



## **BRAINTREE CONTRIBUTORY RETIREMENT SYSTEM**

### **ACTUARIAL VALUATION as of**

**January 1, 2016**

Prepared by:

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Fellow, Society of Actuaries  
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November 15, 2016

Braintree Contributory Retirement Board  
Town of Braintree  
74 Pond Street, 2nd Floor  
Braintree, MA 02184

Dear Board Members:

We are pleased to present the enclosed report summarizing the results of our actuarial valuation of the Braintree Contributory Retirement System as of January 1, 2016.

Our valuation was performed in accordance with the provisions contained in Chapter 32 of the Massachusetts General Laws, "M.G.L.", as of January 1, 2016. Disclosures under GASB Statement No. 67, Financial Reporting for Pension Plans (GASB 67) and GASB Statement No. 68, Accounting and Financial Reporting for Pensions (GASB 68) are provided in a separate report.

The principal results of our valuation are summarized in Section 2. The summary of Plan provisions and actuarial methods and assumptions are shown in Sections 5 and 6, respectively. Section 7 summarizes the demographic profile of active members, retired plan members and beneficiaries and disabled plan members. Asset information and actuarial liabilities are presented in Section 2. The development of the required appropriations pursuant to Chapter 32 of the M.G.L. is shown in Section 3. The summary of information for PERAC is presented in Section 4.

We also provide a 30-year forecast of the required appropriations and cash flows in Section 3.

Our actuarial valuation is based on an investment return rate of 7.75%, compounded annually. Our calculations were based on participant census and asset data and other information provided by the Braintree Contributory Retirement Board and the benefit provisions of Chapter 32 of the M.G.L. as of January 1, 2016.

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K M S A C T U A R I E S

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Braintree Contributory Retirement Board

November 15, 2016

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Our valuation follows generally accepted actuarial methods and we perform such tests as we consider necessary to assure the accuracy of the results. The amounts presented in this report have been appropriately determined according to the actuarial assumptions and methods stated herein.

We appreciate this opportunity to be of service to the Braintree Contributory Retirement Board. We are available to answer any questions with respect to our valuation.

Respectfully submitted,

A handwritten signature in black ink that reads "Linda Bournival". The signature is written in a cursive, flowing style.

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Linda L. Bournival, FSA

Member, American Academy of Actuaries

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## ACTUARIAL CERTIFICATION

This report presents the results of the Actuarial Valuation for the Braintree Contributory Retirement System as of January 1, 2016. The report presents the funding schedule contribution amounts for the fiscal years beginning 2018.

This valuation is based upon member data provided by the Retirement Board and asset information reported to the Public Employee Retirement Administration Commission (PERAC) by the Braintree Contributory Retirement Board. Although we did not audit the data used in the valuation, we believe that the information is complete and reliable.

Future actuarial valuation results may differ significantly from the current results presented in this report. Examples of potential sources of volatility include plan experience differing from that anticipated by the economic or demographic assumptions, the effect of new entrants, changes in economic or demographic assumptions, the effect of law changes and the delayed effect of smoothing techniques.

This report was completed in accordance with generally accepted actuarial standards and procedures, and conforms to the Code of Professional Conduct of the American Academy of Actuaries. The actuarial assumptions used in the determination of costs are reasonably related to the experience of the System and to reasonable expectations, and represent our best estimate of anticipated long-term experience under the System.

This report is intended for the sole use of the Braintree Contributory Retirement Board and is intended to provide information to comply with the stated purpose of the report. It may not be appropriate for other purposes.

The undersigned credentialed actuaries are Members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries necessary to render the actuarial opinion contained herein. They are available to answer any questions with regard to this report.

Respectfully submitted,



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Linda L. Bournival, FSA  
Member, American Academy of Actuaries  
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## SECTION 1 - SUMMARY

### Background

We have completed the Actuarial Valuation of the Braintree Contributory Retirement System as of January 1, 2016. This valuation is based upon census data provided by the Retirement Board and asset information reported to the Public Employee Retirement Administration Commission (PERAC) by the Braintree Contributory Retirement Board. Information for the prior valuation completed as of January 1, 2014 was obtained from the valuation report prepared by KMS Actuaries, LLC.

### Massachusetts General Laws

The valuation was prepared in accordance with Chapter 32 of the Massachusetts General Laws ("M.G.L.").

The valuation does not take into consideration:

- Changes in the law after the valuation date,
- Transfers between retirement systems pursuant to Section 3(8)(c) of Chapter 32,
- State-mandated benefits and
- Cost-of-living increases granted to members in pay status between 1982 and 1997.

### GASB Statement Numbers 67 and 68

In June 2012, the GASB approved two related Statements that significantly change the way pension plans and governments will account and report pension liabilities. Effective for plans with fiscal years beginning after June 15, 2013, GASB Statement No. 67, Financial Reporting for Pension Plans, replaces the requirements of Statement No. 25 and effective for employers with fiscal years beginning after June 15, 2014, GASB Statement No. 68, Accounting and Financial Reporting for Pensions, replaces the requirements of Statement No. 27.

The new pension standards reflect changes from those currently in place regarding how governments calculate total pension liability and pension expense. Further, the new standards contain requirements for disclosing information in the notes to financial statements and presenting required supplementary information following the notes.

The required disclosures and notes under the new GASB Statements for the fiscal year ending December 31, 2015 are provided in a separate report.

### Actuarial Valuation

During the two years since the last valuation, the total unfunded actuarial accrued liability of the System was expected to decrease from \$82,944,825 as of January 1, 2014 to \$80,644,857 as of January 1, 2016, for a total decrease of \$2,299,968. The actual unfunded actuarial accrued liability, before any assumption or plan changes, was \$84,658,378, resulting in an actuarial loss of \$4,013,521. The actuarial loss was primarily due to an asset loss of \$724,571 and a demographic experience loss of \$3,288,950. The details of the gain and loss analysis are provided in Exhibit 2.6.

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## SECTION 1 - SUMMARY

### Appropriations

The funding appropriation for each year is computed as the sum of the normal cost and an amortization payment to pay off the Unfunded Actuarial Liability, adjusted for annual payments of the appropriation made at the beginning of each fiscal year. The appropriation calculated as of the January 1, 2016 valuation is \$10,809,691, and is made up of a normal cost payment of \$3,314,987, an amortization payment of \$7,364,650 and net 3(8)(c) transfers of \$130,054. The amortization method is an increasing amortization of the unfunded actuarial accrued liability at 4% over 17 years and is expected to fully pay the unfunded actuarial accrued liability by the year 2033. The development of the appropriation as of January 1, 2016 is presented in Exhibit 3.1.

