

Monterey Bay Area Self Insurance Authority

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

**BAY ACTUARIAL CONSULTANTS
Moraga, California
March 9, 2020**

Bay Actuarial Consultants

March 9, 2020

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. This report covers the following topics:

- 1) **Projected 2020-21 Losses & Rate of Loss.** A projection of the losses expected to be incurred during 2020-21, expressed as a total dollar amount and also as a rate of loss per \$100 of payroll.
- 2) **Unpaid Losses.** We estimated the Authority’s liability for unpaid losses as of December 31, 2019 and projected the June 30, 2020 liability.
- 3) **Discounting.** We discounted the projected 2020-21 losses and the liabilities to present value, assuming a 0.5% 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

This report is 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 2020-21 Losses and Loss Rates

Tables I and II shows the projected 2020-21 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 0.5% 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 above \$1,000,000 per loss, and the Employment Risk Management Authority (“ERMA”) is expected to cover any EPL losses above \$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 2020-21 discounted loss rate, gross of deductibles (Table I) will be less than **\$3.09**. There is a table on page 12 that allows one to discount these loss rates at interest rates other than 0.5%.

Table I: Projected 2020-21 Losses and Loss Rates				
\$1M SIR (\$500K EPL SIR), Gross of \$10K Deductible, 0.5% 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	\$1,746,671	\$1,723,964	\$2.63	\$2.60
70%	2,078,538	2,051,517	3.13	\$3.09
75%	2,218,272	2,189,435	3.34	3.30
80%	2,392,939	2,361,831	3.60	3.56
90%	2,899,474	2,861,781	4.37	4.32
2019-20 C.E.	\$1,764,241	\$1,697,200	\$2.80	\$2.69
% Change from 19-20	-1.0%	+1.6%	-6.1%	-3.3%

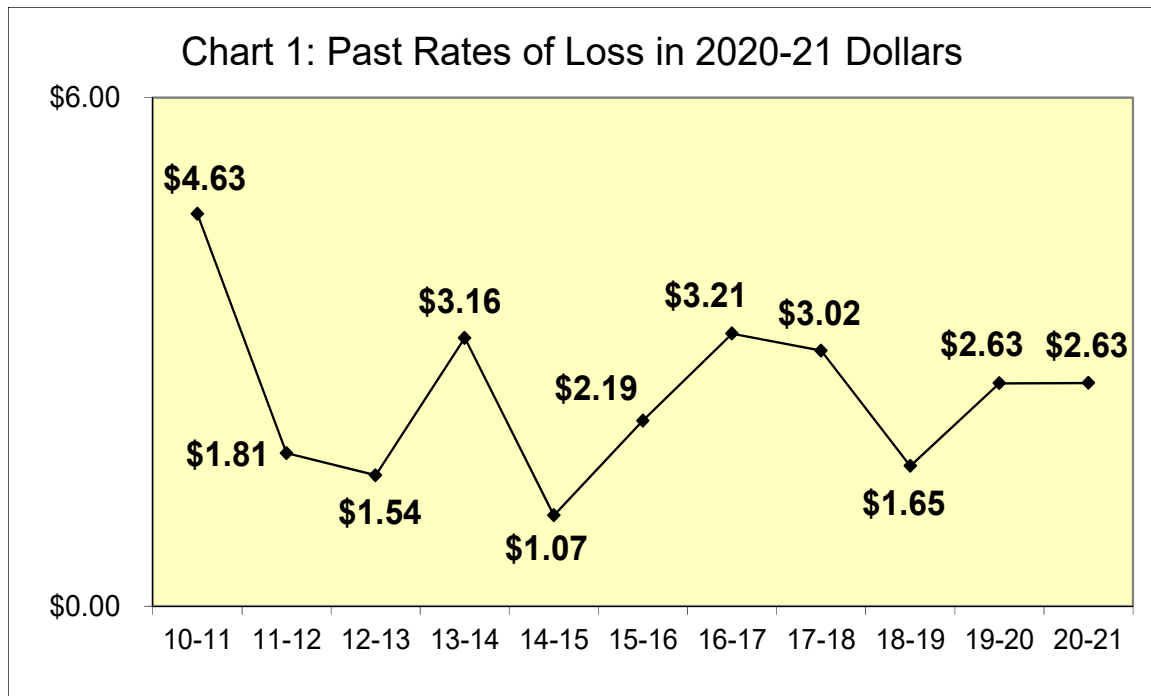
The change from last year in the projected total losses was -1.0%. The projected *rate of loss* fell farther, by -6.1%, because a 5.2% increase in the projected payroll. The improvements in the projected *discounted losses* and *discounted rate of loss* were less because the interest rate fell by 1.0%, from last year’s 1.5% to this year’s 0.5%.

Table II: Projected 2020-21 Losses and Loss Rates				
\$1M SIR (\$500K EPL SIR), NET of \$10K Deductible, 0.5% 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	\$1,574,770	\$1,552,723	\$2.37	\$2.34
70%	1,889,724	1,863,268	2.84	\$2.81
75%	2,062,949	2,034,068	3.10	3.07
80%	2,251,921	2,220,394	3.39	3.35
90%	2,787,343	2,748,320	4.19	4.14
2019-20 C.E.	\$1,587,685	\$1,524,177	\$2.52	\$2.42
% Change from 19-20	-0.8%	+1.9%	-6.0%	-3.3%

The \$10,000 deductible rates in Table II are between 4.0% and 10.0% lower than the Table I rates.

The Authority's Past Rates of Loss

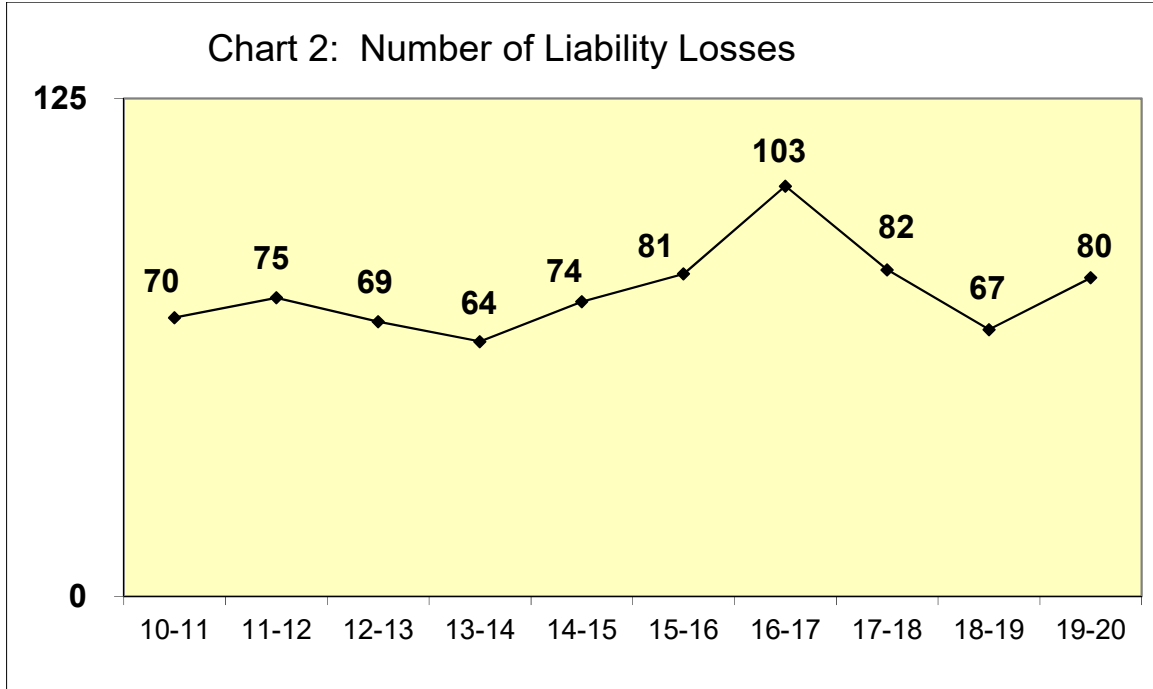
Chart 1 shows the Authority's estimated past rates of loss at the \$1M/\$500K (\$500K EPL) SIR. The older rates are equal to the estimated total losses divided by the total insured payroll. The **\$2.63** rate for 2020-21 is the projected undiscounted central estimate rate from Table I. These are undiscounted rates.



