development Factor (2)	Estimated Percentage of Claims Unreported (3)	Estimated Unreported Claims (4)	Reported Claims as of 12/31/17 (5)	Projected Ultimate Claims (6)
2017-18	66	3.504	71.5%	47	26	73

Notes:

- (1) Page 44, Column (3), average 2008-09 to 2016-17.
- (2) Page 44, Column (2).
- (3) $100\% - [1.000 / (2)]$.
- (4) $(1) \times (3)$.
- (5) Page 44, Column (1).
- (6) $(4) + (5)$.

Monterey Bay Area Self Insurance Authority

**Actuarial Analysis of the
General and Auto Liability Program**

**Limited Loss Analysis
Losses Limited to \$250,000 per Loss**

Monterey Bay Area Self Insurance Authority
General and Auto Liability Program

Selected Ultimate Losses
Losses Limited to \$250,000, Gross of \$10K Deductible

Program Year	Reported Projection (1)	Paid Projection (2)	IBNR to Case Reserves Ratio (3)	B-F Method Using Reported (4)	B-F Method Using Paid (5)	Selected Ultimate Losses (6)
2008-09	\$455,371	\$455,371	\$455,371	\$455,371	\$455,371	\$455,371
2009-10	699,177	699,177	699,177	699,177	699,177	699,177
2010-11	1,216,289	1,216,569	1,216,289	1,216,289	1,216,289	1,216,289
2011-12	600,162	600,216	600,162	600,162	600,162	600,162
2012-13	862,110	650,209	862,110	862,110	649,704	863,000
2013-14	932,900	949,134	931,927	932,515	942,512	933,000
2014-15	445,877	487,967	443,731	446,687	497,522	443,731
2015-16	1,035,425	993,153	1,036,593	1,025,005	815,971	1,030,000
2016-17	1,908,352	1,824,896	1,917,234	1,493,208	806,105	1,770,000
2017-18	6,531,441	3,699,068	6,941,453	852,941	618,052	850,000
Total	\$14,687,104	\$11,575,760	\$15,104,045	\$8,583,463	\$7,300,864	\$8,860,730

Notes:

- (1) Page 48, Column (3).
- (2) Page 49, Column (3).
- (3) Page 50, Column (6).
- (4) Page 51, Column (6).
- (5) Page 52, Column (6).
- (6) Selected on the basis of (1) - (5).

Monterey Bay Area Self Insurance Authority
General and Auto Liability Program

Reported Loss Development
Losses Limited to \$250,000, Gross of \$10K Deductible

Program Year	Cumulative Reported Losses as of 12/31/17 (1)	Reported Development Factor as of 12/31/17 (2)	Projected Ultimate Losses (3)
2008-09	\$455,371	1.000	\$455,371
2009-10	699,177	1.000	699,177
2010-11	1,216,289	1.000	1,216,289
2011-12	600,162	1.000	600,162
2012-13	862,110	1.000	862,110
2013-14	931,927	1.001	932,900
2014-15	443,731	1.005	445,877
2015-16	1,011,333	1.024	1,035,425
2016-17	1,303,663	1.464	1,908,352
2017-18	277,137	23.568	6,531,441
Total	\$7,800,898		\$14,687,104

Notes:

- (1) Provided by Risk Management Services.
- (2) Estimated by BAC.
- (3) (1) x (2), rounded.

Monterey Bay Area Self Insurance Authority
General and Auto Liability Program

Paid Loss Development
Losses Limited to \$250,000, Gross of \$10K Deductible

Program Year	Cumulative Paid Losses as of 12/31/17 (1)	Paid Development Factor as of 12/31/17 (2)	Projected Ultimate Losses (3)
2008-09	\$455,371	1.000	\$455,371
2009-10	699,177	1.000	699,177
2010-11	1,216,289	1.000	1,216,569
2011-12	600,162	1.000	600,216
2012-13	644,443	1.009	650,209
2013-14	931,927	1.018	949,134
2014-15	443,731	1.100	487,967
2015-16	552,051	1.799	993,153
2016-17	309,221	5.902	1,824,896
2017-18	20,610	179.483	3,699,068
Total	\$5,872,981		\$11,575,760

Notes:

- (1) Provided by Risk Management Services.
- (2) Estimated by BAC.
- (3) (1) x (2), rounded.