For fiscal year 2017, we show the actual appropriation developed under the previous funding schedule and reported on the PERAC "Required Fiscal Year 2017 Appropriation" letter dated November 12, 2015 of \$9,165,831. For fiscal year 2018, we developed an annual appropriation of \$9,899,098, which is made up of a normal cost of \$3,578,689 and payment toward the unfunded actuarial accrued liability of \$6,320,409. The unfunded actuarial accrued liability is expected to be fully paid by 2033. The Board adopted a schedule that limits the annual increase in appropriations to 8% for each year. The current funding schedule is shown in Exhibit 3.2.

## SECTION 1 - SUMMARY

A summary of principal valuation results from the current valuation and the prior valuation follows. Changes in actuarial assumptions and methods and Plan provisions are discussed below, as well as changes in census data and asset information.

Valuation Date	<u>1/1/2016</u>	<u>1/1/2014</u>	<u>Increase/ (Decrease)</u>
<b>Summary of Member Data</b>			
Active Members	771	735	4.9%
Average Age	49.4	49.2	0.4%
Average Service	13.1	12.8	2.3%
Total Salary	\$45,214,072	\$38,444,353	17.6%
Average Salary	\$58,643	\$52,305	12.1%
Retired Members and Beneficiaries	445	437	1.8%
Average Age	75.6	74.9	0.9%
Total Annual Pension	\$12,755,623	12,021,546	6.1%
Average Annual Pension	\$28,664	\$27,509	4.2%
State Reimbursed COLAs	\$112,478	137,566	(18.2%)
Total System-Funded Pension	\$12,643,145	\$11,883,980	6.4%
Disabled Members	65	65	0.0%
Average Age	69.1	67.9	1.8%
Total Annual Pension	\$2,353,802	2,365,921	(0.5%)
Average Annual Pension	\$36,212	\$36,399	(0.5%)
State Reimbursed COLAs	\$50,553	54,093	(6.5%)
Total System-Funded Pension	\$2,303,249	\$2,311,828	(0.4%)
Inactive Members	106	80	32.5%
Annuity Savings Fund	1,223,829	\$974,031	25.6%
<b>Funded Status - Market Value of Assets</b>			
Actuarial Accrued Liability (AAL)	\$273,681,112	\$242,396,817	12.9%
Market Value of Assets (MVA)	\$167,233,859	\$165,581,123	1.0%
Unfunded Accrued Liability	\$106,447,253	\$76,815,694	38.6%
Funded Status	61.1%	68.3%	(10.5%)
<b>Funded Status - Actuarial Value of Assets</b>			
Actuarial Accrued Liability (AAL)	\$273,681,112	\$242,396,817	12.9%
Actuarial Value of Assets (AVA)	179,027,016	159,451,992	12.3%
Unfunded Accrued Liability	\$94,654,096	\$82,944,825	14.1%
Funded Status	65.4%	65.8%	(0.6%)

## SECTION 1 - SUMMARY

Valuation Date	<u>1/1/2016</u>	<u>1/1/2014</u>	<u>Increase/ (Decrease)</u>
<b>Normal Cost</b>			
Employer	\$2,964,987	\$2,035,896	45.6%
Employee	4,047,005	3,554,304	13.9%
Administrative Expenses	350,000	350,000	0.0%
Total Normal Cost	\$7,361,992	\$5,940,200	23.9%
<b>Appropriations</b>			
Fiscal Year 2016	N/A	\$8,771,129	N/A
Fiscal Year 2017	\$9,165,831	\$9,165,831	0.0%
Fiscal Year 2018	\$9,899,098	\$9,578,292	3.3%
Fiscal Year 2019	\$10,691,027	\$10,009,316	6.8%

### Actuarial Assumptions and Methods

Many Actuarial Assumptions and Methods used in this valuation have been changed since the last valuation, including the mortality tables and mortality improvement scales and the salary scale for both Group 1 and Group 4 employees. Changing these assumptions resulted in a net increase in the unfunded actuarial accrued liability of \$9,995,718 and an increase in the employer normal cost of \$745,469. The Actuarial Assumptions and Methods utilized in this valuation are detailed in Section 6, Actuarial Assumptions and Methods.

### Plan Provisions

All plan provisions are the same as those used in the prior valuation. The Plan provisions utilized in this valuation are detailed in Section 5, Summary of Plan Provisions.

### Census Data

As of January 1, 2016, there are 771 active members who may be eligible for benefits in the future, 445 retirees and beneficiaries, 106 inactive members and 65 disabled retirees. Summaries of the active, retired and disabled employees are included in Section 7, Demographic Information.

### Assets

This valuation is based upon asset information reported to the Public Employee Retirement Administration Commission (PERAC) by the Braintree Contributory Retirement Board. The market value of assets increased from \$165,581,123 as of January 1, 2014 to \$167,233,859 as of January 1, 2016. During the plan years ended 2014 and 2015, the market value rates of return were 5.76% and -1.65%, respectively.

The actuarial value of assets increased from \$159,451,992 as of January 1, 2014 to \$179,027,016 as of January 1, 2016. During the plan years ended 2014 and 2015, the actuarial rates of return were 8.07% and 6.99%, respectively.

## SECTION 2 - PRINCIPAL VALUATION RESULTS

### Exhibit 2.1 - Plan Assets

Asset information is reported annually to the Public Employee Retirement Administration Commission by the Braintree Contributory Retirement Board. The Market Value of Assets for the two most recent calendar years are as follows:

Calendar Year	2015	2014
<b>Trust Fund Composition at Year-End</b>		
Cash	\$3,512,759	\$3,826,186
Short-Term Investments	0	0
Fixed Income Securities	0	0
Equities	0	0
Pooled Short Term Funds	0	0
Pooled Domestic Equity Funds	40,891,900	41,594,079
Pooled International Equity Funds	31,050,868	33,120,540
Pooled Global Equity Funds	0	0
Pooled Domestic Fixed Income Funds	42,380,440	44,271,499
Pooled International Fixed Income Funds	3,640,106	4,222,932
Pooled Global Fixed Income Funds	0	0
Pooled Alternative Investments	1,112,305	1,258,113
Pooled Real Estate Funds	9,807,973	8,809,121
Pooled Domestic Balanced Funds	0	0
Pooled International Balanced Funds	0	0
Hedge Funds	8,148,642	8,303,074
PRIT Cash	0	0
PRIT Fund	26,626,714	27,418,367
Interest Due & Accrued	0	0
Prepaid Expenses	19,868	15,628
Accounts Receivable	124,816	64,102
Land	0	0
Buildings	0	0
Accumulated Depreciation - Buildings	0	0
Accounts Payable	(82,532)	(77,992)
Total Market Value of Assets	\$167,233,859	\$172,825,649

