

# **Monterey Bay Area Self Insurance Authority**

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

**BAY ACTUARIAL CONSULTANTS  
Moraga, California  
April 23, 2016**

# Bay Actuarial Consultants

April 23, 2016

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 2016-17 Loss Rate.** A projection of the losses expected to be incurred during 2016-17, expressed in terms of a rate of loss per \$100 of payroll.
- 2) **Unpaid Losses.** We projected the Authority’s liability for unpaid losses as of June 30, 2016.
- 3) **Discounting.** We have also discounted the projected 2016-17 losses and the liabilities to present value, assuming a 1% 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 have broken out the liabilities into their short-term and long-term components.

## **Conditions & Limitations**

This report has been prepared for the Authority's internal use. Copies of this report may be provided to the Authority's auditors. Any other use of this report is not authorized without the prior written permission of Bay Actuarial. In particular, those interested in providing insurance to the Authority must perform their own actuarial analysis and may not rely upon our work.

We relied upon the loss data that by Risk Management Services provided and the payroll information that Alliant Insurance Services provided. 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 2016-17 Losses and Loss Rates

Tables I and II shows the projected 2016-17 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 of that deductible. We discounted the rates at 1.0% interest. The items in Tables I and II do not include claims handling fees (“ULAE”), administrative costs, or the cost of excess insurance coverage. The losses have been calculated assuming that CARMA will cover any general and auto liability losses that exceed \$1,000,000, and that the Employment Risk Management Authority (“ERMA”) will 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 2016-17 discounted loss rate, gross of deductibles (Table I) will be less than **\$3.01**.

Table V on page 11 shows factors to adjust these rates for interest rates other than 1.0%.

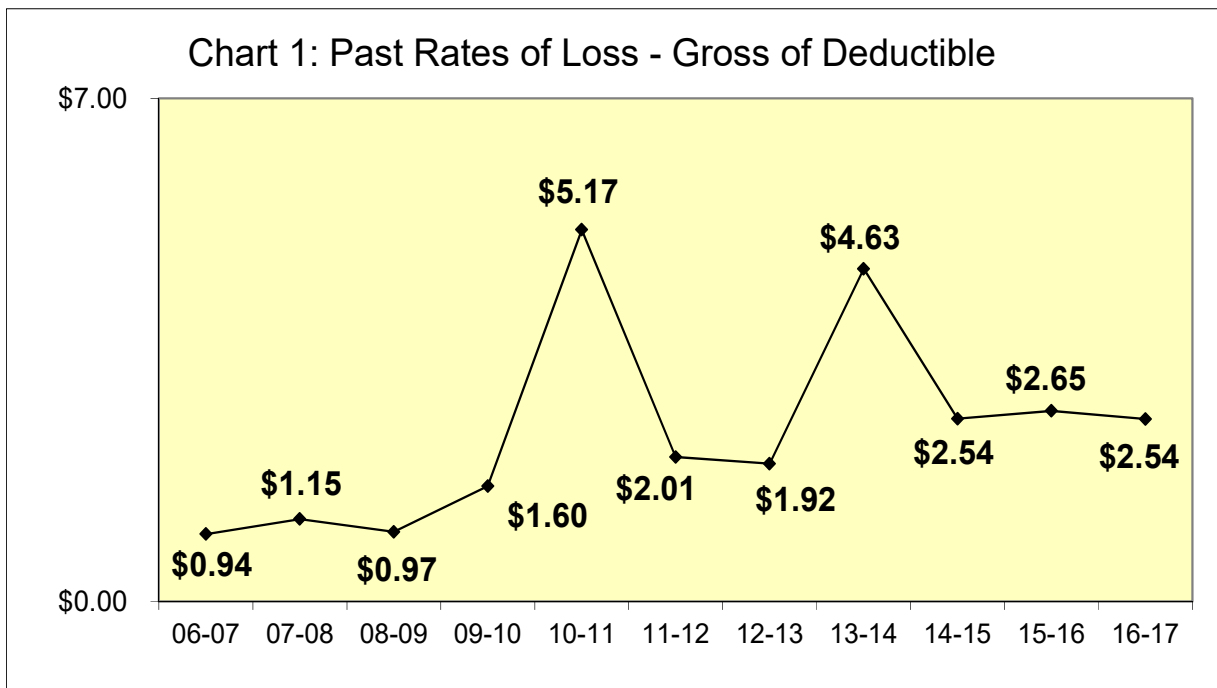
<b>Table I: Projected 2016-17 Losses and Loss Rates</b>				
<b>\$1M SIR (\$500K EPL SIR), Gross of \$10K Deductible, 1.0% Interest Rate</b>				
<u>Probability Level</u>	<u>Undiscounted Losses</u>	<u>Discounted Losses</u>	<u>Undiscounted Loss Rate</u>	<u>Discounted Loss Rate</u>
<b>Central Estimate</b>	<b>\$1,190,386</b>	<b>\$1,159,436</b>	<b>\$2.54</b>	<b>\$2.47</b>
70%	1,449,275	1,411,594	3.09	3.01
80%	1,764,404	1,718,530	3.76	3.66
90%	2,269,827	2,210,812	4.84	4.71
<b>2015-16 C.E.</b>	<b>\$1,113,211</b>	<b>\$1,086,494</b>	<b>\$2.48</b>	<b>\$2.42</b>
% Change from 15-16	+6.9%	+6.7%	+2.4%	+2.1%

<b>Table II: Projected 2016-17 Losses and Loss Rates</b> <b>\$1M SIR (\$500K EPL SIR), NET of \$10K Deductible, 1.0% Interest Rate</b>				
<u>Probability Level</u>	<u>Undiscounted Losses</u>	<u>Discounted Losses</u>	<u>Undiscounted Loss Rate</u>	<u>Discounted Loss Rate</u>
<b>Central Estimate</b>	<b>\$1,047,011</b>	<b>\$1,018,741</b>	<b>\$2.23</b>	<b>\$2.17</b>
70%	1,274,718	1,240,300	2.72	2.64
80%	1,551,892	1,509,990	3.31	3.22
90%	1,996,439	1,942,535	4.25	4.14
<b>2015-16 C.E.</b>	<b>\$963,382</b>	<b>\$939,297</b>	<b>\$2.15</b>	<b>\$2.09</b>
% Change from 15-16	+8.7%	+8.5%	+3.7%	+3.8%

The \$10,000 deductible rates in Table II are about 12% lower than the Table I rates.