Monterey Bay Area Self Insurance Authority
General and Auto Liability Program

IBNR to Case Reserves Ratio Method
Losses Limited to \$250,000, Gross of \$10K Deductible

Program Year	Reported LDF (1)	Paid LDF (2)	IBNR to Case Reserves Ratio (3)	Case Reserves as of 12/31/17 (4)	Estimated IBNR as of as of 12/31/17 (5)	Estimated Ultimate Losses (6)
2008-09	1.000	1.000	0.000	\$0	\$0	\$455,371
2009-10	1.000	1.000	0.000	0	0	699,177
2010-11	1.000	1.000	0.000	0	0	1,216,289
2011-12	1.000	1.000	0.000	0	0	600,162
2012-13	1.000	1.009	0.000	217,667	0	862,110
2013-14	1.001	1.018	0.061	0	0	931,927
2014-15	1.005	1.100	0.056	0	0	443,731
2015-16	1.024	1.799	0.055	459,282	25,260	1,036,593
2016-17	1.464	5.902	0.617	994,442	613,571	1,917,234
2017-18	23.568	179.483	25.979	256,527	6,664,316	6,941,453
Total				\$1,927,918	\$7,303,147	\$15,104,045

Notes:

- (1) Page 48, Column (2).
- (2) Page 49, Column (2).
- (3) $[(1) - 1.000] \times (2) / [(2) - (1)]$.
- (4) Page 48, Column (1) - Page 49, Column (1).
- (5) (3) x (4), rounded.
- (6) (5) + Page 48, Column (1).

Monterey Bay Area Self Insurance Authority
General and Auto Liability Program

Bornhuetter-Ferguson Using Reported Losses
Losses Limited to \$250,000, Gross of \$10K Deductible

Program Year	<i>A Priori</i> Ultimate Losses (1)	Cumulative Reported Loss Development Factors (2)	Percentage of Losses Not Yet Reported (3)	Expected Unreported Losses (4)	Losses Reported as of 12/31/17 (5)	Estimated Ultimate Losses (6)
2008-09	\$571,484	1.000	0.0%	\$0	\$455,371	\$455,371
2009-10	575,184	1.000	0.0%	0	699,177	699,177
2010-11	578,480	1.000	0.0%	0	1,216,289	1,216,289
2011-12	581,385	1.000	0.0%	0	600,162	600,162
2012-13	584,584	1.000	0.0%	0	862,110	862,110
2013-14	588,047	1.001	0.1%	588	931,927	932,515
2014-15	591,110	1.005	0.5%	2,956	443,731	446,687
2015-16	594,415	1.024	2.3%	13,672	1,011,333	1,025,005
2016-17	597,935	1.464	31.7%	189,545	1,303,663	1,493,208
2017-18	601,048	23.568	95.8%	575,804	277,137	852,941
Total	\$5,863,673			\$782,565	\$7,800,898	\$8,583,463

Notes:

- (1) Page 33, Column (6), adjusted for \$250K limit.
- (2) Page 48, Column (2).
- (3) $100\% - [1.000 / (2)]$.
- (4) $(1) \times (3)$.
- (5) Page 48, Column (1).
- (6) $(4) + (5)$.

Monterey Bay Area Self Insurance Authority
General and Auto Liability Program

Bornhuetter-Ferguson Using Paid Losses
Losses Limited to \$250,000, Gross of \$10K Deductible

Program Year	<i>A Priori</i> Ultimate Losses (1)	Cumulative Paid Loss Development Factors (2)	Percentage of Losses Not Yet Paid (3)	Expected Unpaid Losses (4)	Losses Paid as of 12/31/17 (5)	Estimated Ultimate Losses (6)
2008-09	\$571,484	1.000	0.0%	\$0	\$455,371	\$455,371
2009-10	575,184	1.000	0.0%	0	699,177	699,177
2010-11	578,480	1.000	0.0%	0	1,216,289	1,216,289
2011-12	581,385	1.000	0.0%	0	600,162	600,162
2012-13	584,584	1.009	0.9%	5,261	644,443	649,704
2013-14	588,047	1.018	1.8%	10,585	931,927	942,512
2014-15	591,110	1.100	9.1%	53,791	443,731	497,522
2015-16	594,415	1.799	44.4%	263,920	552,051	815,971
2016-17	597,935	5.902	83.1%	496,884	309,221	806,105
2017-18	601,048	179.483	99.4%	597,442	20,610	618,052
Total	\$5,863,673			\$1,427,883	\$5,872,981	\$7,300,864

Notes:

- (1) Page 51, Column (1).
- (2) Page 49, Column (2).
- (3) $100\% - [1.000 / (2)]$.
- (4) $(1) \times (3)$.
- (5) Page 49, Column (1).
- (6) $(4) + (5)$.