## SECTION 2 - PRINCIPAL VALUATION RESULTS

### Exhibit 2.1 - Plan Assets

Calendar Year	2015	2014
<b>Funds</b>		
Annuity Savings Fund	\$46,836,427	\$44,342,129
Annuity Reserve Fund	11,393,497	11,957,157
Military Service Fund	1,513	1,512
Pension Fund	2,774,843	2,576,669
Expense Fund	0	0
Pension Reserve Fund	106,227,579	113,948,182
Total Market Value of Assets	\$167,233,859	\$172,825,649
<b>Asset Activity</b>		
Market value as of Beginning of Year	\$172,825,649	\$165,581,123
Contributions and Receipts	13,533,129	13,536,047
Benefit Payments and Expenses	(16,298,067)	(15,770,656)
Investment Return	(2,826,852)	9,479,135
Market Value as of End of Year	\$167,233,859	\$172,825,649
<b>Computed Rate of Return</b>	-1.65%	5.76%

Returns and annualized past returns developed by PERAC are shown below. Information is obtained from the Annual Investment Reports published by PERAC for the years shown.

Year	1-Year Return	5-Year Return	Return (Since 1985)
2015	-1.06%	6.26%	8.56%
2014	5.92%	8.81%	8.89%
2013	13.65%	11.68%	9.00%
2012	12.56%	3.75%	8.83%
2011	1.06%	2.87%	8.70%
2010	11.41%	5.36%	9.00%
2009	20.63%	4.37%	8.91%
2008	-21.35%	2.99%	8.45%
2007	7.82%	12.92%	9.97%
2006	13.93%	9.25%	10.07%
2005	6.26%	6.41%	9.89%
2004	12.87%	5.68%	10.07%
2003	24.61%	5.81%	10.51%

## SECTION 2 - PRINCIPAL VALUATION RESULTS

### Exhibit 2.1 - Plan Assets

Valuation Date	1/1/2016	1/1/2015	
<b>1. Market Value of Assets as of prior January 1</b>	\$172,825,649	\$165,581,123	
a. Prior Year Contributions and Receipts	13,533,129	13,536,047	
b. Prior Year Benefit Payments and Expenses	(16,298,067)	(15,770,656)	
c. Expected Investment Return Rate, prior valuation	7.750%	7.750%	
d. Expected Investment Return	13,286,846	12,745,946	
e. Expected Market Value of Assets as of Valuation Date	\$183,347,557	\$176,092,460	
<b>2. Prior Year Gain / (Loss)</b>			
a. Market Value of Assets as of January 1	\$167,233,859	\$172,825,649	
b. Expected Market Value of Assets	183,347,557	176,092,460	
c. Prior Year Gain / (Loss)	(16,113,698)	(3,266,811)	
<b>3. Phase-In of Asset Gains and Losses</b>			
Plan Year	Gain / (Loss)	Unrecognized Gain / (Loss)	Unrecognized Gain / (Loss)
a. 2015	(\$16,113,698)	(\$12,085,274)	\$0
b. 2014	(3,266,811)	(1,633,406)	(2,450,108)
c. 2013	7,702,094	1,925,523	3,851,047
d. 2012	5,707,098	-	1,426,774
e. Total deferred gains/(losses)		(11,793,157)	2,827,713
<b>4. Actuarial Value of Assets</b>			
a. Market Value of Assets Less Unrecognized Gain / (Loss)		\$179,027,016	\$169,997,936
b. 90% of Market Value of Assets		150,510,473	155,543,084
c. 110% of Market Value of Assets		183,957,245	190,108,214
d. Actuarial Value of Assets, a., but not less than b. and not greater than c.		\$179,027,016	\$169,997,936
e. Ratio of Actuarial Value of Assets to Market Value of Assets		107.05%	98.36%
<b>5. Rate of Return on Actuarial Value of Assets for     Prior Calendar Year</b>		6.99%	8.07%

## SECTION 2 - PRINCIPAL VALUATION RESULTS

The **Actuarial Present Value of Future Benefits** is the present value of the cost to finance all benefits payable in the future, discounted to reflect the probability of payment and the time value of money. Below is the Actuarial Present Value of Future Benefits from the current valuation and the prior valuation:

### Exhibit 2.2 - Actuarial Present Value of Future Benefits

Valuation Date	<u>1/1/2016</u>	<u>1/1/2014</u>
<b>Actives</b>		
Superannuation	\$156,189,300	\$124,584,099
Termination	3,685,200	3,419,795
Death	7,725,892	5,571,856
Disability	29,206,019	25,175,455
Total Actives	\$196,806,411	\$158,751,205
<b>Retired Members and Inactives</b>		
Retired Members and Beneficiaries	\$113,649,185	\$107,090,314
Disabled Members	23,909,915	24,343,834
Inactive Members	1,223,829	974,031
Total Retired Members and Inactives	\$138,782,929	\$132,408,179
<b>Total Present Value of Future Benefits</b>	<b>\$335,589,340</b>	<b>\$291,159,384</b>

The **Actuarial Accrued Liability** is the portion of the Actuarial Present Value of Future Benefits which is allocated to all periods prior to a valuation year and therefore is not provided for by future Normal Costs. Below is the Actuarial Accrued Liability from the current valuation and the prior valuation:

### Exhibit 2.3 - Actuarial Accrued Liability

Valuation Date	<u>1/1/2016</u>	<u>1/1/2014</u>
<b>Actives</b>		
Superannuation	\$115,025,351	\$92,313,395
Termination	2,713,959	2,533,974
Death	3,656,393	2,774,740
Disability	13,502,480	12,366,529
Total Actives	\$134,898,183	\$109,988,638
<b>Retired Members and Inactives</b>		
Retired Members and Beneficiaries	\$113,649,185	\$107,090,314
Disabled Members	23,909,915	24,343,834
Inactive Members	1,223,829	974,031
Total Retired Members and Inactives	\$138,782,929	\$132,408,179
<b>Total Actuarial Accrued Liability</b>	<b>\$273,681,112</b>	<b>\$242,396,817</b>

## SECTION 2 - PRINCIPAL VALUATION RESULTS

The **Normal Cost** is the portion of the Actuarial Present Value of Future Benefits which is allocated to a valuation year. Only active employees who have not reached Normal Retirement Age incur a Normal Cost. Below is the Normal Cost from the current valuation and the prior valuation:

### Exhibit 2.4 - Normal Cost

Valuation Date	<u>1/1/2016</u>	<u>1/1/2014</u>
<b>Actives</b>		
Superannuation	\$4,148,308	\$3,240,340
Termination	680,470	609,971
Death	485,458	330,279
Disability	1,697,756	1,409,610
Total Actives	\$7,011,992	\$5,590,200
As a Percentage of Salary	15.5%	14.5%
<b>Administrative Expenses</b>		
As a Percentage of Salary	\$350,000 0.8%	\$350,000 0.9%
<b>Total Normal Cost</b>		
Normal Cost	\$7,361,992	\$5,940,200
As a Percentage of Salary	16.3%	15.5%
<b>Employee Normal Cost</b>		
Employee Contributions	\$4,047,005	\$3,554,304
As a Percentage of Salary	9.0%	9.2%
<b>Employer Normal Cost</b>		
Employer Normal Cost	\$3,314,987	\$2,385,896
As a Percentage of Salary	7.3%	6.2%

### Exhibit 2.5 - Unfunded Actuarial Accrued Liability

Valuation Date	<u>1/1/2016</u>	<u>1/1/2014</u>
<b>Unfunded Actuarial Accrued Liability</b>		
a. Actuarial Accrued Liability	\$273,681,112	\$242,396,817
b. Actuarial Value of Assets	179,027,016	159,451,992
c. Unfunded Actuarial Accrued Liability (a. - b.)	\$94,654,096	\$82,944,825
d. Funded Ratio (b. divided by a.)	65.4%	65.8%

## SECTION 2 - PRINCIPAL VALUATION RESULTS

### Exhibit 2.6 - Actuarial Experience

In performing the actuarial valuation, various assumptions are made regarding mortality, retirement, disability and withdrawal rates as well as salary increases and investment returns. A comparison of the results of the current valuation and the prior valuation is made to determine how closely actual experience relates to expected. During the two years since the last valuation, the total unfunded actuarial accrued liability of the System was expected to decrease by \$2,299,968. Below is the development of the actuarial loss for the current 2-year period:

Calendar Year Ending	<u>12/31/2015</u>	<u>12/31/2014</u>
<b>Expected Unfunded Actuarial Accrued Liability</b>		
a. Unfunded Actuarial Accrued Liability, beginning of year	\$81,713,046	\$82,944,825
b. Normal cost, beginning of year	\$6,177,808	5,940,200
c. Total contributions	(13,533,129)	(13,536,047)
d. Interest (full year on a. and b., one-half year on c.)	6,287,132	6,364,068
e. Expected Unfunded Actuarial Accrued Liability	\$80,644,857	\$81,713,046
f. Unfunded Actuarial Accrued Liability (before changes)	\$84,658,378	
g. (Gain)/Loss	\$4,013,521	
<b>Asset (Gain)/Loss</b>		
a. Actuarial value of assets, beginning of year	\$169,997,936	\$159,451,992
b. Contributions and Receipts	13,533,129	13,536,047
c. Benefit Payments and Expenses	(16,298,067)	(15,770,656)
d. Assumed rate of return, prior valuation	7.750%	7.750%
e. Expected return	13,067,699	12,270,938
f. Actuarial value of assets, end of year	179,027,016	169,997,936
g. Actual return	11,794,018	12,780,553
h. Actual rate of return	6.99%	8.07%
i. Asset gain/(loss)	(1,273,681)	509,615
j. Total asset gain/(loss), 2-year period	(\$724,571)	
<b>Actual Unfunded Actuarial Accrued Liability</b>		
a. Changes due to:		
i) Asset (gain)/loss	\$724,571	
ii) (Gain)/loss from demographic experience	3,288,950	
iii) (Gain)/loss prior to changes	4,013,521	
iv) Assumption change - Mortality	7,476,602	
v) Assumption change - Salary Scale	2,519,116	
vi) Total changes	14,009,239	
b. Unfunded Actuarial Accrued Liability	\$94,654,096	

## SECTION 3 - CHAPTER 32 OF M.G.L. APPROPRIATIONS

### Exhibit 3.1 - Annual Appropriations

The **Annual Appropriation** is determined in accordance with the requirements set forth in Sections 22D and 22F of Chapter 32 of the Massachusetts General Laws ("M.G.L."). The appropriation is comprised of the annual employer normal cost, amortization payments to pay the unfunded actuarial accrued liability and net 3(8)(c) transfers. Below are the details of the annual appropriation as of the current valuation.

#### Amortization Payments

a.	Early Retirement Incentive (2002)	
	Fully Funded Year	2019
	Balance as of valuation date	\$30,122
	Amortization Amount	\$10,799
	Remaining Payment Period	3
b.	Early Retirement Incentive (2003)	
	Fully Funded Year	2020
	Balance as of valuation date	\$15,694
	Amortization Amount	\$4,373
	Remaining Payment Period	4
c.	Early Retirement Incentive (2010)	
	Fully Funded Year	2022
	Balance as of valuation date	\$581,665
	Amortization Amount	\$115,889
	Remaining Payment Period	6
d.	Remaining Unfunded Actuarial Liability	
	Fully Funded Year	2033
	Balance as of valuation date	\$94,026,615
	Amortization Amount	\$7,233,589
	Remaining Payment Period	17
e.	Total Amortization Payments	\$7,364,650
	<b>Normal Cost</b>	\$3,314,987
	<b>Net 3(8)(c) Transfers</b>	\$130,054
	<b>Total Appropriation as of January 1, 2016</b>	\$10,809,691

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## SECTION 3 - CHAPTER 32 OF M.G.L. APPROPRIATIONS

**Exhibits 3.2 and 3.3**, are based on the assumptions below:

Exhibit 3.2:

- Employer Normal Cost is expected to increase 4% per year.
- The Unfunded Actuarial Accrued Liability ("UAL") is computed as of January 1 of each year assuming no future gains or losses.
- The Amortization Payment of UAL is to be paid over 17 years through 2033, with the increase in total appropriations limited to 4%.
- The Amortization Payments of the Early Retirement Incentive programs (ERI) are level amortizations of the UAL attributable to the ERI programs for 2002, 2003 and 2010 over 3 years, 4 years and 6 years, respectively.
- Net 3(8)(c) transfers are a level dollar amount based on the net transfers expected to be paid by the Braintree Contributory Retirement Board during the current year offset by the amount received during the same period.
- Total Employer Cost is the sum of the Employer Normal Cost, the Amortization Payments of the UAL and the ERI programs and the Net 3(8)(c) Transfers, all computed as of January 1 of each year and adjusted for annual payments made on July 1. The increase in annual appropriations is further limited to 8% per year.
- For fiscal year 2017, we show the actual appropriation developed under the previous funding schedule of \$9,165,831.