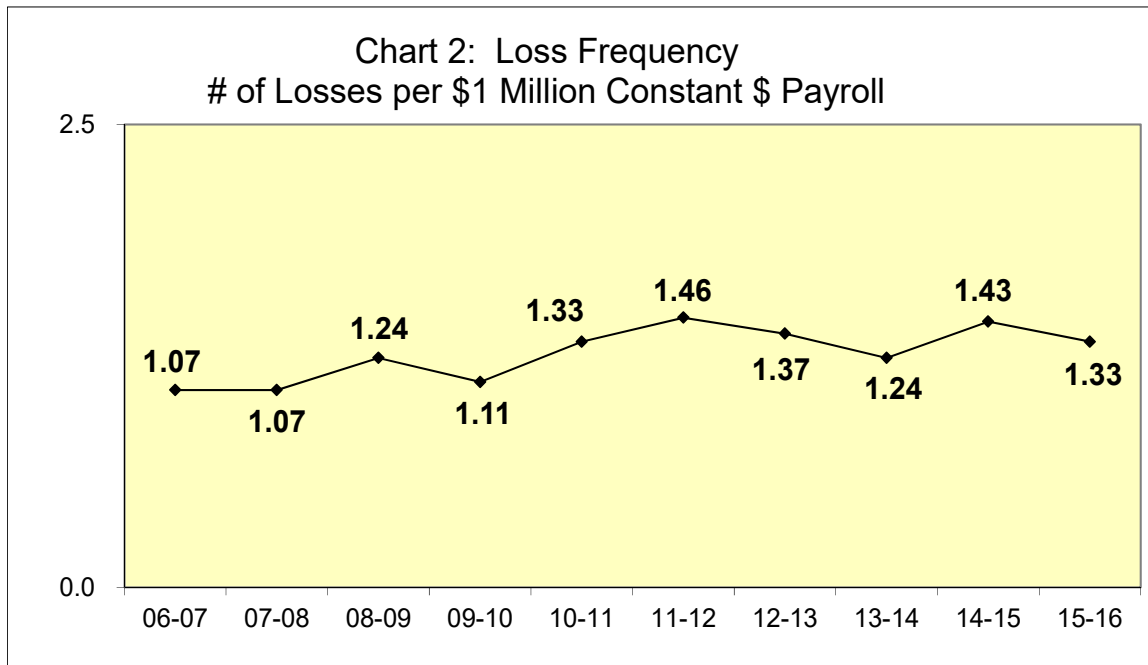
### The Authority's Past Rates of Loss

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 **\$2.54** projected for 2016-17 in Chart 1 matches the undiscounted central estimate rate in Table I.



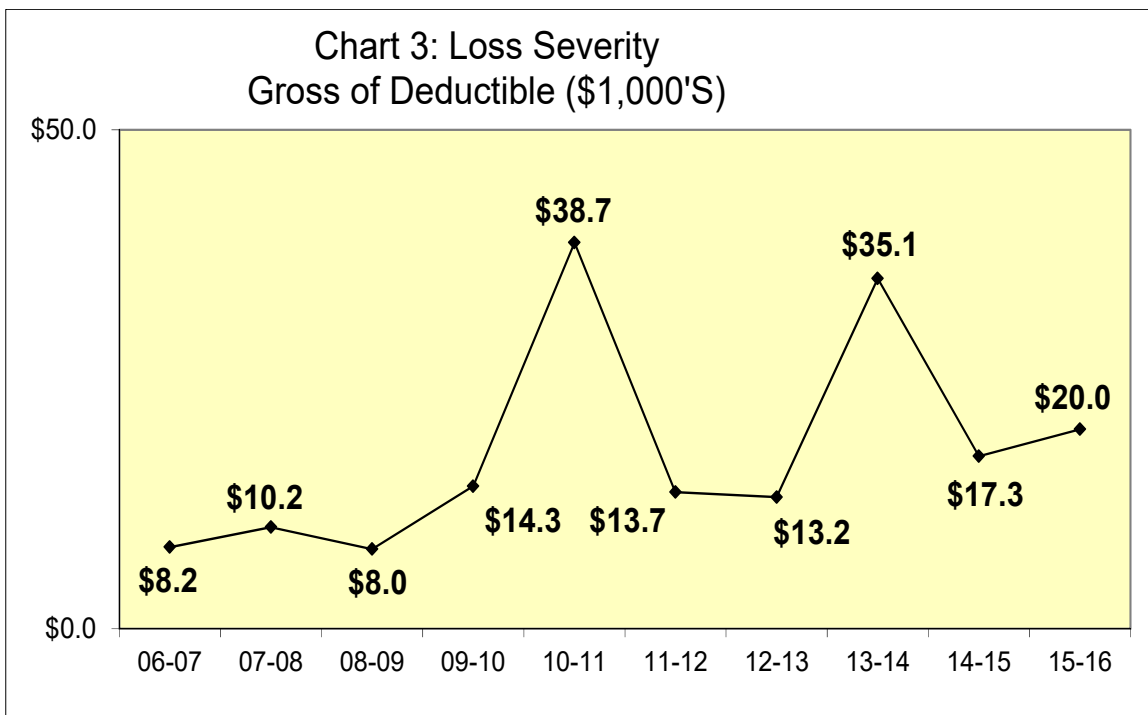
### Loss Frequency

Loss “frequency” is the number of losses divided by 2015-16 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 – 6/30/16

We project that the Authority's liability for unpaid losses, undiscounted, will be **\$2,745,000** on June 30, 2016, or **\$2,709,000** if discounted at 1.0% interest. Table III shows the actuarial central estimate plus various probability levels. The estimates in Table III are net of the \$10,000 deductible that the members pay on each loss.

<b>Table III: Projected Liability for Unpaid Losses As of June 30, 2016 – Net of Deductibles</b>		
Probability <u>Level</u>	Undiscounted <u>Losses</u>	Discounted <u>at 1.0%</u>
50%	2,557,947	2,524,694
<b>Central Estimate</b>	<b>\$2,744,758</b>	<b>\$2,709,430</b>
60%	2,799,250	2,762,860
70%	3,085,449	3,045,338
80%	3,458,612	3,413,650
90%	4,047,116	3,994,503

Table IV shows the projected liability gross of deductibles.

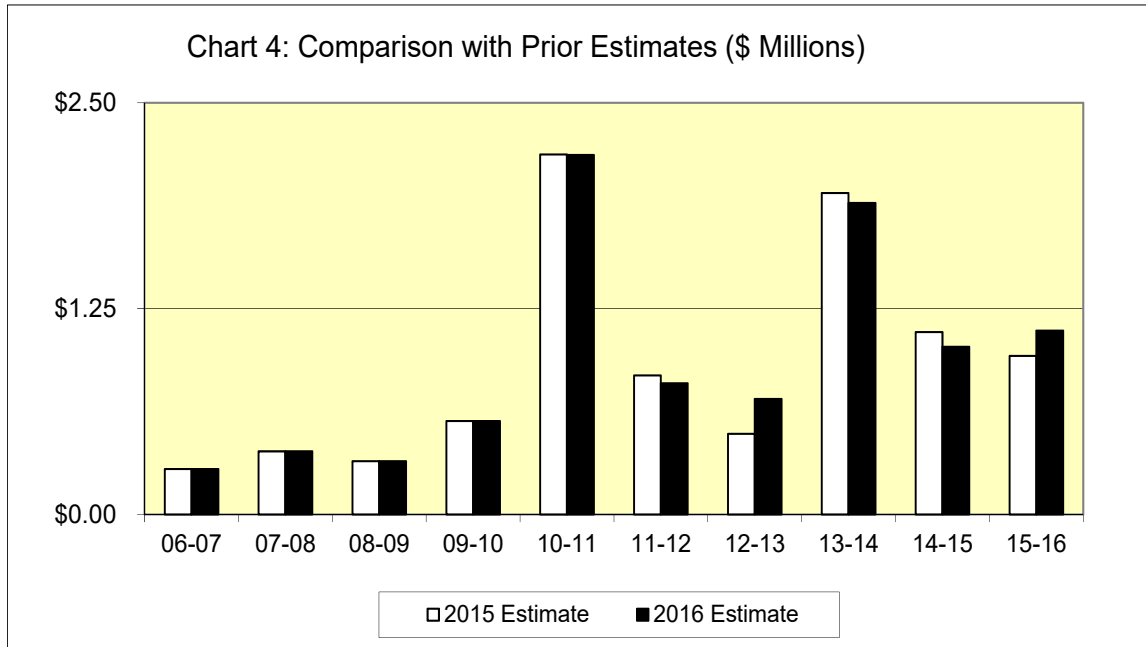
<b>Table IV: Projected Liability for Unpaid Losses As of June 30, 2016 – Gross of Deductibles</b>		
Probability <u>Level</u>	Undiscounted <u>Losses</u>	Discounted <u>at 1.0%</u>
50%	2,678,214	2,643,052
<b>Central Estimate</b>	<b>\$2,873,808</b>	<b>\$2,836,448</b>
60%	2,930,862	2,892,383
70%	3,230,517	3,188,103
80%	3,621,225	3,573,682
90%	4,237,398	4,181,765

### ULAE Liability

We estimate the liability for unpaid unallocated loss adjustment expenses ("ULAE") will be \$164,000 on June 30, 2016. See page 20.