Monterey Bay Area Self Insurance Authority

**Actuarial Analysis of the
General and Auto Liability Program**

Future Loss Exhibits

Monterey Bay Area Self Insurance Authority
General and Auto Liability Program

Projected 1M/500K Loss Rate for 2018-19 *

All Gross of \$10K Deductible

Based on 250K Limit Analysis

Program Year	250K Limit Loss Rate (1)	Factor for 1M/500K SIR (2)	Projected 1M/500K SIR Loss Rate (3)
2018-19	\$1.83	1.548	\$2.83

Based on 1M/500K Limit Analysis

Program Year	1M/500K SIR Loss Rate (4)	Factor for 1M/500K SIR (5)	Projected 1M/500K SIR Loss Rate (6)
2018-19	\$2.73	1.000	\$2.73

Program Year	Selected 2018-19 1M/500K SIR Loss Rate (7)	Projected 2018-19 Payroll (\$00's) (8)	Projected Ultimate Losses (9)
2018-19	\$2.73	\$548,768	\$1,496,574

* EPL Losses are limited to \$500K per occurrence

Notes:

- (1) Page 55, Item (5).
- (2) Estimated by BAC.
- (3) (1) x (2), rounded.
- (4) Page 56, Item (5).
- (5) Estimated by BAC.
- (6) (4) x (5), rounded.
- (7) Selected by BAC.
- (8) Page 69, Column (2).
- (9) (7) x (8), rounded.

Monterey Bay Area Self Insurance Authority
 General and Auto Liability Program

Projected Future Loss Rate
 Losses Limited to \$250,000, Gross of \$10K Deductible

Program Year	Estimated Ultimate Losses (1)	Trend Factor (2)	Losses Trended to 2018-19 (3)
2008-09	\$455,371	1.246	\$567,559
2009-10	699,177	1.219	852,449
2010-11	1,216,289	1.193	1,450,619
2011-12	600,162	1.167	700,198
2012-13	863,000	1.141	984,914
2013-14	933,000	1.116	1,041,609
2014-15	443,731	1.092	484,594
2015-16	1,030,000	1.068	1,100,350
2016-17	1,770,000	1.045	1,849,705
2017-18	850,000	1.022	868,927
Average 08-09 through 16-17:			\$1,003,555
(4) Projected 2018-19 Payroll (\$00's):			\$548,768
(5) Projected 2018-19 \$250K Limit Rate:			\$1.83

Notes:

- (1) Page 47, Column (6).
- (2) Estimated by BAC.
- (3) (1) x (2).
- (4) Page 69, Column (2).
- (5) Average (3) / (4).

Monterey Bay Area Self Insurance Authority
General and Auto Liability Program

Projected Future Loss Rate
Losses Limited to \$1,000,000, Gross of \$10K Deductible

Program Year	Estimated Ultimate Losses (1)	Trend Factor (2)	Losses Trended to 2018-19 (3)
2008-09	\$455,371	1.306	\$594,680
2009-10	729,487	1.272	927,563
2010-11	2,239,948	1.238	2,773,142
2011-12	902,000	1.205	1,087,299
2012-13	940,000	1.174	1,103,262
2013-14	1,710,000	1.143	1,954,137
2014-15	588,593	1.113	654,911
2015-16	1,730,000	1.083	1,874,224
2016-17	2,370,000	1.055	2,499,953
2017-18	1,700,000	1.027	1,745,986
Average 08-09 through 16-17:			\$1,496,574
(4) Projected 2018-19 Payroll (\$00's):			\$548,768
(5) Projected 2018-19 \$1M Limit Rate:			\$2.73

Notes:

- (1) Page 33, Column (6).
- (2) Estimated by BAC.
- (3) (1) x (2).
- (4) Page 69, Column (2).
- (5) (3) / (4).