The average of the rates shown in this chart, excluding 2020-21's projected rate of \$2.63, is \$2.49.

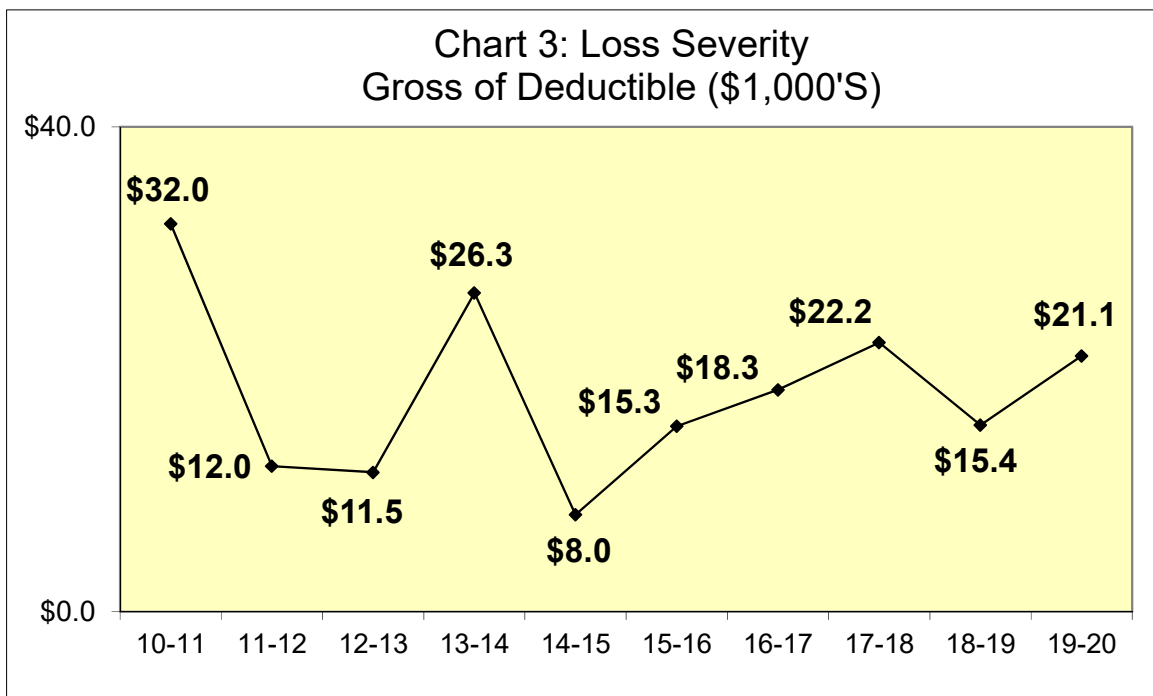
Number of Losses

Chart 2 shows the estimated number off losses by program year. The 2019-20 estimate of 80 is based on the 26 2019-20 losses actually reported through 12/31/19.



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 **\$3,194,163** on December 31, 2019. 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, 2019 – Net of Deductibles		
<u>Probability Level</u>	<u>Undiscounted Losses</u>	<u>Discounted at 0.5%</u>
Central Estimate	\$3,194,163	\$3,172,625
60%	3,258,047	3,236,078
70%	3,545,521	3,521,614
75%	3,705,229	3,680,245
80%	3,896,879	3,870,603
90%	4,471,829	4,441,675

Table IV shows the estimated liability gross of deductibles.

Table IV: Estimated Liability for Unpaid Losses as of December 31, 2019 – Gross of Deductibles		
<u>Probability Level</u>	<u>Undiscounted Losses</u>	<u>Discounted at 0.5%</u>
Central Estimate	\$3,313,068	\$3,289,876
60%	3,379,329	3,355,674
70%	3,677,505	3,651,763
75%	3,843,159	3,816,256
80%	4,041,943	4,013,649
90%	4,638,295	4,605,827

Table V shows the projected June 30, 2020 liability net of deductibles.

Table V: Projected Liability for Unpaid Losses as of June 30, 2020 – Net of Deductibles		
<u>Probability Level</u>	<u>Undiscounted Losses</u>	<u>Discounted at 0.5%</u>
Central Estimate	\$3,209,915	\$3,188,270
60%	3,242,853	3,220,153
70%	3,660,250	3,634,628
75%	3,949,217	3,921,572
80%	4,238,183	4,208,516
90%	5,201,407	5,164,997

Table VI shows the projected June 30, 2020 liability gross of deductibles.

Table VI: Projected Liability for Unpaid Losses as of June 30, 2020 – Gross of Deductibles		
Probability Level	Undiscounted Losses	Discounted at 0.5%
Central Estimate	\$3,330,919	\$3,307,603
60%	3,365,099	3,340,679
70%	3,798,231	3,770,667
75%	4,098,091	4,068,351
80%	4,397,951	4,366,035
90%	5,397,485	5,358,316

The 90% probability level is 40% higher than the net central estimate at December 31 but 62% higher at June 30. This is because both estimates are based on December 31 data. The June 30 projections include six months projected loss occurrences that have not yet occurred so the uncertainty is currently much higher. If the liabilities were to re-estimated at June 30 using updated data that 62% “probability loading” would then fall back toward the 40% level.