## Comparison with 2015 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 2014-15, was \$14,000.

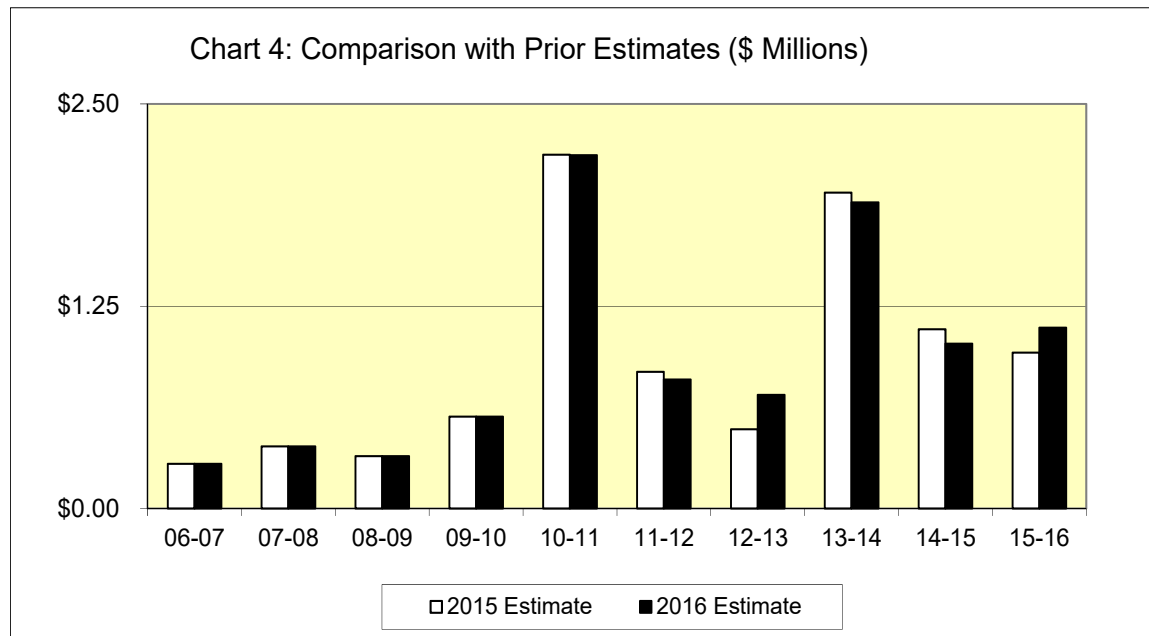
### Reconciliation of 12/31/14 & 12/31/15 Estimates

These estimates are based on analysis of the 12/31/15 data. Last year we used 12/31/14 data and estimated a gross liability of \$3,182,000 on that date. Claims expenditures were \$1,374,000 during 2015. We increased the losses estimates for 12/31/14 and prior by \$48,000 in this report. We estimate the losses incurred during 2015 at \$1,180,000.

Therefore starting with last year's 12/31/14 liability estimate, subtracting the claims payments, and then adding the change in the estimates and the 2015 losses produces \$3,036,000 as the indicated liability on 12/31/15. This matched the direct calculation shown on page 26.

## Loss Breakout as of 6/30/16

In Table III we projected that the Authority's 6/30/16 liability, net of deductibles, would be **\$2,745,000**. This comprises **\$1,282,000** in case reserves for known claims and an IBNR liability of **\$1,463,000**. Chart 5 breaks out the projected total program year losses into their components: losses paid, case reserves, and IBNR liability. The details are on page 22. There is \$1.14 of IBNR liability for every \$1.00 of case reserves. Total IBNR is up 2% from last year while case reserves are down 5%.



## Short-Term Liability

Short-term liabilities are those expected to be discharged within twelve months. The total projected 6/30/16 liability of **\$2,745,000** comprises **\$1,221,000** of short-term and **\$1,524,000** of long-term liabilities.

## Interest Rates

The discounted liabilities and rates in this report were discounted at 1.0% interest. Here are the adjustments to make for different interest rate assumptions:

Interest Rate	0.0%	0.59%	0.96%	1.0%	1.5%
Gross Rates	+2.7%	+1.1%	+0.1%	0.0%	-1.3%
Net Rates	+2.8%	+1.1%	+0.1%	0.0%	-1.3%
Liabilities	+1.3%	+0.5%	+0.1%	0.0%	-0.6%

The Table includes columns for 0.59% and 0.96% 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 2016-17 losses yields 0.96% and the portfolio matching the 6/30/16 liability expenditures yields 0.59%.

# **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 Exhibit 1 shows the projected liabilities for unpaid losses as of June 30, 2016. Summary Exhibit 2 shows our projected rate for the 2016-17 program year, which runs from July 1, 2016 to June 30, 2017. Summary Exhibit 3 shows the projected unpaid losses as of June 30, 2016 by program year on both discounted and non-discounted bases.

##### ***Fiscal Year End Exhibits***

These exhibits show the calculation of the projected unpaid losses as of June 30, 2016.

##### ***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 2016-17 loss rate.

***Future Loss Exhibits***

These exhibits show the projection of the expected rate for 2016-17.

***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 06/30/16  
**Losses Limited to SIR, NET of \$10K Deductible**

	<u>06/30/16</u>
(1) Projected Unpaid Losses:	\$2,744,758
(2) Discounted Value of Unpaid Losses: (Assuming 1.0% Interest Rate)	\$2,709,430

**Probability Levels for 06/30/16 Liabilities**

Probability Level <u>(3)</u>	Probability Factor <u>(4)</u>	Discounted * Liability <u>(5)</u>
50%	0.93	2,524,694
<b>Central Estimate</b>	<b>1.00</b>	<b>\$2,709,430</b>
60%	1.02	2,762,860
70%	1.12	3,045,338
80%	1.26	3,413,650
90%	1.47	3,994,503

\* Multiply by 1.013 to obtain undiscounted values.

Notes:

- (1) Page 19, Column (1).
- (2) Page 19, 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 2016-17  
**Losses Limited to \$1,000,000, NET of \$10K Deductible**

(1) Discounted Loss Rate:  
(as of July 1, 2016, 1.0% interest rate)

Loss Rates  
\$2.17

<u>Probability Levels</u>		
Probability Level (2)	Probability Factor (3)	Discounted * Rate (4)
50%	0.85	1.85
<b>Central Estimate</b>	<b>1.00</b>	<b>\$2.17</b>
60%	1.02	2.21
70%	1.22	2.64
80%	1.48	3.22
90%	1.91	4.14

\* Multiply by 1.028 to obtain undiscounted values.

Notes:

- (1) [Page 52, Column ] x [Page 58, 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, 2016  
**Losses Limited to SIR, NET of \$10K Deductible**

Program Year	Undiscounted Value: Claims Liabilities as of 6/30/16 <u>(1)</u>	Discounted (1.0% Interest) Claims Liabilities as of 6/30/16 <u>(2)</u>	Estimated Ultimate Losses <u>(3)</u>
2006-07	\$0	\$0	\$274,868
2007-08	0	0	382,509
2008-09	0	0	323,425
2009-10	0	0	566,348
2010-11	109,773	109,228	2,182,990
2011-12	20,109	19,892	795,966
2012-13	73,829	73,185	701,649
2013-14	644,482	638,583	1,891,254
2014-15	784,647	775,891	1,018,936
2015-16	1,111,918	1,092,651	1,116,819
Total	\$2,744,758	\$2,709,430	\$9,254,763

## Notes:

- (1) Page 22, Column (6).
- (2) Page 56, Column (3).
- (3) Page 22, 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%**

	<u>Case Reserves with Development</u>	<u>"True" IBNR</u>	<u>Total</u>
(2) ULAE Ratio:	4.3%	8.7%	
(3) Estimated Unpaid Losses as of 12/31/15:	\$2,264,771	\$771,664	\$3,036,435
(4) Estimated Unpaid ULAE as of 12/31/15:	\$97,385	\$66,966	\$164,351
(5) Discounted Unpaid ULAE as of 12/31/15: ( 1.0% interest rate)			\$162,214

We project that the 6/30/16 ULAE liability  
will equal the 12/31/15 ULAE liability.