Monterey Bay Area Self Insurance Authority

**Actuarial Analysis of the
General and Auto Liability Program**

Discounting Exhibits

Monterey Bay Area Self Insurance Authority
 General and Auto Liability Program

Discounted Value of Unpaid Losses as of June 30, 2018
 Assuming a 1.5% Interest Rate

Losses Limited to SIR, NET of \$10K Deductible

Program Year	Projected Unpaid Losses (1)	Discount Factor (2)	Discounted Unpaid Losses (3)
2008-09	\$0	1.000	\$0
2009-10	0	1.000	0
2010-11	0	1.000	0
2011-12	39	0.993	38
2012-13	112,560	0.992	111,705
2013-14	16,460	0.986	16,229
2014-15	0	0.989	0
2015-16	802,191	0.989	793,505
2016-17	1,317,077	0.985	1,296,789
2017-18	1,458,767	0.978	1,427,082
Total	\$3,707,093		\$3,645,348

(4) Indicated Discount Factor: 0.983

Notes:

- (1) Page 24, Column (6).
- (2) (3) / (1).
- (3) Based upon a 1.5% interest rate.
- (4) [Sum of Column (3)] / [Sum of Column (1)].

Monterey Bay Area Self Insurance Authority
 General and Auto Liability Program

Discounted Value of 2018-19 Losses as of July 1, 2018
 Assuming a 1.5% Interest Rate

Losses Limited to \$1M SIR, Gross of \$10K Deductible

Program Year	Projected Loss Payments (1)	Discounted Value Factor (2)	Discounted Value of Payments (3)
2018-19	\$109,322	0.993	\$108,511
2019-20	524,631	0.978	513,044
2020-21	413,650	0.963	398,536
2021-22	374,144	0.949	355,146
2022-23	60,186	0.935	56,285
2023-24	7,160	0.921	6,597
2024-25	7,419	0.908	6,734
2025-26	64	0.894	57
2026-27	0	0.881	0
2027-28	0	0.868	0
2028-29	0	0.855	0
Total	\$1,496,574		\$1,444,910
	(4) Indicated Discount Factor:		0.965

Notes:

- (1) Based upon the observed payment pattern.
- (2) Based upon a 1.5% interest rate.
- (3) (1) x (2).
- (4) [Sum of Column (3)] / [Sum of Column (1)].

Monterey Bay Area Self Insurance Authority
 General and Auto Liability Program

Discounted Value of 2018-19 Losses as of July 1, 2018
 Assuming a 1.5% Interest Rate

Losses Limited to \$1M SIR, NET of \$10K Deductible

Program Year	Projected Loss Payments (1)	Discount Factor (2)	Discounted Value of Payments (3)
2018-19	\$52,702	0.993	\$52,311
2019-20	466,329	0.978	456,030
2020-21	451,184	0.963	434,699
2021-22	292,393	0.949	277,547
2022-23	54,492	0.935	50,960
2023-24	6,645	0.921	6,123
2024-25	5,250	0.908	4,765
2025-26	67	0.894	60
2026-27	0	0.881	0
2027-28	0	0.868	0
2028-29	0	0.855	0
Total	\$1,329,061		\$1,282,495

(4) Indicated Discount Factor: 0.965

Notes:

- (1) Based upon the observed payment pattern.
- (2) Based upon a 1.5% interest rate.
- (3) (1) x (2).
- (4) [Sum of Column (3)] / [Sum of Column (1)].

Monterey Bay Area Self Insurance Authority

Actuarial Analysis of the General and Auto Liability Program

Deductibles

Monterey Bay Area Self Insurance Authority
General and Auto Liability Program

Selected Ultimate Deductible Losses
Losses Limited to \$10,000 Deductible

Program Year	Reported Projection <u>(1)</u>	B-F Method Using Reported <u>(2)</u>	Selected Ultimate Losses <u>(3)</u>
2008-09	\$131,945	\$131,945	\$131,945
2009-10	163,139	163,139	163,139
2010-11	168,864	168,864	168,864
2011-12	131,104	131,104	131,104
2012-13	118,307	118,304	118,304
2013-14	114,515	114,620	115,000
2014-15	104,791	104,749	104,673
2015-16	156,150	156,491	156,000
2016-17	201,613	216,765	209,000
2017-18	723,390	180,596	181,000
Total	\$2,013,818	\$1,486,578	\$1,479,029

Notes:

- (1) Page 63, Column (3).
- (2) Page 64, Column (6).
- (3) Selected on the basis of (1) - (2).

Monterey Bay Area Self Insurance Authority
General and Auto Liability Program

Reported Loss Development
Deductible Losses Limited to \$10,000

Program Year	Cumulative Reported Losses as of 12/31/17 (1)	Reported Development Factor as of 12/31/17 (2)	Projected Ultimate Losses (3)
2008-09	\$131,945	1.000	\$131,945
2009-10	163,139	1.000	163,139
2010-11	168,864	1.000	168,864
2011-12	131,104	1.000	131,104
2012-13	118,304	1.000	118,307
2013-14	114,456	1.001	114,515
2014-15	104,673	1.001	104,791
2015-16	153,369	1.018	156,150
2016-17	167,974	1.200	201,613
2017-18	53,251	13.584	723,390
Total	\$1,307,080		\$2,013,818

Notes:

- (1) Provided by Risk Management Services.
- (2) Estimated by BAC.
- (3) (1) x (2), rounded.