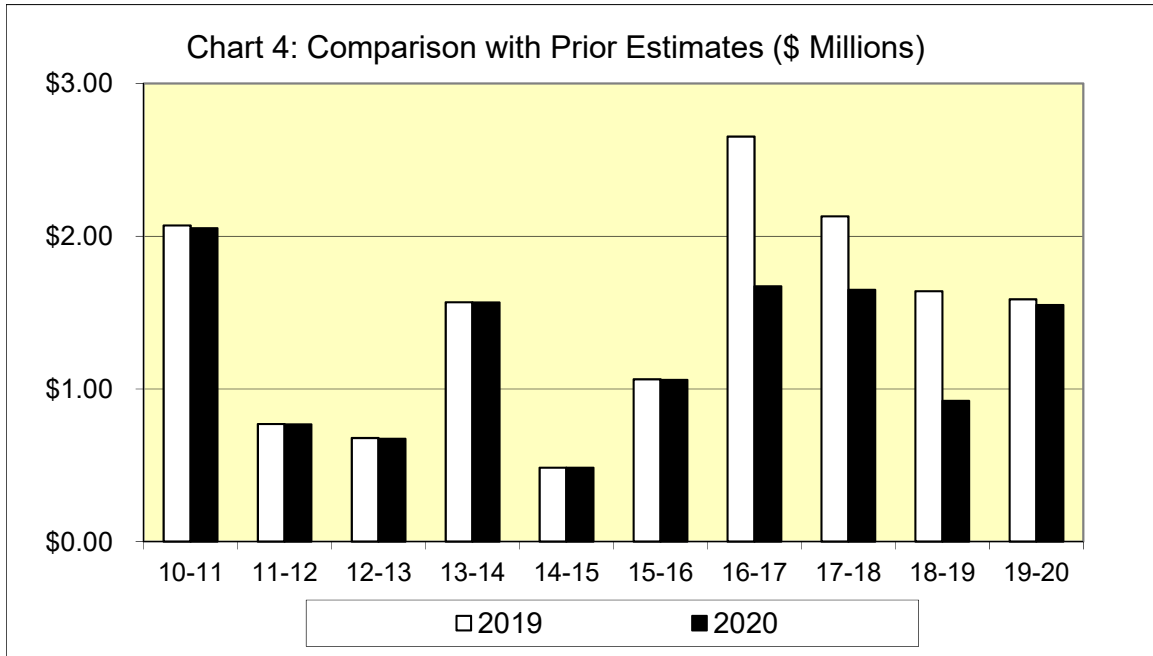
The liability is projected to increase only slightly between December 31 and June 30. New losses coming in are expected to offset the payments made on the old losses over the next six months. Of course projecting the timing of claims payments has an extremely high level of uncertainty, contributing to those higher probability level “loadings” at June 30.

ULAE Liability

We estimate the liability for unpaid unallocated loss adjustment expenses (“ULAE”) at \$180,000 on both December 31, 2019 and June 30, 2020. This is shown on page 22.

Comparison with 2019 Estimates

Chart 4 compares last year's estimates of the net of deductible losses with the new estimates. There was very favorable loss development in the losses from program years 2016-17, 2017-18, and 2018-19. The 19-20 columns are the initial projection from one year ago and the new estimate based on the 12/31/19 data.



The overall reduction in the estimates for all years through 2018-19 was \$2,210,419.

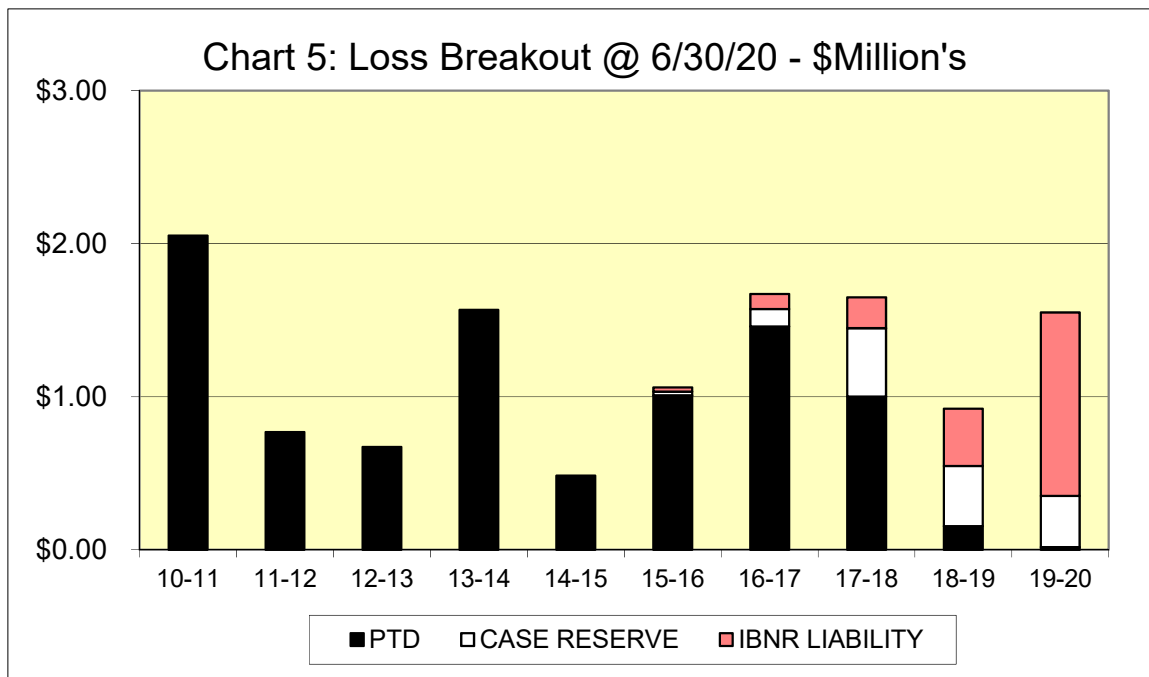
Reconciling the 12/31/18 & 12/31/19 Liabilities

In the 2019 report we estimated that the liability, net of deductibles, was **\$4,853,904** on December 31, 2018. Table III shows the new undiscounted central estimate of **\$3,194,163**. Table VII reconciles these two amounts.

Table VI: Reconcile 12/31/18 & 12/31/19 Liabilities	
Estimated 12/31/18 Liability	\$4,853,904
Payments in Calendar 2019	-1,044,322
Change in estimates for 12/31/18 and Prior	-1,851,419
Estimated Losses Calendar 2019	+1,236,000
<hr/>	
12/31/19 Liability	\$3,194,163

Loss Breakout as of 6/30/20

In Table V shows the Authority's projected 6/30/20 liability of **\$3,209,915**, net of deductibles. This comprises **\$1,312,247** in projected case reserves for known claims and a projected IBNR liability of **\$1,897,668**. This is \$1.45 of IBNR liability for every \$1.00 of case reserves. Chart 5 breaks out the projected total program year losses into their components: losses paid, case reserves, and IBNR liability. The projected 6/30/20 dollar amounts are shown on page 24.



Short-Term Liability

Short-term liabilities are those expected to be discharged within twelve months. The total projected 6/30/20 liability of **\$3,209,915** comprises **\$1,294,729** of short-term and **\$1,915,186** of long-term liabilities.

Interest Rates

The discounted liabilities and rates in this report were discounted at 0.5% interest. Here are the adjustments to make for different interest rate assumptions:

Interest Rate	0.0%	0.45%	0.5%	0.51%	1.5%
Gross Rates	+1.3%	+0.1%	0.0%	-0.1%	-2.6%
Net Rates	+1.4%	+0.1%	0.0%	0.0%	-2.7%
Liabilities	+0.7%	+0.1%	0.0%	0.0%	-1.3%

The Table includes columns for 0.45% and 0.51% interest rates. Those were the “risk-free buy-and-hold” interest rates. They were obtained 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 2020-21 losses yields 0.51% and the portfolio matching the 6/30/20 liability expenditures yields 0.45%.

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, 2019 and June 30, 2020. Summary Exhibit 3 shows the projected rate for the 2020-21 program year, which runs from July 1, 2020 to June 30, 2021. Summary Exhibit 4 shows the projected unpaid losses as of June 30, 2020 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, 2020.