Notes:

- (1) Estimated by BAC.
- (2) "50-50 Rule."
- (3) Page 29, assuming 50% of IBNR is  
development on known claims.
- (4) (2) x [(3)].
- (5) (4) x [Page 56, 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, 2016  
**Losses Limited to SIR, NET of \$10K Deductible**

Program Year	Estimated Ultimate Losses (1)	Projected Losses Paid as of 6/30/16 (2)	Projected Case Reserves 6/30/16 (3)	Projected Losses Reported as of 6/30/16 (4)	Projected IBNR as of 6/30/16 (5)	Projected Unpaid Losses as of 6/30/16 (6)
2006-07	\$274,868	\$274,867	\$0	\$274,867	\$0	\$0
2007-08	382,509	382,509	0	382,509	0	0
2008-09	323,425	323,426	0	323,426	0	0
2009-10	566,348	566,348	0	566,349	0	0
2010-11	2,182,990	2,073,217	96,680	2,169,897	13,093	109,773
2011-12	795,966	775,856	2,934	778,790	17,176	20,109
2012-13	701,649	627,820	36,693	664,512	37,136	73,829
2013-14	1,891,254	1,246,772	440,446	1,687,218	204,036	644,482
2014-15	1,018,936	234,290	431,442	665,732	353,205	784,647
2015-16	1,116,819	4,901	273,611	278,512	838,307	1,111,918
Total	\$9,254,763	\$6,510,005	\$1,281,806	\$7,791,810	\$1,462,952	\$2,744,758

## Notes:

(1) through (6) Page 24 entries minus Page 27 entries.

Monterey Bay Area Self Insurance Authority  
General and Auto Liability Program

Estimated Unpaid Losses as of December 31, 2015  
**Losses Limited to SIR, NET of \$10K Deductible**

Program Year	Estimated Ultimate Losses (1)	Losses Paid as of 12/31/15 (2)	Case Reserves 12/31/15 (3)	Losses Reported as of 12/31/15 (4)	Estimated IBNR as of 12/31/15 (5)	Estimated Unpaid Losses as of 12/31/15 (6)
2006-07	\$274,868	\$274,867	\$0	\$274,867	\$0	\$0
2007-08	382,509	382,509	0	382,509	0	0
2008-09	323,425	323,426	0	323,426	0	0
2009-10	566,348	566,348	0	566,348	0	0
2010-11	2,182,990	2,054,577	102,155	2,156,732	26,258	128,413
2011-12	795,966	770,819	979	771,797	24,168	25,147
2012-13	701,649	590,442	58,447	648,889	52,760	111,206
2013-14	1,891,254	837,560	769,827	1,607,388	283,866	1,053,694
2014-15	1,018,936	0	431,144	431,144	587,792	1,018,936
2015-16	558,409	0	27,500	27,500	530,909	558,409
Total	\$8,696,353	\$5,800,548	\$1,390,052	\$7,190,600	\$1,505,753	\$2,895,805

## Notes:

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

Monterey Bay Area Self Insurance Authority  
General and Auto Liability Program

Projected Unpaid Losses as of June 30, 2016  
Losses Limited to SIR, Gross of \$10K Deductible

Program Year	Estimated Ultimate Losses (1)	Projected Losses Paid as of 6/30/16 (2)	Projected Case Reserves 6/30/16 (3)	Projected Losses Reported as of 6/30/16 (4)	Projected IBNR as of 6/30/16 (5)	Projected Unpaid Losses as of 6/30/16 (6)
2006-07	\$401,336	\$401,336	\$0	\$401,336	\$0	\$0
2007-08	500,365	500,365	0	500,365	0	0
2008-09	454,381	454,381	0	454,381	0	0
2009-10	729,487	729,487	0	729,487	0	0
2010-11	2,360,000	2,246,000	100,907	2,346,907	13,093	114,000
2011-12	920,000	899,840	2,985	902,824	17,176	20,160
2012-13	830,000	746,190	46,611	792,801	37,199	83,810
2013-14	2,000,000	1,348,147	446,867	1,795,014	204,986	651,853
2014-15	1,140,000	319,131	458,020	777,151	362,849	820,869
2015-16	1,220,000	36,885	303,860	340,746	879,254	1,183,115
Total	\$10,555,569	\$7,681,761	\$1,359,251	\$9,041,012	\$1,514,557	\$2,873,808

## Notes:

- (1) Page 31, Column (6).
- (2) Page 25, Column (3).
- (3) (4) - (2).
- (4) Page 25, 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 1/1/16 and 6/30/16  
Losses Limited to SIR, Gross of \$10K Deductible

Program Year	Losses Paid as of 12/31/15 (1)	Projected Losses Paid 1/1/16 - 6/30/16 (2)	Projected Losses Paid as of 6/30/16 (3)	Losses Reported as of 12/31/15 (4)	Projected Losses Reported 1/1/16 - 6/30/16 (5)	Projected Losses Reported as of 6/30/16 (6)
2006-07	\$401,336	\$0	\$401,336	\$401,336	\$0	\$401,336
2007-08	500,365	0	500,365	500,365	0	500,365
2008-09	454,381	0	454,381	454,381	0	454,381
2009-10	729,487	0	729,487	729,487	1	729,487
2010-11	2,223,132	22,868	2,246,000	2,333,742	13,165	2,346,907
2011-12	894,768	5,072	899,840	895,832	6,992	902,824
2012-13	701,606	44,584	746,190	777,115	15,686	792,801
2013-14	934,665	413,482	1,348,147	1,714,333	80,681	1,795,014
2014-15	56,019	263,112	319,131	534,410	242,742	777,151
2015-16	13,376	23,510	36,885	55,291	285,455	340,746
Total	\$6,909,135	\$772,627	\$7,681,761	\$8,396,292	\$644,721	\$9,041,012

## Notes:

- (1) Page 33, Column (1).
- (2) Projected by BAC.
- (3) (1) + (2).
- (4) Page 32, 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, 2015  
Losses Limited to SIR, Gross of \$10K Deductible

Program Year	Estimated Ultimate Losses (1)	Losses Paid as of 12/31/15 (2)	Case Reserves 12/31/15 (3)	Losses Reported as of 12/31/15 (4)	Estimated IBNR as of 12/31/15 (5)	Estimated Unpaid Losses as of 12/31/15 (6)
2006-07	\$401,336	\$401,336	\$0	\$401,336	\$0	\$0
2007-08	500,365	500,365	0	500,365	0	0
2008-09	454,381	454,381	0	454,381	0	0
2009-10	729,487	729,487	0	729,487	0	0
2010-11	2,360,000	2,223,132	110,611	2,333,742	26,258	136,868
2011-12	920,000	894,768	1,064	895,832	24,168	25,232
2012-13	830,000	701,606	75,509	777,115	52,885	128,394
2013-14	2,000,000	934,665	779,668	1,714,333	285,667	1,065,335
2014-15	1,140,000	56,019	478,390	534,410	605,590	1,083,981
2015-16	610,000	13,376	41,916	55,291	554,709	596,624
Total	\$9,945,569	\$6,909,135	\$1,487,157	\$8,396,292	\$1,549,278	\$3,036,434