Exhibit 3.3:

- Expected benefit payments include payments expected to be made to retired members, beneficiaries, disabled members and active members expected to retire. In addition, expected benefit payments include distribution of the annuity savings fund attributed to inactive members.
- Benefit payments exclude cost-of-living increases granted to members in pay status between 1982 and 1997. In addition, benefit payments are as expected for the first ten years of the forecast, then increase by the greater of 4.50% per year thereafter or the expected future payments for the current population projected by our computer model.
- Calendar year cash flow entries are developed as of each January 1.

## SECTION 3 - CHAPTER 32 OF M.G.L. APPROPRIATIONS

### Exhibit 3.2 - 30-Year Forecast of Annual Appropriations

Fiscal Year Ending	Employer Normal Cost	Amortization Payment of UAL	Amortization Payment of ERI 2002	Amortization Payment of ERI 2003	Amortization Payment of ERI 2010	Net 3(8)(c) Transfers	Total Employer Cost	Unfunded Actuarial Accrued Liability
2017	\$3,441,045	\$5,453,741	\$11,210	\$4,539	\$120,296	\$135,000	\$9,165,831	94,654,096
2018	3,578,689	6,049,364	11,210	4,539	120,296	135,000	9,899,098	96,187,440
2019	3,721,838	6,698,144	11,210	4,539	120,296	135,000	10,691,027	97,221,346
2020	3,870,710	7,415,764	-	4,538	120,296	135,000	11,546,308	97,661,928
2021	4,025,538	8,189,179	-	-	120,296	135,000	12,470,013	97,403,383
2022	4,186,559	9,025,759	-	-	120,295	135,000	13,467,613	96,326,686
2023	4,354,023	10,055,999	-	-	-	135,000	14,545,022	94,298,154
2024	4,528,184	11,041,615	-	-	-	135,000	15,704,799	91,167,862
2025	4,709,312	11,483,280	-	-	-	135,000	16,327,592	86,771,877
2026	4,897,684	11,942,611	-	-	-	135,000	16,975,295	81,576,743
2027	5,093,591	12,420,316	-	-	-	135,000	17,648,907	75,502,188
2028	5,297,335	12,917,129	-	-	-	135,000	18,349,464	68,460,985
2029	5,509,229	13,433,814	-	-	-	135,000	19,078,043	60,358,383
2030	5,729,599	13,971,166	-	-	-	135,000	19,835,765	51,091,496
2031	5,958,782	14,530,012	-	-	-	135,000	20,623,794	40,548,639
2032	6,197,135	15,111,213	-	-	-	135,000	21,443,348	28,608,614
2033	6,445,019	15,715,661	-	-	-	135,000	22,295,680	15,139,935
2034	6,702,820	-	-	-	-	135,000	6,837,820	-
2035	6,970,933	-	-	-	-	135,000	7,105,933	-
2036	7,249,772	-	-	-	-	135,000	7,384,772	-
2037	7,539,761	-	-	-	-	135,000	7,674,761	-
2038	7,841,352	-	-	-	-	135,000	7,976,352	-
2039	8,155,007	-	-	-	-	135,000	8,290,007	-
2040	8,481,207	-	-	-	-	135,000	8,616,207	-
2041	8,820,456	-	-	-	-	135,000	8,955,456	-
2042	9,173,273	-	-	-	-	135,000	9,308,273	-
2043	9,540,205	-	-	-	-	135,000	9,675,205	-
2044	9,921,812	-	-	-	-	135,000	10,056,812	-
2045	10,318,686	-	-	-	-	135,000	10,453,686	-
2046	10,731,433	-	-	-	-	135,000	10,866,433	-

## SECTION 3 - CHAPTER 32 OF M.G.L. APPROPRIATIONS

### Exhibit 3.3 - 30-Year Forecast of Cash Flow

Calendar Year	Assets, BOY	Benefit Payments	Employee Contributions	Employer Contributions	Investment Return	Assets, EOY
2016	\$167,233,859	\$17,564,510	\$4,047,005	\$8,830,051	\$13,277,971	\$175,824,376
2017	175,824,376	17,107,606	4,208,885	9,536,454	14,028,733	186,490,842
2018	186,490,842	18,014,489	4,377,240	10,299,371	14,892,416	198,045,380
2019	198,045,380	18,946,718	4,552,330	11,123,321	15,829,195	210,603,508
2020	210,603,508	19,933,201	4,734,423	12,013,187	16,847,300	224,265,217
2021	224,265,217	20,956,839	4,923,800	12,974,242	17,955,575	239,161,995
2022	239,161,995	22,005,108	5,120,752	14,012,181	19,165,159	255,454,979
2023	255,454,979	23,065,223	5,325,582	15,129,471	20,489,250	273,334,059
2024	273,334,059	24,135,717	5,538,605	15,729,448	21,896,405	292,362,800
2025	292,362,800	25,339,198	5,760,149	16,353,424	23,390,025	312,527,200
2026	312,527,200	26,617,554	5,990,555	17,002,358	24,971,379	333,873,938
2027	333,873,938	27,915,973	6,230,177	17,677,251	26,646,312	356,511,705
2028	356,511,705	29,244,188	6,479,384	18,379,139	28,422,980	380,549,020
2029	380,549,020	30,560,176	6,738,559	19,109,103	30,311,536	406,148,042
2030	406,148,042	31,935,384	7,008,101	19,868,264	32,321,895	433,410,918
2031	433,410,918	33,372,476	7,288,425	20,657,793	34,461,995	462,446,655
2032	462,446,655	34,874,237	7,579,962	21,478,902	36,740,301	493,371,583
2033	493,371,583	36,443,578	7,883,160	6,587,324	37,945,572	509,344,061
2034	509,344,061	38,083,539	8,198,486	6,845,615	39,164,345	525,468,968
2035	525,468,968	39,797,298	8,526,425	7,114,238	40,393,851	541,706,184
2036	541,706,184	41,588,176	8,867,482	7,393,605	41,630,922	558,010,017
2037	558,010,017	43,459,644	9,222,181	7,684,147	42,871,956	574,328,657
2038	574,328,657	45,415,328	9,591,068	7,986,311	44,112,874	590,603,582
2039	590,603,582	47,459,018	9,974,711	8,300,561	45,349,074	606,768,910
2040	606,768,910	49,594,674	10,373,699	8,627,382	46,575,381	622,750,698
2041	622,750,698	51,826,434	10,788,647	8,967,275	47,785,989	638,466,175
2042	638,466,175	54,158,624	11,220,193	9,320,764	48,974,406	653,822,914
2043	653,822,914	56,595,762	11,669,001	9,688,392	50,133,388	668,717,933
2044	668,717,933	59,142,571	12,135,761	10,070,726	51,254,868	683,036,717
2045	683,036,717	61,803,987	12,621,191	10,468,353	52,329,881	696,652,155

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## SECTION 4 - REQUIRED DISCLOSURES

### Exhibit 4.1 - GASB 67 and GASB 68 Disclosures

In June 2012, the GASB approved two related Statements that significantly changed the way pension plans and governments account and report pension liabilities. Effective for plans with fiscal years beginning after June 15, 2013, GASB Statement No. 67, *Financial Reporting for Pension Plans*, replaced the requirements of Statement No. 25 and effective for employers with fiscal years beginning after June 15, 2014, GASB Statement No. 68, *Accounting and Financial Reporting for Pensions*, replaced the requirements of Statement No. 27.