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. This limited loss analysis is used in calculating the projected 2020-21 loss rate.

Future Loss Exhibits

These exhibits show the projection of the expected rate for 2020-21.

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 and losses paid 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 12/31/19
Losses Limited to SIR, NET of \$10K Deductible

	<u>12/31/19</u>
(1) Estimated Unpaid Losses:	\$3,194,163
(2) Discounted Value of Unpaid Losses: (Assuming 0.5% Interest Rate)	\$3,172,625

Probability Levels for 12/31/19 Liabilities

Probability Level <u>(3)</u>	Probability Factor <u>(4)</u>	Discounted * Liability <u>(5)</u>
Central Estimate	1.00	\$3,172,625
60%	1.02	3,236,077
70%	1.11	3,521,614
75%	1.16	3,680,245
80%	1.22	3,870,602
90%	1.40	4,441,675

* Multiply by 1.007 to obtain undiscounted values.

Notes:

- (1) Page 25, Column (6).
- (2) (1), discounted at 0.50% 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 6/30/20
Losses Limited to SIR, NET of \$10K Deductible

	<u>06/30/20</u>
(1) Projected Unpaid Losses:	\$3,209,915
(2) Discounted Value of Unpaid Losses: (Assuming 0.5% Interest Rate)	\$3,188,270

Probability Levels for 6/30/20 Liabilities

Probability Level <u>(3)</u>	Probability Factor <u>(4)</u>	Discounted * Liability <u>(5)</u>
60%	1.01	3,220,153
Central Estimate	1.00	\$3,188,270
70%	1.14	3,634,628
75%	1.23	3,921,572
80%	1.32	4,208,516
90%	1.62	5,164,997

* Multiply by 1.007 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 2020-21
Losses Limited to \$1,000,000, NET of \$10K Deductible

(1) Discounted Loss Rate: Loss Rates
\$2.34
 (as of July 1, 2020, 0.5% interest rate)

<u>Probability Levels</u>		
Probability Level <u>(2)</u>	Probability Factor <u>(3)</u>	Discounted * Rate <u>(4)</u>
50%	0.89	2.08
Central Estimate	1.00	\$2.34
60%	1.04	2.43
70%	1.20	2.81
75%	1.31	3.07
80%	1.43	3.35
90%	1.77	4.14

* Multiply by 1.014 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, 2020
Losses Limited to SIR, NET of \$10K Deductible

Program Year	Undiscounted Value: Claims Liabilities as of 6/30/20 (1)	Discounted (0.5% Interest) Claims Liabilities as of 6/30/20 (2)	Estimated Ultimate Losses (3)
2010-11	\$0	\$0	\$2,052,996
2011-12	0	0	768,382
2012-13	0	0	672,566
2013-14	0	0	1,566,555
2014-15	0	0	483,920
2015-16	51,061	51,061	1,060,000
2016-17	212,106	211,577	1,671,000
2017-18	646,766	644,117	1,649,000
2018-19	766,762	762,480	922,000
2019-20	1,533,220	1,519,035	1,550,000
Total	\$3,209,915	\$3,188,270	\$12,396,418

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%**

	<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 12/31/19:	\$2,447,253	\$865,814	\$3,313,067
(4) Estimated Unpaid ULAE as of 12/31/19:	\$105,232	\$75,137	\$180,369
(5) Discounted Unpaid ULAE as of 12/31/19: (0.5% interest rate)			\$179,106

We project that the 6/30/20 ULAE liability
will equal the 12/31/19 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, 2020
Losses Limited to SIR, NET of \$10K Deductible

Program Year	Estimated Ultimate Losses (1)	Projected Losses Paid as of 6/30/20 (2)	Projected Case Reserves 6/30/20 (3)	Projected Losses Reported as of 6/30/20 (4)	Projected IBNR as of 6/30/20 (5)	Projected Unpaid Losses as of 6/30/20 (6)
2010-11	\$2,052,996	\$2,052,996	\$0	\$2,052,996	\$0	\$0
2011-12	768,382	768,381	0	768,381	0	0
2012-13	672,566	672,565	0	672,565	0	0
2013-14	1,566,555	1,566,555	0	1,566,555	0	0
2014-15	483,920	483,920	0	483,920	0	0
2015-16	1,060,000	1,008,939	24,406	1,033,346	26,654	51,061
2016-17	1,671,000	1,458,894	113,069	1,571,963	99,037	212,106
2017-18	1,649,000	1,002,234	445,775	1,448,009	200,991	646,766
2018-19	922,000	155,238	392,879	548,117	373,883	766,762
2019-20	1,550,000	16,780	336,117	352,898	1,197,102	1,533,220
Total	\$12,396,418	\$9,186,503	\$1,312,247	\$10,498,750	\$1,897,668	\$3,209,915

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, 2019
Losses Limited to SIR, NET of \$10K Deductible

Program Year	Estimated Ultimate Losses (1)	Losses Paid as of 12/31/19 (2)	Case Reserves 12/31/19 (3)	Losses Reported as of 12/31/19 (4)	Estimated IBNR as of 12/31/19 (5)	Estimated Unpaid Losses as of 12/31/19 (6)
2010-11	\$2,052,996	\$2,052,996	\$0	\$2,052,996	\$0	\$0
2011-12	768,382	768,381	0	768,381	0	0
2012-13	672,566	672,565	0	672,565	0	0
2013-14	1,566,555	1,566,555	0	1,566,555	0	0
2014-15	483,920	483,920	0	483,920	0	0
2015-16	1,060,000	955,610	50,472	1,006,081	53,919	104,390
2016-17	1,671,000	1,404,071	151,671	1,555,742	115,258	266,929
2017-18	1,649,000	511,088	842,934	1,354,021	294,979	1,137,912
2018-19	922,000	12,069	273,431	285,500	636,500	909,931
2019-20	775,000	0	195,000	195,000	580,000	775,000
Total	\$11,621,418	\$8,427,255	\$1,513,508	\$9,940,763	\$1,680,655	\$3,194,163

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, 2020
Losses Limited to SIR, Gross of \$10K Deductible

Program Year	Estimated Ultimate Losses (1)	Projected Losses Paid as of 6/30/20 (2)	Projected Case Reserves 6/30/20 (3)	Projected Losses Reported as of 6/30/20 (4)	Projected IBNR as of 6/30/20 (5)	Projected Unpaid Losses as of 6/30/20 (6)
2010-11	\$2,240,499	\$2,240,499	\$0	\$2,240,499	\$0	\$0
2011-12	902,244	902,244	0	902,244	0	0
2012-13	795,897	795,897	0	795,897	0	0
2013-14	1,683,839	1,683,839	0	1,683,839	0	0
2014-15	588,593	588,593	0	588,593	0	0
2015-16	1,240,000	1,188,044	24,765	1,212,809	27,191	51,956
2016-17	1,880,000	1,664,396	115,923	1,780,319	99,681	215,604
2017-18	1,820,000	1,170,223	447,093	1,617,316	202,684	649,777
2018-19	1,030,000	240,916	407,656	648,572	381,428	789,084
2019-20	1,690,000	65,502	373,513	439,015	1,250,985	1,624,498
Total	\$13,871,072	\$10,540,153	\$1,368,950	\$11,909,103	\$1,961,969	\$3,330,919