## Notes:

- (1) Page 31, Column (6).  
2015-16 entry adjusted for incomplete year through 12/31/15.
- (2) Page 33, Column (1).
- (3) (4) - (2).
- (4) Page 32, 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, 2016  
Losses Limited to \$10K Deductible

Program Year	Estimated Ultimate Deductibles (1)	Projected Ded Paid as of 6/30/16 (2)	Projected Case Reserves 6/30/16 (3)	Projected Ded Reported as of 6/30/16 (4)	Projected Deductible IBNR as of 6/30/16 (5)	Projected Deductible Losses as of 6/30/16 (6)
2006-07	\$126,468	\$126,468	\$0	\$126,468	\$0	\$0
2007-08	117,856	117,856	0	117,856	0	0
2008-09	130,956	130,956	0	130,956	0	0
2009-10	163,139	163,139	0	163,139	0	0
2010-11	177,010	172,784	4,227	177,010	0	4,227
2011-12	124,034	123,983	51	124,034	0	51
2012-13	128,351	118,370	9,919	128,289	63	9,981
2013-14	108,746	101,375	6,421	107,796	950	7,371
2014-15	121,064	84,841	26,578	111,420	9,644	36,223
2015-16	103,181	31,984	30,250	62,234	40,947	71,197
Total	\$1,300,806	\$1,171,757	\$77,445	\$1,249,202	\$51,604	\$129,050

## Notes:

- (1) Page 60, Column (3).
- (2) Page 28, Column (3).
- (3) (4) - (2).
- (4) Page 28, 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 1/1/16 and 6/30/16  
Losses Limited to \$10K Deductible

Program Year	Ded Paid as of 12/31/15 (1)	Projected Losses Paid 1/1/16 - 6/30/16 (2)	Projected Losses Paid as of 6/30/16 (3)	Losses Reported as of 12/31/15 (4)	Projected Losses Reported 1/1/16 - 6/30/16 (5)	Projected Losses Reported as of 6/30/16 (6)
2006-07	\$126,468	\$0	\$126,468	\$126,468	\$0	\$126,468
2007-08	117,856	0	117,856	117,856	0	117,856
2008-09	130,956	0	130,956	130,956	0	130,956
2009-10	163,139	0	163,139	163,139	0	163,139
2010-11	168,555	4,229	172,784	177,010	0	177,010
2011-12	123,949	34	123,983	124,034	0	124,034
2012-13	111,164	7,206	118,370	128,226	63	128,289
2013-14	97,105	4,270	101,375	106,945	850	107,796
2014-15	56,019	28,822	84,841	103,266	8,154	111,420
2015-16	13,376	18,609	31,984	27,791	34,443	62,234
<b>Total</b>	<b>\$1,108,586</b>	<b>\$63,170</b>	<b>\$1,171,757</b>	<b>\$1,205,692</b>	<b>\$43,510</b>	<b>\$1,249,202</b>

## Notes:

- (1) Page 29, Column (2).
- (2) Projected by BAC.
- (3) (1) + (2).
- (4) Page 29, 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, 2015  
Losses Limited to \$10K Deductible

Program Year	Estimated Ultimate Deductibles (1)	Ded Paid as of 12/31/15 (2)	Case Reserves 12/31/15 (3)	Ded Reported as of 12/31/15 (4)	Estimated Deductible IBNR as of 12/31/15 (5)	Estimated Deductible Losses as of 12/31/15 (6)
2006-07	\$126,468	\$126,468	\$0	\$126,468	\$0	\$0
2007-08	117,856	117,856	0	117,856	0	0
2008-09	130,956	130,956	0	130,956	0	0
2009-10	163,139	163,139	0	163,139	0	0
2010-11	177,010	168,555	8,456	177,010	0	8,456
2011-12	124,034	123,949	85	124,034	0	85
2012-13	128,351	111,164	17,062	128,226	126	17,188
2013-14	108,746	97,105	9,841	106,945	1,801	11,641
2014-15	121,064	56,019	47,246	103,266	17,798	65,045
2015-16	51,591	13,376	14,416	27,791	23,799	38,215
Total	\$1,249,216	\$1,108,586	\$97,105	\$1,205,692	\$43,524	\$140,629

## Notes:

- (1) Page 60, Column (3).  
2015-16 adjusted for partial year through 12/31/15.
- (2) Provided by Risk Management Services.
- (3) (4) - (2).
- (4) Page 61, 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)
2006-07	\$401,336	\$401,336	\$401,336	\$401,336	\$771,067	\$401,336
2007-08	500,365	500,365	500,365	500,365	791,886	500,365
2008-09	454,381	454,394	454,381	454,381	946,045	454,381
2009-10	729,487	756,013	729,487	729,487	869,316	729,487
2010-11	2,349,223	2,401,642	2,344,471	2,340,916	1,067,844	2,360,000
2011-12	916,735	1,001,329	896,122	920,049	1,204,545	920,000
2012-13	823,492	997,675	794,784	837,652	1,163,213	830,000
2013-14	2,073,064	2,435,172	2,018,404	1,906,414	1,080,846	2,000,000
2014-15	1,084,642	385,155	1,233,338	1,112,768	1,285,297	1,140,000
2015-16	5,166,463	1,986,491	10,503,950	1,213,605	1,220,000	1,220,000
Total	\$14,499,188	\$11,319,572	\$19,876,638	\$10,416,973	\$10,400,059	\$10,555,569

## Notes:

- (1) Page 32, Column (3).
- (2) Page 33, Column (3).
- (3) Page 34, Column (6).
- (4) Page 35, Column (6).
- (5) Page 39, 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 12/31/15 <u>(1)</u>	Reported Development Factor as of 12/31/15 <u>(2)</u>	Projected Ultimate Losses <u>(3)</u>
2006-07	\$401,336	1.000	\$401,336
2007-08	500,365	1.000	500,365
2008-09	454,381	1.000	454,381
2009-10	729,487	1.000	729,487
2010-11	2,333,742	1.007	2,349,223
2011-12	895,832	1.023	916,735
2012-13	777,115	1.060	823,492
2013-14	1,714,333	1.209	2,073,064
2014-15	534,410	2.030	1,084,642
2015-16	55,291	93.441	5,166,463
Total	\$8,396,292		\$14,499,188

## Notes:

- (1) Provided by Risk Management Services.
- (2) Page 64.
- (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 12/31/15 <u>(1)</u>	Paid Development Factor as of 12/31/15 <u>(2)</u>	Projected Ultimate Losses <u>(3)</u>
2006-07	\$401,336	1.000	\$401,336
2007-08	500,365	1.000	500,365
2008-09	454,381	1.000	454,394
2009-10	729,487	1.036	756,013
2010-11	2,223,132	1.080	2,401,642
2011-12	894,768	1.119	1,001,329
2012-13	701,606	1.422	997,675
2013-14	934,665	2.605	2,435,172
2014-15	56,019	6.875	385,155
2015-16	13,376	148.516	1,986,491
Total	\$6,909,135		\$11,319,572