The new pension standards reflect changes from those currently in place regarding how governments calculate total pension liability and pension expense. Further, the new standards contain requirements for disclosing information in the notes to financial statements and presenting required supplementary information following the notes.

GASB 67 requires defined benefit pension plans, such as the Braintree Contributory Retirement System, to present a statement of fiduciary net position (pension plan assets) and a statement of changes in fiduciary net position. Further, the statement requires that notes to financial statements include descriptive information such as the types of benefits provided, the classes of plan members covered and the composition of the pension plan's retirement board. Finally, GASB 67 requires pension plans to present in required supplementary information the sources of the changes in the net pension liability and information about the actuarially determined contributions compared with the actual contributions made to the plan and related ratios.

GASB 67 and GASB 68 require projected benefit payments be discounted to their actuarial present value using the single rate that reflects:

- (1) a long-term expected rate of return on pension plan investments *to the extent that the pension plan's assets are sufficient to pay benefits and pension plan assets are expected to be invested using a strategy to achieve that return and*
- (2) a tax-exempt, high-quality municipal bond rate *to the extent that the conditions for use of the long-term expected rate of return are not met.*

GASB 68 establishes standards for measuring and recognizing liabilities, deferred outflows of resources, deferred inflows of resources and pension expense by state and local governments.

The effective date for GASB 67 is for plan years beginning after June 15, 2013, which is fiscal year ending December 31, 2014 for the Braintree Contributory Retirement System. The effective date for GASB 68 is for employers' fiscal years beginning after June 15, 2014. The GASB report, submitted under separate cover and prepared as of December 31, 2015 (the measurement date), presents information to assist the Braintree Contributory Retirement System in providing the required information under GASB 68 to participating employers.

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## SECTION 4 - REQUIRED DISCLOSURES

The most recent actuarial valuation of the System was prepared by KMS Actuaries, LLC as of January 1, 2016.

The normal cost for employees on that date was:	\$4,047,005	9.0% of payroll
The normal cost for the employer was:	\$3,314,987	7.3% of payroll

The actuarial liability for active members was:	\$134,898,183
The actuarial liability for retired and inactive members was:	138,782,929
Total actuarial liability:	\$273,681,112
System assets as of that date:	\$179,027,016
Unfunded actuarial accrued liability:	\$94,654,096

The ratio of System assets to total actuarial accrued liability was: 65.4%

The principal actuarial assumptions used in the valuation are as follows:

Investment Return:	7.75%
Rates of Salary Increase:	6%-4.25% for Groups 1 and 2 (based on service) 7%-4.75% for Group 4 (based on service)

See Section 6 - Actuarial Assumptions and Methods for full set of assumptions.

## SECTION 5 - SUMMARY OF PLAN PROVISIONS

### Administration

There are 105 contributory retirement systems for public employees in Massachusetts. Each system is governed by a retirement board and all boards, although operating independently, are governed by Chapter 32 of the Massachusetts General Laws and other applicable statutes. This law in general provides uniform benefits, uniform contribution requirements and a uniform accounting and funds structure for all systems.

### Participation

Participation is mandatory for all full-time employees. Eligibility with respect to part-time, provisional, temporary, seasonal or intermittent employment is governed by regulations promulgated by the local retirement board, and approved by PERAC. Membership is optional for certain elected officials.

There are four classes of membership in the Retirement System:

- |          |  |
|----------|--|
| Group 1: | General employees, including clerical, administrative, technical and all other employees not otherwise classified. |
| Group 2: | Certain specified hazardous duty positions.  |
| Group 3: | State police officers and inspectors.  |
| Group 4: | Local police officers, firefighters and other specified hazardous positions.                                       |

For members in more than one group, participation will be proportional.

### Member Contributions

Member contributions vary depending on the most recent date of membership:

Prior to 1975:	5% of Salary
1975 – 1983:	7% of Salary
1984 – June 30, 1996:	8% of Salary
July 1, 1996 – present:	9% of Salary
1979 – present:	An additional 2% of Salary in excess of \$30,000.
Group 1 members hired on or after April 2, 2012:	6% of Salary with 30 or more years of creditable service.

### Rate of Interest

Interest on regular deductions made after January 1, 1984 is a rate established by PERAC in consultation with the Commissioner of Banks. The rate is obtained from the average rates paid on individual savings accounts by a representative sample of at least ten financial institutions.

## SECTION 5 - SUMMARY OF PLAN PROVISIONS

<b>Retirement Age</b>	The mandatory retirement age for some Group 2 and Group 4 members is age 65. Most Group 2 and Group 4 members may remain in service after reaching age 65. Group 4 members who are employed in certain public safety positions are required to retire at age 65. There is no mandatory retirement age for members in Group 1.
<b>Salary</b>	Gross regular compensation. This does not include bonuses, overtime, severance pay, unused sick leave credit or other similar compensation.
<b>Average Salary</b>	<p>Membership before April 2, 2012: Average annual rate of regular compensation received during the three consecutive years that produce the highest average, or, if greater, during the last three years (whether or not consecutive) preceding retirement.</p> <p>Membership on or after April 2, 2012: Average annual rate of regular compensation received during the five consecutive years that produce the highest average, or, if greater, during the last five years (whether or not consecutive) preceding retirement.</p>
<b>Creditable Service</b>	The period during which a member contributes to the retirement system plus certain periods of military service and “purchased” service.
<b>Benefit Rate</b>	The benefit rate varies with the member's retirement age, Group, membership date and years of creditable service at retirement. Each year a member retires prior to the age at which the 2.5% maximum benefit rate applies, a reduction is applied to each year of age under the maximum age. The maximum age and reduction for each Group and membership date is as follows:

	<u>Group 1</u>	<u>Group 2</u>	<u>Group 4</u>
2.5% for Membership before April 2, 2012:			
Maximum age:	65	60	55
Reduction:	0.1%	0.1%	0.1%
2.5% for Membership on or after April 2, 2012 (less than 30 years of service):			
Maximum age:	67	62	57
Reduction:	0.15%	0.15%	0.15%
2.5% for Membership on or after April 2, 2012 (30+ years of service):			
Maximum age:	67	62	57
Reduction:	0.125%	0.125%	0.125%