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 1/1/20 and 6/30/20
Losses Limited to SIR, Gross of \$10K Deductible

Program Year	Losses Paid as of 12/31/19 (1)	Projected Losses Paid 1/1/20 - 6/30/20 (2)	Projected Losses Paid as of 6/30/20 (3)	Losses Reported as of 12/31/19 (4)	Projected Losses Reported 1/1/20 - 6/30/20 (5)	Projected Losses Reported as of 6/30/20 (6)
2010-11	\$2,240,499	\$0	\$2,240,499	\$2,240,499	\$0	\$2,240,499
2011-12	902,244	0	902,244	902,244	0	902,244
2012-13	795,897	0	795,897	795,897	0	795,897
2013-14	1,683,839	0	1,683,839	1,683,839	0	1,683,839
2014-15	588,593	0	588,593	588,593	0	588,593
2015-16	1,133,814	54,230	1,188,044	1,185,007	27,802	1,212,809
2016-17	1,608,150	56,246	1,664,396	1,763,872	16,447	1,780,319
2017-18	678,713	491,510	1,170,223	1,522,342	94,974	1,617,316
2018-19	74,553	166,362	240,916	379,767	268,805	648,572
2019-20	6,702	58,800	65,502	232,383	206,631	439,015
Total	\$9,713,004	\$827,149	\$10,540,153	\$11,294,443	\$614,659	\$11,909,103

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, 2019
Losses Limited to SIR, Gross of \$10K Deductible

Program Year	Estimated Ultimate Losses (1)	Losses Paid as of 12/31/19 (2)	Case Reserves 12/31/19 (3)	Losses Reported as of 12/31/19 (4)	Estimated IBNR as of 12/31/19 (5)	Estimated Unpaid Losses as of 12/31/19 (6)
2010-11	\$2,240,499	\$2,240,499	\$0	\$2,240,499	\$0	\$0
2011-12	902,244	902,244	0	902,244	0	0
2012-13	795,897	795,897	0	795,897	0	0
2013-14	1,683,839	1,683,839	0	1,683,839	0	0
2014-15	588,593	588,593	0	588,593	0	0
2015-16	1,240,000	1,133,814	51,193	1,185,007	54,993	106,186
2016-17	1,880,000	1,608,150	155,722	1,763,872	116,128	271,850
2017-18	1,820,000	678,713	843,629	1,522,342	297,658	1,141,287
2018-19	1,030,000	74,553	305,213	379,767	650,233	955,447
2019-20	845,000	6,702	225,682	232,383	612,617	838,298
Total	\$13,026,072	\$9,713,004	\$1,581,439	\$11,294,443	\$1,731,629	\$3,313,068

Notes:

- (1) Page 33, Column (6).
2019-20 entry adjusted for incomplete year through 12/31/19.
- (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, 2020
Losses Limited to \$10K Deductible

Program Year	Estimated Ultimate Deductibles (1)	Projected Ded Paid as of 6/30/20 (2)	Projected Case Reserves 6/30/20 (3)	Projected Ded Reported as of 6/30/20 (4)	Projected Deductible IBNR as of 6/30/20 (5)	Projected Deductible Losses as of 6/30/20 (6)
2010-11	\$187,503	\$187,503	\$0	\$187,503	\$0	\$0
2011-12	133,862	133,862	0	133,862	0	0
2012-13	123,331	123,331	0	123,331	0	0
2013-14	117,284	117,284	0	117,284	0	0
2014-15	104,673	104,673	0	104,673	0	0
2015-16	180,000	179,105	359	179,463	537	895
2016-17	209,000	205,502	2,854	208,356	644	3,498
2017-18	171,000	167,989	1,318	169,307	1,693	3,011
2018-19	108,000	85,678	14,777	100,455	7,545	22,322
2019-20	140,000	48,722	37,395	86,117	53,883	91,278
Total	\$1,474,654	\$1,353,649	\$56,703	\$1,410,353	\$64,301	\$121,005

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 1/1/20 and 6/30/20
Losses Limited to \$10K Deductible

Program Year	Ded Paid as of 12/31/19 (1)	Projected Losses Paid 1/1/20 - 6/30/20 (2)	Projected Losses Paid as of 6/30/20 (3)	Losses Reported as of 12/31/19 (4)	Projected Losses Reported 1/1/20 - 6/30/20 (5)	Projected Losses Reported as of 6/30/20 (6)
2010-11	\$187,503	\$0	\$187,503	\$187,503	\$0	\$187,503
2011-12	133,862	0	133,862	133,862	0	133,862
2012-13	123,331	0	123,331	123,331	0	123,331
2013-14	117,284	0	117,284	117,284	0	117,284
2014-15	104,673	0	104,673	104,673	0	104,673
2015-16	178,205	900	179,105	178,926	537	179,463
2016-17	204,079	1,423	205,502	208,130	226	208,356
2017-18	167,625	364	167,989	168,321	987	169,307
2018-19	62,485	23,193	85,678	94,267	6,188	100,455
2019-20	6,702	42,020	48,722	37,383	48,734	86,117
Total	\$1,285,750	\$67,900	\$1,353,649	\$1,353,680	\$56,672	\$1,410,353

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, 2019
Losses Limited to \$10K Deductible

Program Year	Estimated Ultimate Deductibles (1)	Ded Paid as of 12/31/19 (2)	Case Reserves 12/31/19 (3)	Ded Reported as of 12/31/19 (4)	Estimated Deductible IBNR as of 12/31/19 (5)	Estimated Deductible Losses as of 12/31/19 (6)
2010-11	\$187,503	\$187,503	\$0	\$187,503	\$0	\$0
2011-12	133,862	133,862	0	133,862	0	0
2012-13	123,331	123,331	0	123,331	0	0
2013-14	117,284	117,284	0	117,284	0	0
2014-15	104,673	104,673	0	104,673	0	0
2015-16	180,000	178,205	721	178,926	1,074	1,795
2016-17	209,000	204,079	4,051	208,130	870	4,921
2017-18	171,000	167,625	695	168,321	2,679	3,375
2018-19	108,000	62,485	31,782	94,267	13,733	45,515
2019-20	70,000	6,702	30,682	37,383	32,617	63,298
Total	\$1,404,654	\$1,285,750	\$67,931	\$1,353,680	\$50,974	\$118,904

Notes:

- (1) Page 62, Column (3).
2019-20 adjusted for partial year through 12/31/19.
- (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)
2010-11	\$2,240,499	\$2,240,499	\$2,240,499	\$2,240,499	\$1,064,957	\$2,240,499
2011-12	902,244	902,281	902,244	902,244	1,177,538	902,244
2012-13	795,897	795,929	795,897	795,897	1,118,002	795,897
2013-14	1,683,839	1,683,908	1,683,839	1,683,839	1,070,171	1,683,839
2014-15	592,498	593,145	588,593	597,715	1,276,981	588,593
2015-16	1,222,402	1,184,522	1,313,194	1,226,731	1,442,506	1,240,000
2016-17	1,884,158	1,851,201	1,911,185	1,852,746	1,892,995	1,880,000
2017-18	1,806,020	1,418,119	1,885,946	1,747,309	1,555,270	1,820,000
2018-19	700,776	543,698	725,268	1,057,006	1,311,434	1,030,000
2019-20	4,639,450	1,399,454	4,964,701	1,682,077	1,616,000	1,690,000
Total	\$16,467,783	\$12,612,756	\$17,011,366	\$13,786,063	\$13,525,854	\$13,871,072