## Notes:

- (1) Provided by Risk Management Services.
- (2) Page 65.
- (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 12/31/15 (1)	Paid Development Factor as of 12/31/15 (2)	IBNR to Case Reserves Ratio (3)	Case Reserves 12/31/15 (4)	Estimated IBNR as of 12/31/15 (5)	Estimated Ultimate Losses (6)
2006-07	1.000	1.000	0.000	\$0	\$0	\$401,336
2007-08	1.000	1.000	0.000	0	0	500,365
2008-09	1.000	1.000	0.000	0	0	454,381
2009-10	1.000	1.036	0.000	0	0	729,487
2010-11	1.007	1.080	0.097	110,611	10,729	2,344,471
2011-12	1.023	1.119	0.273	1,064	290	896,122
2012-13	1.060	1.422	0.234	75,509	17,669	794,784
2013-14	1.209	2.605	0.390	779,668	304,071	2,018,404
2014-15	2.030	6.875	1.461	478,390	698,928	1,233,338
2015-16	93.441	148.516	249.279	41,916	10,448,659	10,503,950
Total				\$1,487,157	\$11,480,346	\$19,876,638

## Notes:

- (1) Page 32, Column (2).
- (2) Page 33, Column (2).
- (3)  $[(1) - 1.000] \times (2) / [(2) - (1)]$ .
- (4) Page 32, Column (1) - Page 33, Column (1).
- (5) (3) x (4), rounded.
- (6) (5) + Page 32, 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 12/31/15 (5)	Estimated Ultimate Losses (6)
2006-07	\$921,732	1.000	0.0%	\$0	\$401,336	\$401,336
2007-08	946,327	1.000	0.0%	0	500,365	500,365
2008-09	972,094	1.000	0.0%	0	454,381	454,381
2009-10	997,860	1.000	0.0%	0	729,487	729,487
2010-11	1,024,798	1.007	0.7%	7,174	2,333,742	2,340,916
2011-12	1,052,906	1.023	2.3%	24,217	895,832	920,049
2012-13	1,081,015	1.060	5.6%	60,537	777,115	837,652
2013-14	1,110,295	1.209	17.3%	192,081	1,714,333	1,906,414
2014-15	1,140,746	2.030	50.7%	578,358	534,410	1,112,768
2015-16	1,171,197	93.441	98.9%	1,158,314	55,291	1,213,605
	\$10,418,970			\$2,020,681	\$8,396,292	\$10,416,973

## Notes:

- (1) Page 36, Column (3).
- (2) Page 32, Column (2).
- (3)  $100\% - [1.000 / (2)]$ .
- (4)  $(1) \times (3)$ .
- (5) Page 32, 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> 2015-16 Loss (1)	Factor to Remove Trend (2)	<i>A Priori</i> Ultimate Losses (3)
2006-07	\$1,171,197	0.787	\$921,732
2007-08	1,171,197	0.808	946,327
2008-09	1,171,197	0.830	972,094
2009-10	1,171,197	0.852	997,860
2010-11	1,171,197	0.875	1,024,798
2011-12	1,171,197	0.899	1,052,906
2012-13	1,171,197	0.923	1,081,015
2013-14	1,171,197	0.948	1,110,295
2014-15	1,171,197	0.974	1,140,746
2015-16	1,171,197	1.000	1,171,197
Total			\$10,418,970

## Notes:

- (1) Page 37, Average of Column (3).
- (2) 1.000 / [Page 37, 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)
2006-07	\$401,336	1.271	\$510,084
2007-08	500,365	1.238	619,228
2008-09	454,381	1.205	547,537
2009-10	729,487	1.173	855,933
2010-11	2,374,508	1.142	2,712,850
2011-12	957,141	1.112	1,064,775
2012-13	897,869	1.083	972,578
2013-14	2,187,853	1.055	2,307,592
2014-15	925,217	1.027	950,198
2015-16	3,938,393	1.000	3,938,393
Average			\$1,447,917
06/07-14/15			\$1,171,197
		(4) A Priori 2015-16 Losses:	\$1,171,197

## Notes:

- (1) Page 38, Column (3).
- (2) Estimated by BAC.
- (3) (1) x (2).
- (4) Average of (3) excluding 2015-16.

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)
2006-07	\$401,336	\$401,336	\$401,336
2007-08	500,365	500,365	500,365
2008-09	454,381	454,394	454,381
2009-10	729,487	756,013	729,487
2010-11	2,349,223	2,401,642	2,374,508
2011-12	916,735	1,001,329	957,141
2012-13	823,492	997,675	897,869
2013-14	2,073,064	2,435,172	2,187,853
2014-15	1,084,642	385,155	925,217
2015-16	5,166,463	1,986,491	3,938,393
Total	\$14,499,188	\$11,319,572	\$13,366,550

## Notes:

- (1) Page 32, Column (3).
- (2) Page 33, 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)
2006-07	\$20,000	0.787	49	\$771,067
2007-08	20,000	0.808	49	791,886
2008-09	20,000	0.830	57	946,045
2009-10	20,000	0.852	51	869,316
2010-11	20,000	0.875	61	1,067,844
2011-12	20,000	0.899	67	1,204,545
2012-13	20,000	0.923	63	1,163,213
2013-14	20,000	0.948	57	1,080,846
2014-15	20,000	0.974	66	1,285,297
2015-16	20,000	1.000	61	1,220,000
Total				\$10,400,059

## Notes:

- (1) Page 40, Item (5).
- (2) 1.000 / [Page 40, Column (2)].
- (3) Page 41, Column (3).
- (4) (1) x (2) x (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)
2006-07	\$401,336	1.271	49	\$10,410
2007-08	500,365	1.238	49	12,637
2008-09	454,381	1.205	57	9,606
2009-10	729,487	1.173	51	16,783
2010-11	2,374,508	1.142	61	44,473
2011-12	957,141	1.112	67	15,892
2012-13	897,869	1.083	63	15,438
2013-14	2,187,853	1.055	57	40,484
2014-15	925,217	1.027	66	14,397
2015-16	3,938,393	1.000	61	64,564
Total	\$13,366,550		581	\$24,468
06/07-14/15	\$9,428,157		520	\$20,013
			(5) Selected Severity:	\$20,000

## Notes:

- (1) Page 38, Column (3).
- (2) Estimated by BAC.
- (3) Page 41, Column (3).
- (4) (1) x (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)
2006-07	49		49
2007-08	49		49
2008-09	57		57
2009-10	51		51
2010-11	61		61
2011-12	67		67
2012-13	63		63
2013-14	57		57
2014-15	66		66
2015-16	70	61	61
Total	590		581

## Notes:

- (1) Page 42, Column (3).
- (2) Page 43, 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 12/31/15 <u>(1)</u>	Development Factors as of 12/31/15 <u>(2)</u>	Projected Ultimate Claims <u>(3)</u>
2006-07	49	1.000	49
2007-08	49	1.000	49
2008-09	57	1.000	57
2009-10	51	1.000	51
2010-11	61	1.000	61
2011-12	67	1.000	67
2012-13	63	1.000	63
2013-14	57	1.003	57
2014-15	64	1.030	66
2015-16	20	3.497	70
Average			59
06/07-14/15 Average			58

## Notes:

- (1) Provided by Risk Management Services.
- (2) Page 64.
- (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 12/31/15 (5)	Projected Ultimate Claims (6)
2015-16	58	3.497	71.4%	41	20	61

## Notes:

- (1) Page 42, Column (3), average 2006-07 to 2014-15.
- (2) Page 42, Column (2).
- (3)  $100\% - [1.000 / (2)]$ .
- (4)  $(1) \times (3)$ .
- (5) Page 42, 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)
2006-07	\$401,336	\$401,336	\$401,336	\$401,336	\$401,336	\$401,336
2007-08	500,365	500,365	500,365	500,365	500,365	500,365
2008-09	454,381	454,386	454,381	454,381	454,381	454,381
2009-10	699,177	710,692	699,177	699,177	707,264	699,177
2010-11	1,269,435	1,262,678	1,269,435	1,269,435	1,234,562	1,269,435
2011-12	593,711	630,890	593,094	593,594	623,134	600,000
2012-13	692,950	800,674	690,988	692,116	736,455	690,000
2013-14	982,501	1,795,501	969,047	973,306	1,100,576	970,000
2014-15	616,719	298,606	654,209	579,461	459,557	620,000
2015-16	3,567,136	1,385,014	7,118,014	542,452	503,508	520,000
Total	\$9,777,711	\$8,240,142	\$13,350,046	\$6,705,623	\$6,721,138	\$6,724,694