Braintree Contributory Retirement System  
Actuarial Valuation as of January 1, 2016

## SECTION 5 - SUMMARY OF PLAN PROVISIONS

### Superannuation Retirement

Eligibility if membership before April 2, 2012:	<ul style="list-style-type: none"><li>• completion of 20 years of Creditable Service, or</li><li>• attainment of age 55 if hired prior to 1978, or</li><li>• attainment of age 55 with 10 years of Creditable Service, if hired after 1978.</li></ul>
Eligibility if membership on or after April 2, 2012:	<ul style="list-style-type: none"><li>• attainment of age 60 with 10 years of Creditable Service if classified in Group 1</li><li>• attainment of age 55 with 10 years of Creditable Service if classified in Group 2</li><li>• attainment of age 55 if hired prior to 1978 or if classified in Group 4</li></ul>
Benefit Amount	Product of the member's Benefit Rate, Average Salary and Creditable Service.
Maximum Benefit	80% of the member's Average Salary.
Veteran's Benefit	Additional benefit of \$15 per year of Creditable Service, up to a maximum of \$300.

### Deferred Vested

Eligibility	<ul style="list-style-type: none"><li>• completion of ten or more years of Creditable Service.</li><li>• elected officials hired prior to 1978, completion of six years of Creditable Service.</li></ul>
Benefit Amount	Accrued benefit payable commencing at age 55, or the completion of 20 years of Creditable Service, or may be deferred until later at the participant's option.

## SECTION 5 - SUMMARY OF PLAN PROVISIONS

**Withdrawal of Contributions**

Contributions may be withdrawn upon termination of employment.

- Members who voluntarily terminate with at least ten years of creditable service will receive 100% of the regular interest that has accrued to the Annuity Savings Account.
- Members who voluntarily terminate with fewer than ten years of creditable service will receive interest on the Annuity Savings Account at the annual rate of 3%.

**Ordinary Disability Retirement**

Eligibility

Non-job related disability after completion of ten years of Creditable Service.

Benefit Amount for Group 1 membership before April 2, 2012 or Group 2 or Group 4

Superannuation benefit determined as if the member is age 55, up to a maximum of 80% of Average Salary over three years. If the member is a veteran, 50% of final rate of salary (final year) plus an annuity based on the accumulated member contributions plus credited interest, up to a maximum of 80% of Average Salary over five years.

Benefit Amount for Group 1 membership on or after April 2, 2012

Superannuation benefit determined as if the member is age 60, up to a maximum of 80% of Average Salary over three years. If the member is a veteran, 50% of final rate of salary (final year) plus an annuity based on the accumulated member contributions plus credited interest, up to a maximum of 80% of Average Salary over five years.

**Accidental Disability Retirement**

Eligibility

Disabled as a result of an accident in the performance of duties. There is no minimum age or service requirement.

Benefit Amount

72% of Salary plus an annuity based on accumulated member contributions plus credited interest.

Maximum Benefit

75% of Salary if hired on or after January 1, 1988.

Veteran's Benefit

Additional allowance of \$15 per year of Creditable Service, up to a maximum of \$300.

Supplemental

Additional allowance of \$415 per year for each child.

## SECTION 5 - SUMMARY OF PLAN PROVISIONS

<b>Non-Occupational Death</b>	Eligibility	For members with at least two years of creditable service who die while in active service, but not due to occupational injury.
	Benefit Amount	Benefit as if Option C had been elected. Minimum benefit of \$250 per month for surviving spouse, \$120 per month for first child and \$90 per month for each additional child.
<b>Accidental Death</b>	Eligibility	For members who die as a result of an occupational injury.
	Benefit Amount	72% of Salary plus an annuity based on accumulated member contributions plus credited interest.
	Maximum Benefit	100% of Salary if hired before January 1, 1988, otherwise 75% of Salary.
	Veteran's Benefit	Additional allowance of \$15 per year of creditable service, up to a maximum of \$300.
	Supplemental Dependent Allowance	Additional allowance of \$708.60 per year for each child until age 18 (or age 22 if a full-time student).
<b>Cost-of-Living Adjustment (COLA)</b>		In accordance with the adoption of Chapter 17 of the Acts of 1997, the granting of a Cost-of-Living Adjustment will be determined by an annual vote by the Retirement Board. The amount of increase will be based upon the Consumer Price Index, limited to a maximum of 3.0%, beginning on July 1. All retirees, disabled retirees and beneficiaries who have been receiving benefit payments for at least one year as of July 1 are eligible for the adjustment. The maximum amount of pension benefit subject to a COLA is \$12,000. All COLAs granted to members after 1981 and prior to July 1, 1998 are deemed to be an obligation of the Commonwealth of Massachusetts and are not the liability of the Retirement System.
<b>Optional Forms of Payment</b>		A member may elect to receive his or her retirement allowance in one of three forms of payment: <ul style="list-style-type: none"><li>• Option A – Life annuity.</li><li>• Option B – Life annuity with death benefit equal to excess of member contributions plus credited interest to retirement over annuity benefit paid to member.</li><li>• Option C – Life annuity with 66⅔% of benefit continued to designated joint annuitant upon death of member.</li></ul>

## SECTION 6 - ACTUARIAL ASSUMPTIONS AND METHODS

**Valuation Date:** January 1, 2016

**Investment Return:** 7.75% per year.

The investment return assumption is a long-term assumption based on capital market expectations by asset class, historical returns and professional judgment. We considered analysis prepared by PRIM's investment advisor using a building block approach and using the target asset allocation, expected returns by asset class and risk analysis to determine a long-term expected average annual rate of return.

**Annuity Savings Fund Interest Rate:** 2.00% per year

**Amortization Method:**

*Unfunded Actuarial Accrued Liability (UAL):*

Increasing dollar amount at 4% to reduce the Unfunded Actuarial Accrued Liability to zero on or before June 30, 2033. No change from prior valuation.

*Early Retirement Incentive Programs (ERI):*

2002 ERI is amortized as a level dollar amount to reduce the liability to zero on June 30, 2019.

2003 ERI is amortized as a level dollar amount to reduce the liability to zero on June 30, 2020.

2010 ERI is amortized as a level dollar amount to reduce the liability to zero on June 30, 2022.

**Salary Scale:**

The assumed annual rates for salary increases including longevity are illustrated by the following rates:

<u>Service</u>	<u>Groups 1 and 2</u>	<u>Group 4</u>
0	6.00%	7.00%
1	5.50%	6.50%
2	5.50%	6.00%
3	5.25%	5.75%
4	5.25%	5.25%
5	4.75%	5.25%
6	4.75%	4.75%
7	4.50%	4.75%
8	4.50%	4.75%
9	4.25%	4.75%

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## SECTION 6 - ACTUARIAL ASSUMPTIONS AND METHODS

The salary scale assumption is a long-term estimate derived from historical data, current and recent market expectations and professional judgment.