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 12/31/19 (1)	Reported Development Factor as of 12/31/19 (2)	Projected Ultimate Losses (3)
2010-11	\$2,240,499	1.000	\$2,240,499
2011-12	902,244	1.000	902,244
2012-13	795,897	1.000	795,897
2013-14	1,683,839	1.000	1,683,839
2014-15	588,593	1.007	592,498
2015-16	1,185,007	1.032	1,222,402
2016-17	1,763,872	1.068	1,884,158
2017-18	1,522,342	1.186	1,806,020
2018-19	379,767	1.845	700,776
2019-20	232,383	19.965	4,639,450
Total	\$11,294,443		\$16,467,783

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 12/31/19 <u>(1)</u>	Paid Development Factor as of 12/31/19 <u>(2)</u>	Projected Ultimate Losses <u>(3)</u>
2010-11	\$2,240,499	1.000	\$2,240,499
2011-12	902,244	1.000	902,281
2012-13	795,897	1.000	795,929
2013-14	1,683,839	1.000	1,683,908
2014-15	588,593	1.008	593,145
2015-16	1,133,814	1.045	1,184,522
2016-17	1,608,150	1.151	1,851,201
2017-18	678,713	2.089	1,418,119
2018-19	74,553	7.293	543,698
2019-20	6,702	208.820	1,399,454
Total	\$9,713,004		\$12,612,756

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 12/31/19 (1)	Paid Development Factor as of 12/31/19 (2)	IBNR to Case Reserves Ratio (3)	Case Reserves 12/31/19 (4)	Estimated IBNR as of 12/31/19 (5)	Estimated Ultimate Losses (6)
2010-11	1.000	1.000	0.000	\$0	\$0	\$2,240,499
2011-12	1.000	1.000	0.000	0	0	902,244
2012-13	1.000	1.000	0.000	0	0	795,897
2013-14	1.000	1.000	0.000	0	0	1,683,839
2014-15	1.007	1.008	6.080	0	0	588,593
2015-16	1.032	1.045	2.504	51,193	128,187	1,313,194
2016-17	1.068	1.151	0.946	155,722	147,313	1,911,185
2017-18	1.186	2.089	0.431	843,629	363,604	1,885,946
2018-19	1.845	7.293	1.132	305,213	345,501	725,268
2019-20	19.965	208.820	20.969	225,682	4,732,318	4,964,701
Total				\$1,581,439	\$5,716,923	\$17,011,366

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 12/31/19 (5)	Estimated Ultimate Losses (6)
2010-11	\$1,149,074	1.000	0.0%	\$0	\$2,240,499	\$2,240,499
2011-12	1,185,698	1.000	0.0%	0	902,244	902,244
2012-13	1,223,847	1.000	0.0%	0	795,897	795,897
2013-14	1,263,523	1.000	0.0%	0	1,683,839	1,683,839
2014-15	1,303,199	1.007	0.7%	9,122	588,593	597,715
2015-16	1,345,927	1.032	3.1%	41,724	1,185,007	1,226,731
2016-17	1,388,655	1.068	6.4%	88,874	1,763,872	1,852,746
2017-18	1,432,909	1.186	15.7%	224,967	1,522,342	1,747,309
2018-19	1,478,688	1.845	45.8%	677,239	379,767	1,057,006
2019-20	1,525,994	19.965	95.0%	1,449,694	232,383	1,682,077
	\$13,297,514			\$2,491,620	\$11,294,443	\$13,786,063

Notes:

- (1) Page 38, Column (3).
- (2) Page 34, Column (2).
- (3) $100\% - [1.000 / (2)]$.
- (4) $(1) \times (3)$.
- (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> 2019-20 Loss (1)	Factor to Remove Trend (2)	<i>A Priori</i> Ultimate Losses (3)
2010-11	\$1,525,994	0.753	\$1,149,074
2011-12	1,525,994	0.777	1,185,698
2012-13	1,525,994	0.802	1,223,847
2013-14	1,525,994	0.828	1,263,523
2014-15	1,525,994	0.854	1,303,199
2015-16	1,525,994	0.882	1,345,927
2016-17	1,525,994	0.910	1,388,655
2017-18	1,525,994	0.939	1,432,909
2018-19	1,525,994	0.969	1,478,688
2019-20	1,525,994	1.000	1,525,994
Total			\$13,297,514

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)
2010-11	\$2,240,499	1.328	\$2,974,829
2011-12	902,244	1.287	1,160,811
2012-13	795,897	1.247	992,235
2013-14	1,683,839	1.208	2,034,131
2014-15	588,593	1.171	688,991
2015-16	1,203,582	1.134	1,365,194
2016-17	1,868,295	1.099	2,053,452
2017-18	1,665,539	1.065	1,773,839
2018-19	669,057	1.032	690,467
2019-20	4,356,715	1.000	4,356,715
Average			\$1,809,066
10/11-18/19			\$1,525,994
		(4) A Priori 2019-20 Losses:	\$1,525,994

Notes:

- (1) Page 40, Column (3).
- (2) Estimated by BAC.
- (3) (1) x (2).
- (4) Average of (3) excluding 2019-20.

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)
2010-11	\$2,240,499	\$2,240,499	\$2,240,499
2011-12	902,244	902,281	902,244
2012-13	795,897	795,929	795,897
2013-14	1,683,839	1,683,908	1,683,839
2014-15	592,498	593,145	588,593
2015-16	1,222,402	1,184,522	1,203,582
2016-17	1,884,158	1,851,201	1,868,295
2017-18	1,806,020	1,418,119	1,665,539
2018-19	700,776	543,698	669,057
2019-20	4,639,450	1,399,454	4,356,715
Total	\$16,467,783	\$12,612,756	\$15,974,260

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)
2010-11	\$20,200	0.753	70	\$1,064,957
2011-12	20,200	0.777	75	1,177,538
2012-13	20,200	0.802	69	1,118,002
2013-14	20,200	0.828	64	1,070,171
2014-15	20,200	0.854	74	1,276,981
2015-16	20,200	0.882	81	1,442,506
2016-17	20,200	0.910	103	1,892,995
2017-18	20,200	0.939	82	1,555,270
2018-19	20,200	0.969	67	1,311,434
2019-20	20,200	1.000	80	1,616,000
Total				\$13,525,854

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)
2010-11	\$2,240,499	1.328	70	\$42,498
2011-12	902,244	1.287	75	15,477
2012-13	795,897	1.247	69	14,380
2013-14	1,683,839	1.208	64	31,783
2014-15	588,593	1.171	74	9,311
2015-16	1,203,582	1.134	81	16,854
2016-17	1,868,295	1.099	103	19,936
2017-18	1,665,539	1.065	82	21,632
2018-19	669,057	1.032	67	10,305
2019-20	4,356,715	1.000	80	54,459
Total	\$15,974,260		765	\$23,664
10/11-18/19	\$11,617,545		685	\$20,242
			(5) Selected Severity:	\$20,200

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)
2010-11	70		70
2011-12	75		75
2012-13	69		69
2013-14	64		64
2014-15	74		74
2015-16	81		81
2016-17	103		103
2017-18	82		82
2018-19	67		67
2019-20	90	80	80
Total	775		765