Monterey Bay Area Self Insurance Authority
General and Auto Liability Program

Bornhuetter-Ferguson Using Reported Losses
Deductible Losses Limited to \$10,000

Program Year	<i>A Priori</i> Ultimate Losses (1)	Cumulative Reported Loss Development Factors (2)	Percentage of Losses Not Yet Reported (3)	Expected Unreported Losses (4)	Limited Losses Reported as of 12/31/17 (5)	Estimated Ultimate Deductible Losses (6)
2008-09	\$88,224	1.000	0.0%	\$0	\$131,945	\$131,945
2009-10	132,774	1.000	0.0%	0	163,139	163,139
2010-11	226,394	1.000	0.0%	0	168,864	168,864
2011-12	109,497	1.000	0.0%	0	131,104	131,104
2012-13	154,328	1.000	0.0%	0	118,304	118,304
2013-14	163,538	1.001	0.1%	164	114,456	114,620
2014-15	76,236	1.001	0.1%	76	104,673	104,749
2015-16	173,453	1.018	1.8%	3,122	153,369	156,491
2016-17	292,160	1.200	16.7%	48,791	167,974	216,765
2017-18	137,521	13.584	92.6%	127,345	53,251	180,596
Total	\$1,554,126			\$179,498	\$1,307,080	\$1,486,578

Notes:

- (1) Page 47, Column (6), adjusted for \$10K limit.
- (2) Page 63, Column (2).
- (3) $100\% - [1.000 / (2)]$.
- (4) $(1) \times (3)$.
- (5) Page 63, Column (1).
- (6) $(4) + (5)$.

Monterey Bay Area Self Insurance Authority

**Actuarial Analysis of the
General and Auto Liability Program**

Claims Data Exhibits

Monterey Bay Area Self Insurance Authority
General and Auto Liability Program

Cumulative Reported Losses (\$000's) - Limited to \$1M per Loss - Includes ALAE - 12/31/17

Program	<u>Months of Development</u>										
	<u>6</u>	<u>18</u>	<u>30</u>	<u>42</u>	<u>54</u>	<u>66</u>	<u>78</u>	<u>90</u>	<u>102</u>	<u>114</u>	<u>126</u>
2006					618	557	557	557	557	557	557
2007				451	424	401	401	401	401	401	401
2008			662	617	500	500	500	500	500	500	500
2009		541	307	355	405	452	455	454	455	455	
2010	151	569	1,025	1,082	721	729	729	729	729		
2011	76	819	2,507	2,500	2,304	2,334	2,240	2,240			
2012	19	278	593	856	896	996	903				
2013	55	343	454	777	703	934					
2014	7	1,443	1,714	2,384	2,359						
2015	13	534	685	589							
2016	55	828	1,339								
2017	13	1,619									
2018	277										
	<u>6 - 18</u>	<u>18 - 30</u>	<u>30 - 42</u>	<u>42 - 54</u>	<u>54 - 66</u>	<u>66 - 78</u>	<u>78 - 90</u>	<u>90 - 102</u>	<u>102 - 114</u>	<u>114 - 126</u>	<u>126 - Ult.</u>
VOL AVG	16.510	1.610	1.153	0.921	1.050	0.969	1.000	1.001	1.000	1.000	
AVG	51.873	1.621	1.193	0.928	1.053	0.982	0.999	1.001	1.000	1.000	
REFERENCE	3.515	1.496	1.092	1.036	1.017	1.007	1.000	1.000	1.000	1.000	1.000
SELECT	16.510	1.621	1.193	1.036	1.017	1.007	1.000	1.000	1.000	1.000	1.000
CUMULATIVE	33.845	2.050	1.265	1.060	1.023	1.007	1.000	1.000	1.000	1.000	1.000

Monterey Bay Area Self Insurance Authority
General and Auto Liability Program

Cumulative Paid Losses (\$000's) - Limited to \$1M per Loss - Includes ALAE - 12/31/17