Notes:

- (1) Page 46, Column (3).
- (2) Page 47, Column (3).
- (3) Page 48, Column (6).
- (4) Page 49, Column (6).
- (5) Page 50, 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 12/31/15 <u>(1)</u>	Reported Development Factor as of 12/31/15 <u>(2)</u>	Projected Ultimate Losses <u>(3)</u>
2006-07	\$401,336	1.000	\$401,336
2007-08	500,365	1.000	500,365
2008-09	454,381	1.000	454,381
2009-10	699,177	1.000	699,177
2010-11	1,269,435	1.000	1,269,435
2011-12	593,092	1.001	593,711
2012-13	689,615	1.005	692,950
2013-14	964,333	1.019	982,501
2014-15	423,910	1.455	616,719
2015-16	55,291	64.515	3,567,136
Total	\$6,050,935		\$9,777,711

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 12/31/15 (1)	Paid Development Factor as of 12/31/15 (2)	Projected Ultimate Losses (3)
2006-07	\$401,336	1.000	\$401,336
2007-08	500,365	1.000	500,365
2008-09	454,381	1.000	454,386
2009-10	699,177	1.016	710,692
2010-11	1,215,926	1.038	1,262,678
2011-12	593,007	1.064	630,890
2012-13	629,910	1.271	800,674
2013-14	833,378	2.154	1,795,501
2014-15	56,019	5.330	298,606
2015-16	13,376	103.548	1,385,014
Total	\$5,396,875		\$8,240,142

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 12/31/15 (4)	Estimated IBNR as of as of 12/31/15 (5)	Estimated Ultimate Losses (6)
2006-07	1.000	1.000	0.000	\$0	\$0	\$401,336
2007-08	1.000	1.000	0.000	0	0	500,365
2008-09	1.000	1.000	0.000	0	0	454,381
2009-10	1.000	1.016	0.000	0	0	699,177
2010-11	1.000	1.038	0.000	53,509	0	1,269,435
2011-12	1.001	1.064	0.018	85	2	593,094
2012-13	1.005	1.271	0.023	59,705	1,373	690,988
2013-14	1.019	2.154	0.036	130,955	4,714	969,047
2014-15	1.455	5.330	0.626	367,890	230,299	654,209
2015-16	64.515	103.548	168.499	41,916	7,062,723	7,118,014
Total				\$654,059	\$7,299,111	\$13,350,046

Notes:

- (1) Page 46, Column (2).
- (2) Page 47, Column (2).
- (3)  $[(1) - 1.000] \times (2) / [(2) - (1)]$ .
- (4) Page 46, Column (1) - Page 47, Column (1).
- (5) (3) x (4), rounded.
- (6) (5) + Page 46, 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 12/31/15 (5)	Estimated Ultimate Losses (6)
2006-07	\$511,060	1.000	0.0%	\$0	\$401,336	\$401,336
2007-08	509,117	1.000	0.0%	0	500,365	500,365
2008-09	507,450	1.000	0.0%	0	454,381	454,381
2009-10	505,433	1.000	0.0%	0	699,177	699,177
2010-11	503,665	1.000	0.0%	0	1,269,435	1,269,435
2011-12	502,113	1.001	0.1%	502	593,092	593,594
2012-13	500,210	1.005	0.5%	2,501	689,615	692,116
2013-14	498,504	1.019	1.8%	8,973	964,333	973,306
2014-15	496,967	1.455	31.3%	155,551	423,910	579,461
2015-16	495,083	64.515	98.4%	487,161	55,291	542,452
Total	\$5,029,603			\$654,688	\$6,050,935	\$6,705,623

Notes:

- (1) Page 31, Column (6), adjusted for \$250K limit.
- (2) Page 46, Column (2).
- (3)  $100\% - [1.000 / (2)]$ .
- (4)  $(1) \times (3)$ .
- (5) Page 46, 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 12/31/15 (5)	Estimated Ultimate Losses (6)
2006-07	\$511,060	1.000	0.0%	\$0	\$401,336	\$401,336
2007-08	509,117	1.000	0.0%	0	500,365	500,365
2008-09	507,450	1.000	0.0%	0	454,381	454,381
2009-10	505,433	1.016	1.6%	8,087	699,177	707,264
2010-11	503,665	1.038	3.7%	18,636	1,215,926	1,234,562
2011-12	502,113	1.064	6.0%	30,127	593,007	623,134
2012-13	500,210	1.271	21.3%	106,545	629,910	736,455
2013-14	498,504	2.154	53.6%	267,198	833,378	1,100,576
2014-15	496,967	5.330	81.2%	403,538	56,019	459,557
2015-16	495,083	103.548	99.0%	490,132	13,376	503,508
Total	\$5,029,603			\$1,324,263	\$5,396,875	\$6,721,138

Notes:

- (1) Page 49, Column (1).
- (2) Page 47, Column (2).
- (3)  $100\% - [1.000 / (2)]$ .
- (4)  $(1) \times (3)$ .
- (5) Page 47, 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 Loss Rate for 2016-17  
**All Gross of \$10K Deductible**

Based on \$250K Limit Analysis

Program Year	250K Limit Loss Rate (1)	Factor for \$1M SIR (2)	Projected \$1M SIR Loss Rate (3)
2016-17	\$1.58	1.673	\$2.64

Based on \$1M Limit Analysis

Program Year	1M Limit Loss Rate (4)	Factor for \$1M SIR (5)	Projected \$1M SIR Loss Rate (6)
2016-17	\$2.54	1.000	\$2.54

Program Year	Selected 2016-17 \$1M SIR Loss Rate (7)	Projected 2016-17 Payroll (\$00's) (8)	Projected Ultimate Losses (9)
2016-17	<b>\$2.54</b>	\$469,287	\$1,190,386

Notes:

- (1) Page 53, Item (5).
- (2) Estimated by BAC.
- (3) (1) x (2), rounded.
- (4) Page 54, Item (5).
- (5) Estimated by BAC.
- (6) (4) x (5), rounded.
- (7) Selected by BAC.
- (8) Page 67, 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 2016-17 (3)
2006-07	\$401,336	1.138	\$456,670
2007-08	500,365	1.123	562,046
2008-09	454,381	1.109	503,844
2009-10	699,177	1.095	765,338
2010-11	1,269,435	1.081	1,371,725
2011-12	600,000	1.067	640,027
2012-13	690,000	1.053	726,586
2013-14	970,000	1.040	1,008,324
2014-15	620,000	1.026	636,225
2015-16	520,000	1.013	526,760
Average 06-07 through 14-15:			\$741,198
(4) Projected 2016-17 Payroll (\$00's):			\$469,287
(5) Projected 2016-17 \$250K Limit Rate:			\$1.58

Notes:

- (1) Page 45, Column (6).
- (2) Estimated by BAC.
- (3) (1) x (2).
- (4) Page 67, 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 2016-17 (3)
2006-07	\$401,336	1.305	\$523,857
2007-08	500,365	1.271	635,947
2008-09	454,381	1.238	562,320
2009-10	729,487	1.205	879,044
2010-11	2,360,000	1.173	2,769,075
2011-12	920,000	1.142	1,051,090
2012-13	830,000	1.112	923,336
2013-14	2,000,000	1.083	2,166,413
2014-15	1,140,000	1.055	1,202,391
2015-16	1,220,000	1.027	1,252,940