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 12/31/19 (1)	Development Factors as of 12/31/19 (2)	Projected Ultimate Claims (3)
2010-11	70	1.000	70
2011-12	75	1.000	75
2012-13	69	1.000	69
2013-14	64	1.000	64
2014-15	74	1.000	74
2015-16	81	1.000	81
2016-17	103	1.000	103
2017-18	81	1.011	82
2018-19	64	1.044	67
2019-20	26	3.458	90
Average			78
10/11-18/19 Average			76

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

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 12/31/19 (5)	Projected Ultimate Claims (6)
2019-20	76	3.458	71.1%	54	26	80

Notes:

- (1) Page 44, Column (3), average 2010-11 to 2018-19.
- (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)
2010-11	\$1,217,304	\$1,217,304	\$1,217,304	\$1,217,304	\$1,217,304	\$1,217,304
2011-12	600,483	600,483	600,483	600,483	600,483	600,483
2012-13	724,089	724,100	724,089	724,089	724,089	724,089
2013-14	933,839	933,857	933,839	933,839	933,839	933,839
2014-15	443,731	445,374	443,731	443,731	446,009	443,731
2015-16	1,083,345	1,055,350	1,085,094	1,082,387	1,043,720	1,090,000
2016-17	1,429,719	1,389,435	1,432,116	1,424,703	1,317,070	1,430,000
2017-18	1,393,841	1,210,441	1,397,835	1,380,494	927,969	1,400,000
2018-19	521,575	420,334	530,542	534,011	541,255	530,000
2019-20	3,260,443	974,893	3,486,937	758,561	569,129	760,000
Total	\$11,608,369	\$8,971,571	\$11,851,970	\$9,099,602	\$8,320,867	\$9,129,446

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 12/31/19 <u>(1)</u>	Reported Development Factor as of 12/31/19 <u>(2)</u>	Projected Ultimate Losses <u>(3)</u>
2010-11	\$1,217,304	1.000	\$1,217,304
2011-12	600,483	1.000	600,483
2012-13	724,089	1.000	724,089
2013-14	933,839	1.000	933,839
2014-15	443,731	1.000	443,731
2015-16	1,081,818	1.001	1,083,345
2016-17	1,421,860	1.006	1,429,719
2017-18	1,370,842	1.017	1,393,841
2018-19	379,767	1.373	521,575
2019-20	232,383	14.030	3,260,443
Total	\$8,406,116		\$11,608,369

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 12/31/19 (1)	Paid Development Factor as of 12/31/19 (2)	Projected Ultimate Losses (3)
2010-11	\$1,217,304	1.000	\$1,217,304
2011-12	600,483	1.000	600,483
2012-13	724,089	1.000	724,100
2013-14	933,839	1.000	933,857
2014-15	443,731	1.004	445,374
2015-16	1,030,625	1.024	1,055,350
2016-17	1,266,470	1.097	1,389,435
2017-18	678,713	1.783	1,210,441
2018-19	74,553	5.638	420,334
2019-20	6,702	145.469	974,893
Total	\$6,976,509		\$8,971,571

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 12/31/19 (4)	Estimated IBNR as of as of 12/31/19 (5)	Estimated Ultimate Losses (6)
2010-11	1.000	1.000	0.000	\$0	\$0	\$1,217,304
2011-12	1.000	1.000	0.000	0	0	600,483
2012-13	1.000	1.000	0.000	0	0	724,089
2013-14	1.000	1.000	0.000	0	0	933,839
2014-15	1.000	1.004	0.000	0	0	443,731
2015-16	1.001	1.024	0.064	51,193	3,276	1,085,094
2016-17	1.006	1.097	0.066	155,390	10,256	1,432,116
2017-18	1.017	1.783	0.039	692,129	26,993	1,397,835
2018-19	1.373	5.638	0.494	305,213	150,775	530,542
2019-20	14.030	145.469	14.421	225,682	3,254,554	3,486,937
Total				\$1,429,607	\$3,445,854	\$11,851,970

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 12/31/19 (5)	Estimated Ultimate Losses (6)
2010-11	\$572,408	1.000	0.0%	\$0	\$1,217,304	\$1,217,304
2011-12	571,653	1.000	0.0%	0	600,483	600,483
2012-13	571,066	1.000	0.0%	0	724,089	724,089
2013-14	570,615	1.000	0.0%	0	933,839	933,839
2014-15	569,602	1.000	0.0%	0	443,731	443,731
2015-16	569,355	1.001	0.1%	569	1,081,818	1,082,387
2016-17	568,534	1.006	0.5%	2,843	1,421,860	1,424,703
2017-18	567,781	1.017	1.7%	9,652	1,370,842	1,380,494
2018-19	567,074	1.373	27.2%	154,244	379,767	534,011
2019-20	566,391	14.030	92.9%	526,178	232,383	758,561
Total	\$5,694,480			\$693,486	\$8,406,116	\$9,099,602

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 12/31/19 (5)	Estimated Ultimate Losses (6)
2010-11	\$572,408	1.000	0.0%	\$0	\$1,217,304	\$1,217,304
2011-12	571,653	1.000	0.0%	0	600,483	600,483
2012-13	571,066	1.000	0.0%	0	724,089	724,089
2013-14	570,615	1.000	0.0%	0	933,839	933,839
2014-15	569,602	1.004	0.4%	2,278	443,731	446,009
2015-16	569,355	1.024	2.3%	13,095	1,030,625	1,043,720
2016-17	568,534	1.097	8.9%	50,600	1,266,470	1,317,070
2017-18	567,781	1.783	43.9%	249,256	678,713	927,969
2018-19	567,074	5.638	82.3%	466,702	74,553	541,255
2019-20	566,391	145.469	99.3%	562,427	6,702	569,129
Total	\$5,694,480			\$1,344,358	\$6,976,509	\$8,320,867

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 2020-21 *
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)
2020-21	\$1.60	1.641	\$2.63

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)
2020-21	\$2.48	1.000	\$2.48

Program Year	Selected 2020-21 1M/500K SIR Loss Rate (7)	Projected 2020-21 Payroll (\$00's) (8)	Projected Ultimate Losses (9)
2020-21	\$2.63	\$663,305	\$1,746,671

* 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 68, 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 2020-21 (3)
2010-11	\$1,217,304	1.255	\$1,528,113
2011-12	600,483	1.227	736,854
2012-13	724,089	1.200	868,554
2013-14	933,839	1.173	1,094,968
2014-15	443,731	1.146	508,597
2015-16	1,090,000	1.120	1,221,250
2016-17	1,430,000	1.095	1,566,169
2017-18	1,400,000	1.071	1,498,839
2018-19	530,000	1.047	554,660
2019-20	760,000	1.023	777,480
Average 10-11 through 18-19:			\$1,064,223
(4) Projected 2020-21 Payroll (\$00's):			\$663,305
(5) Projected 2020-21 \$250K Limit Rate:			\$1.60

Notes:

- (1) Page 47, Column (6).
- (2) Estimated by BAC.
- (3) (1) x (2).
- (4) Page 68, 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 2020-21 (3)
2010-11	\$2,240,499	1.370	\$3,070,024
2011-12	902,244	1.328	1,197,957
2012-13	795,897	1.287	1,023,987
2013-14	1,683,839	1.247	2,099,222
2014-15	588,593	1.208	711,039
2015-16	1,240,000	1.171	1,451,510
2016-17	1,880,000	1.134	2,132,439
2017-18	1,820,000	1.099	2,000,371
2018-19	1,030,000	1.065	1,096,975
2019-20	1,690,000	1.032	1,744,080
	Average 10-11 through 18-19:		\$1,642,614
	(4) Projected 2020-21 Payroll (\$00's):		\$663,305
	(5) Projected 2020-21 \$1M Limit Rate:		\$2.48

Notes:

- (1) Page 33, Column (6).
- (2) Estimated by BAC.
- (3) (1) x (2).
- (4) Page 68, 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, 2020
 Assuming a 0.5% Interest Rate

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

Program Year	Projected Unpaid Losses (1)	Discount Factor (2)	Discounted Unpaid Losses (3)
2010-11	\$0	1.000	\$0
2011-12	0	1.000	0
2012-13	0	1.000	0
2013-14	0	1.000	0
2014-15	0	1.000	0
2015-16	51,061	1.000	51,061
2016-17	212,106	0.998	211,577
2017-18	646,766	0.996	644,117
2018-19	766,762	0.994	762,480
2019-20	1,533,220	0.991	1,519,035
Total	\$3,209,915		\$3,188,270

(4) Indicated Discount Factor: 0.993

Notes:

- (1) Page 24, Column (6).
- (2) (3) / (1).
- (3) Based upon a 0.5% 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 2020-21 Losses as of July 1, 2020
Assuming a 0.5% 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)
2020-21	\$67,699	0.998	\$67,530
2021-22	340,845	0.993	338,305
2022-23	714,530	0.988	705,676
2023-24	423,284	0.983	415,959
2024-25	200,313	0.978	195,867
2025-26	0	0.973	0
2026-27	0	0.968	0
2027-28	0	0.963	0
2028-29	0	0.958	0
2029-30	0	0.954	0
2030-31	0	0.949	0
Total	\$1,746,671		\$1,723,337

(4) Indicated Discount Factor: 0.987

Notes:

- (1) Based upon the observed payment pattern.
- (2) Based upon a 0.5% 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 2020-21 Losses as of July 1, 2020
 Assuming a 0.5% 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)
2020-21	\$17,048	0.998	\$17,006
2021-22	248,097	0.993	246,248
2022-23	691,973	0.988	683,398
2023-24	417,761	0.983	410,532
2024-25	199,891	0.978	195,455
2025-26	0	0.973	0
2026-27	0	0.968	0
2027-28	0	0.963	0
2028-29	0	0.958	0
2029-30	0	0.954	0
2030-31	0	0.949	0
Total	\$1,574,770		\$1,552,639

(4) Indicated Discount Factor: 0.986

Notes:

- (1) Based upon the observed payment pattern.
- (2) Based upon a 0.5% 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 (1)	B-F Method Using Reported (2)	Selected Ultimate Losses (3)
2010-11	\$187,503	\$187,503	\$187,503
2011-12	133,862	133,862	133,862
2012-13	123,331	123,331	123,331
2013-14	117,284	117,284	117,284
2014-15	104,675	104,673	104,673
2015-16	179,051	179,103	180,000
2016-17	208,398	208,358	209,000
2017-18	170,470	171,163	171,000
2018-19	109,465	105,534	108,000
2019-20	309,018	137,453	140,000
Total	\$1,643,057	\$1,468,264	\$1,474,654

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 12/31/19 (1)	Reported Development Factor as of 12/31/19 (2)	Projected Ultimate Losses (3)
2010-11	\$187,503	1.000	\$187,503
2011-12	133,862	1.000	133,862
2012-13	123,331	1.000	123,331
2013-14	117,284	1.000	117,284
2014-15	104,673	1.000	104,675
2015-16	178,926	1.001	179,051
2016-17	208,130	1.001	208,398
2017-18	168,321	1.013	170,470
2018-19	94,267	1.161	109,465
2019-20	37,383	8.266	309,018
Total	\$1,353,680		\$1,643,057

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 12/31/19 (5)	Estimated Ultimate Deductible Losses (6)
2010-11	\$219,773	1.000	0.0%	\$0	\$187,503	\$187,503
2011-12	106,186	1.000	0.0%	0	133,862	133,862
2012-13	125,415	1.000	0.0%	0	123,331	123,331
2013-14	158,425	1.000	0.0%	0	117,284	117,284
2014-15	73,733	1.000	0.0%	0	104,673	104,673
2015-16	177,403	1.001	0.1%	177	178,926	179,103
2016-17	227,962	1.001	0.1%	228	208,130	208,358
2017-18	218,598	1.013	1.3%	2,842	168,321	171,163
2018-19	81,056	1.161	13.9%	11,267	94,267	105,534
2019-20	113,846	8.266	87.9%	100,070	37,383	137,453
Total	\$1,502,397			\$114,584	\$1,353,680	\$1,468,264

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 - 12/31/19

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	455
2010	151	569	1,025	1,082	721	729	729	729	729	729	729
2011	76	819	2,507	2,500	2,304	2,334	2,240	2,240	2,240	2,240	
2012	19	278	593	856	896	996	903	902	902		
2013	55	343	454	777	703	934	796	796			
2014	7	1,443	1,714	2,384	2,359	2,359	1,684				
2015	13	534	685	589	589	589					
2016	55	828	1,339	1,160	1,185						
2017	13	1,619	2,544	1,764							
2018	277	1,500	1,522								
2019	102	380									
2020	232										
	<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	10.819	1.497	1.021	0.936	1.035	0.893	1.000	1.000	1.000	1.000	
AVG	42.414	1.555	1.111	0.944	1.043	0.938	1.000	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	10.819	1.555	1.111	1.036	1.025	1.007	1.000	1.000	1.000	1.000	1.000
CUMULATIVE	19.965	1.845	1.186	1.068	1.032	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 - 12/31/19

Program	Months of Development										
	<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
2007				386	406	401	401	401	401	401	401
2008			337	497	500	500	500	500	500	500	500
2009		151	255	274	306	372	455	454	455	455	455
2010	15	122	524	727	721	729	729	729	729	729	729
2011	5	194	646	1,932	2,200	2,221	2,240	2,240	2,240	2,240	
2012	13	113	177	387	897	899	902	902	902		
2013	3	124	373	702	703	716	796	796			
2014	4	478	935	2,311	2,324	2,329	1,684				
2015	10	56	510	589	589	589					
2016	13	142	575	1,072	1,134						
2017	7	309	966	1,608							
2018	21	243	679								
2019	15	75									
2020	7										
	<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	17.396	2.917	1.907	1.102	1.011	0.947	1.000	1.000	1.000	1.000	
AVG	28.634	3.490	1.815	1.169	1.023	1.008	1.000	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	28.634	3.490	1.815	1.102	1.037	1.008	1.000	1.000	1.000	1.000	1.000
CUMULATIVE	208.820	7.293	2.089	1.151	1.045	1.008	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)
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	545,055	1.000	10,000
2018-19	1,000,000	590,304	1.000	10,000
2019-20	1,000,000	625,741	1.000	10,000
2020-21	?	663,305	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).