Program	<u>Months of Development</u>											
	<u>6</u>	<u>18</u>	<u>30</u>	<u>42</u>	<u>54</u>	<u>66</u>	<u>78</u>	<u>90</u>	<u>102</u>	<u>114</u>	<u>126</u>	
2006					565	557	557	557	557	557	557	557
2007				386	406	401	401	401	401	401	401	401
2008			337	497	500	500	500	500	500	500	500	500
2009		151	255	274	306	372	455	454	455	455		
2010	15	122	524	727	721	729	729	729	729			
2011	5	194	646	1,932	2,200	2,221	2,240	2,240				
2012	13	113	177	387	897	899	902					
2013	3	124	373	702	703	716						
2014	4	478	935	2,311	2,324							
2015	10	56	510	589								
2016	13	142	575									
2017	7	309										
2018	21											
	<u>6 - 18</u>	<u>18 - 30</u>	<u>30 - 42</u>	<u>42 - 54</u>	<u>54 - 66</u>	<u>66 - 78</u>	<u>78 - 90</u>	<u>90 - 102</u>	<u>102 - 114</u>	<u>114 - 126</u>	<u>126 - Ult.</u>	
VOL AVG	21.610	2.894	1.975	1.117	1.015	1.018	1.000	1.001	1.000	1.000		
AVG	33.691	3.624	1.828	1.204	1.029	1.034	1.000	1.001	1.000	1.000		
REFERENCE	9.585	2.802	1.515	1.172	1.037	1.040	1.036	1.019	1.004	1.000	1.000	
SELECT	33.691	3.624	1.828	1.117	1.015	1.018	1.000	1.001	1.000	1.000	1.000	
CUMULATIVE	257.750	7.650	2.111	1.155	1.034	1.019	1.000	1.001	1.000	1.000	1.000	

Monterey Bay Area Self Insurance Authority
General and Auto Liability Program

Cumulative # of Reported Losses - 12/31/17

Program	<u>Months of Development</u>									
	<u>6</u>	<u>18</u>	<u>30</u>	<u>42</u>	<u>54</u>	<u>66</u>	<u>78</u>	<u>90</u>	<u>102</u>	<u>114</u>
2006					41	40	40	40	39	38
2007				56	56	56	56	49	49	49
2008			57	55	55	55	54	52	49	53
2009		56	61	62	62	61	60	57	57	58
2010	17	46	49	52	51	52	51	51	51	
2011	21	65	65	65	65	61	61	61		
2012	22	75	72	72	67	67	68			
2013	17	62	66	63	63	63				
2014	14	58	57	57	57					
2015	19	64	66	67						
2016	20	70	73							
2017	26	89								
2018	26									
	<u>6 - 18</u>	<u>18 - 30</u>	<u>30 - 42</u>	<u>42 - 54</u>	<u>54 - 66</u>	<u>66 - 78</u>	<u>78 - 90</u>	<u>90 - 102</u>	<u>102 - 114</u>	<u>114 - Ult.</u>
ALLYR VOL	3.391	1.026	1.000	0.988	0.989	0.995	0.963	0.984	1.021	0.000
ALL YR AVG	3.411	1.029	1.002	0.989	0.990	0.994	0.958	0.986	1.033	1.000
SELECT	3.399	1.029	1.002	1.000	1.000	1.000	1.000	1.000	1.000	1.000
CUMULATIVE	3.504	1.031	1.002	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Monterey Bay Area Self Insurance Authority
General and Auto Liability Program

Program Information
Program Years run July 1 to June 30

Program Year	Self-Insured Retention (SIR) * (1)	Payroll (\$00's) (2)	Exposure Index (3)	Deductible (4)
2008-09	\$1,000,000	\$470,000	1.000	\$10,000
2009-10	1,000,000	455,000	1.000	10,000
2010-11	1,000,000	456,468	1.000	10,000
2011-12	1,000,000	454,479	1.000	10,000
2012-13	1,000,000	422,491	1.000	10,000
2013-14	1,000,000	436,959	1.000	10,000
2014-15	1,000,000	455,957	1.000	10,000
2015-16	1,000,000	472,388	1.000	10,000
2016-17	1,000,000	518,291	1.000	10,000
2017-18	1,000,000	530,544	1.000	10,000
2018-19	?	548,768	1.000	10,000

Notes:

- (1) Provided by MBASIA.
- * EPL SIR is \$500,000 claims made starting 2011-12.
- (2) Provided by MBASIA.
- (4) Provided by MBASIA.
Deductible assumed to apply to combined loss & ALAE.
(Unconfirmed).