Average 06-07 through 14-15: \$1,190,386

(4) Projected 2016-17 Payroll (\$00's): \$469,287

(5) Projected 2016-17 \$1M Limit Rate: \$2.54

Notes:

- (1) Page 31, Column (6).
- (2) Estimated by BAC.
- (3) (1) x (2).
- (4) Page 67, 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, 2016  
Assuming a 1.0% Interest Rate

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

Program Year	Projected Unpaid Losses (1)	Discount Factor (2)	Discounted Unpaid Losses (3)
2006-07	\$0	1.000	\$0
2007-08	0	1.000	0
2008-09	0	1.000	0
2009-10	0	1.000	0
2010-11	109,773	0.995	109,228
2011-12	20,109	0.989	19,892
2012-13	73,829	0.991	73,185
2013-14	644,482	0.991	638,583
2014-15	784,647	0.989	775,891
2015-16	1,111,918	0.983	1,092,651
Total	\$2,744,758		\$2,709,430

(4) Indicated Discount Factor: 0.987

Notes:

- (1) Page 22, Column (6).
- (2) (3) / (1).
- (3) Based upon a 1.0% 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 2016-17 Losses as of July 1, 2016  
Assuming a 1.0% 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)
2016-17	\$35,990	0.995	\$35,811
2017-18	297,246	0.985	292,842
2018-19	469,172	0.975	457,645
2019-20	267,778	0.966	258,612
2020-21	94,115	0.956	89,994
2021-22	14,182	0.947	13,426
2022-23	11,904	0.937	11,158
2023-24	0	0.928	0
2024-25	0	0.919	0
2025-26	0	0.910	0
2026-27	0	0.901	0
Total	\$1,190,386		\$1,159,488

(4) Indicated Discount Factor: 0.974

Notes:

- (1) Based upon the observed payment pattern.
- (2) Based upon a 1.0% 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 2016-17 Losses as of July 1, 2016  
Assuming a 1.0% 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)
2016-17	\$4,594	0.995	\$4,572
2017-18	236,150	0.985	232,652
2018-19	449,476	0.975	438,433
2019-20	246,621	0.966	238,180
2020-21	83,717	0.956	80,051
2021-22	10,747	0.947	10,174
2022-23	15,705	0.937	14,722
2023-24	0	0.928	0
2024-25	0	0.919	0
2025-26	0	0.910	0
2026-27	0	0.901	0
Total	\$1,047,011		\$1,018,784

(4) Indicated Discount Factor: 0.973

Notes:

- (1) Based upon the observed payment pattern.
- (2) Based upon a 1.0% 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 (1)	B-F Method Using Reported (2)	Selected Ultimate Losses (3)
2006-07	\$126,468	\$126,468	\$126,468
2007-08	117,856	117,856	117,856
2008-09	130,956	130,956	130,956
2009-10	163,139	163,139	163,139
2010-11	177,014	177,010	177,010
2011-12	124,099	124,127	124,034
2012-13	128,371	128,332	128,351
2013-14	108,479	109,013	108,746
2014-15	123,545	118,583	121,064
2015-16	1,012,105	103,181	103,181
Total	\$2,212,032	\$1,298,666	\$1,300,806

Notes:

- (1) Page 61, Column (3).
- (2) Page 62, 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 12/31/15 (1)	Reported Development Factor as of 12/31/15 (2)	Projected Ultimate Losses (3)
2006-07	\$126,468	1.000	\$126,468
2007-08	117,856	1.000	117,856
2008-09	130,956	1.000	130,956
2009-10	163,139	1.000	163,139
2010-11	177,010	1.000	177,014
2011-12	124,034	1.001	124,099
2012-13	128,226	1.001	128,371
2013-14	106,945	1.014	108,479
2014-15	103,266	1.196	123,545
2015-16	27,791	36.418	1,012,105
Total	\$1,205,692		\$2,212,032

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 12/31/15 (5)	Estimated Ultimate Deductible Losses (6)
2006-07	\$65,976	1.000	0.0%	\$0	\$126,468	\$126,468
2007-08	81,362	1.000	0.0%	0	117,856	117,856
2008-09	73,082	1.000	0.0%	0	130,956	130,956
2009-10	111,234	1.000	0.0%	0	163,139	163,139
2010-11	199,764	1.000	0.0%	0	177,010	177,010
2011-12	93,394	1.001	0.1%	93	124,034	124,127
2012-13	106,236	1.001	0.1%	106	128,226	128,332
2013-14	147,725	1.014	1.4%	2,068	106,945	109,013
2014-15	93,397	1.196	16.4%	15,317	103,266	118,583
2015-16	77,482	36.418	97.3%	75,390	27,791	103,181
Total	\$1,049,652			\$92,974	\$1,205,692	\$1,298,666

Notes:

- (1) Page 45, Column (6), adjusted for \$10K limit.
- (2) Page 61, Column (2).
- (3)  $100\% - [1.000 / (2)]$ .
- (4)  $(1) \times (3)$ .
- (5) Page 61, 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 - 12/31/15

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	
2009		541	307	355	405	452	455	454			
2010	151	569	1,025	1,082	721	729	729				
2011	76	819	2,507	2,500	2,304	2,334					
2012	19	278	593	856	896						
2013	55	343	454	777							
2014	7	1,443	1,714								
2015	13	534									
2016	55										
	<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	12.406	1.653	1.115	0.896	1.000	1.001	0.999	1.000	1.000	1.000	
AVG	46.039	1.678	1.216	0.921	0.998	1.002	0.999	1.000	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	46.039	1.678	1.141	1.036	1.017	1.007	1.000	1.000	1.000	1.000	1.000
CUMULATIVE	93.441	2.030	1.209	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 - 12/31/15

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>
Year											
2006					565	557	557	557	557	557	557
2007				386	406	401	401	401	401	401	401
2008			337	497	500	500	500	500	500	500	
2009		151	255	274	306	372	455	454			
2010	15	122	524	727	721	729	729				
2011	5	194	646	1,932	2,200	2,221					
2012	13	113	177	387	897						
2013	3	124	373	702							
2014	4	478	935								
2015	10	56									
2016	13										
	<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	21.601	2.461	1.955	1.197	1.018	1.032	0.999	1.000	1.000	1.000	
AVG	36.257	2.639	1.832	1.271	1.035	1.045	0.999	1.000	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	21.601	2.639	1.832	1.271	1.036	1.042	1.036	1.000	1.000	1.000	1.000
CUMULATIVE	148.516	6.875	2.605	1.422	1.119	1.080	1.036	1.000	1.000	1.000	1.000

Monterey Bay Area Self Insurance Authority  
General and Auto Liability Program

Cumulative # of Reported Losses - 12/31/15

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	
2009		56	61	62	62	61	60	57		
2010	17	46	49	52	51	52	51			
2011	21	65	65	65	65	61				
2012	22	75	72	72	67					
2013	17	62	66	63						
2014	14	58	57							
2015	19	64								
2016	20									
	<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	3.484	1.010	1.003	0.980	0.986	0.987	0.929	0.970	1.000	
ALL YR AVG	3.395	1.027	1.000	0.985	0.986	0.987	0.929	0.971	1.000	1.000
SELECT	3.395	1.027	1.003	1.000	1.000	1.000	1.000	1.000	1.000	1.000
CUMULATIVE	3.497	1.030	1.003	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)
2006-07	\$1,000,000	\$428,182	1.000	\$10,000
2007-08	1,000,000	437,000	1.000	10,000
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	457,935	1.000	10,000
2012-13	1,000,000	433,156	1.000	10,000
2013-14	1,000,000	432,210	1.000	10,000
2014-15	1,000,000	448,768	1.000	10,000
2015-16	1,000,000	460,085	1.000	10,000
2016-17	?	469,287	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).