**Cost-of-Living Allowance:** Cost-of-Living Allowances (COLA) are assumed to be 3% of the pension amount, capped at \$360 per year. No change from prior valuation.

**Mortality Table:** RP-2000 Mortality Table (base year 2009) with full generational mortality improvement using Scale BB. For disabled members, RP-2000 Mortality Table (base year 2012) with full generational mortality improvement using Scale BB. Previously, RP-2000 Mortality Table projected to 2020 for pre-retirement and 2015 for post-retirement with Scale AA.

*General Employees:* 50% of deaths are job-related.

*Police and Fire:* 50% of deaths are job-related.

The underlying tables with generational mortality improvement reasonably reflect the mortality experience of the System as of the valuation date based on historical and current demographic data. Further, PERAC reviewed a sampling of a few larger local retirement systems and compared the results with the results found in performing the analysis of the State Retirement System for years 2012 - 2014. For the State Retirement System analysis, the mortality assumptions reflect the recent experience study published in 2014.

## SECTION 6 - ACTUARIAL ASSUMPTIONS AND METHODS

**Turnover Rates:** Illustrative turnover rates are shown below:

<u>Creditable Service</u>	<u>Groups 1 and 2</u>	<u>Group 4</u>
0	15.0%	1.5%
1	12.0%	1.5%
2	10.0%	1.5%
3	9.0%	1.5%
4	8.0%	1.5%
5	7.6%	1.5%
6	7.5%	1.5%
7	6.7%	1.5%
8	6.3%	1.5%
9	5.9%	1.5%
10	5.4%	1.5%
11	5.0%	0.0%
20	2.0%	0.0%
30	0.0%	0.0%

**Disability Rates:** Illustrative disability rates are shown below:

<u>Attained Age</u>	<u>Groups 1 and 2</u>	<u>Group 4</u>
20	0.03%	0.10%
25	0.04%	0.12%
30	0.06%	0.18%
35	0.08%	0.26%
40	0.12%	0.38%
45	0.18%	0.58%
50	0.31%	0.98%
55	0.50%	1.60%
60	0.61%	1.97%

*General Employees:* 67% of disabilities are accidental and 33% are ordinary.

*Police and Fire:* 90% of disabilities are accidental and 10% are ordinary.

## SECTION 6 - ACTUARIAL ASSUMPTIONS AND METHODS

**Retirement Rates:** Illustrative retirement rates are shown below:

<u>Age</u>	<u>Groups 1 and 2</u>		<u>Group 4</u>
	<u>Male</u>	<u>Female</u>	<u>Male &amp; Female</u>
50	0%	0%	2%
51	0%	0%	2%
52	0%	0%	2%
53	0%	0%	2%
54	0%	0%	2%
55	10%	10%	5%
56	3%	3%	5%
57	3%	3%	5%
58	3%	3%	5%
59	5%	5%	5%
60	5%	5%	10%
61	5%	5%	10%
62	10%	10%	20%
63	10%	10%	20%
64	10%	10%	20%
65	50%	50%	100%
66	35%	35%	
67	35%	35%	
68	35%	35%	
69	35%	35%	
70	100%	100%	

The turnover, disability and retirement rates are based on PERAC's most recent experience analysis of local retirement systems which reviewed age, gender and job group. The assumptions reflect this analysis as well as professional judgment.

**Actuarial Cost Method:** Individual Entry Age Normal.

**Actuarial Asset Method:** The Actuarial Value of Assets is the market value of assets as of the valuation date reduced by the sum of:

- a) 75% of gains and losses of the prior year,
- b) 50% of gains and losses of the second prior year and
- c) 25% of gains and losses of the third prior year.

Investment gains and losses are determined by the excess or deficiency of the expected return over the actual return on the market value. The actuarial valuation of assets is further constrained to be not less than 90% or more than 110% of market value.

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## SECTION 6 - ACTUARIAL ASSUMPTIONS AND METHODS

<b>Census Data:</b>	Census data as of the valuation date were submitted by the Retirement Board.
<b>Asset Data:</b>	Asset information is reported annually to the Public Employee Retirement Administration Commission by the Braintree Contributory Retirement System.
<b>Dependents:</b>	100% of all members will be survived by a spouse. Age assumption for spouses is that males are assumed to be three years older than females.
<b>Administrative Expenses:</b>	<p>The anticipated administrative expenses for the fiscal year. For Fiscal Year 2017, the administrative expenses were assumed to be \$350,000 and are anticipated to increase at 4% per year.</p> <p>The administrative expense assumption is based on information relating to the System's administrative expenses provided by the Retirement System.</p>

## SECTION 7 - PLAN MEMBER INFORMATION

### Exhibit 7.1 - Active Members by Age and Years of Service as of January 1, 2016

Age	Years of Service									Total
	<u>0 to 4</u>	<u>5 to 9</u>	<u>10 to 14</u>	<u>15 to 19</u>	<u>20 to 24</u>	<u>25 to 29</u>	<u>30 to 34</u>	<u>35 to 39</u>	<u>40 &amp; up</u>	
Under 20	-	-	-	-	-	-	-	-	-	0
	-	-	-	-	-	-	-	-	-	0
20-24	15	-	-	-	-	-	-	-	-	15
	44,083	-	-	-	-	-	-	-	-	44,083
25 to 29	42	5	-	-	-	-	-	-	-	47
	42,295	61,512	-	-	-	-	-	-	-	44,340
30 to 34	21	21	3	-	-	-	-	-	-	45
	62,325	66,470	72,371	-	-	-	-	-	-	64,929
35 to 39	20	8	21	5	-	-	-	-	-	54
	53,249	67,632	68,648	69,975	-	-	-	-	-	62,917
40 to 44	16	9	10	15	2	-	-	-	-	52
	30,334	48,425	70,304	91,137	71,636	-	-	-	-	60,279
45 to 49	31	27	17	14	23	6	-	-	-	118
	34,212	48,896	74,474	79,661	79,398	98,155	-	-	-	60,824
50 to 54	31	26	33	32	10	39	11	-	-	182
	34,903	39,733	49,953	70,291	71,735	89,832	95,381	-	-	61,993
55 to 59	20	11	31	31	12	17	11	1	-	134
	35,322	45,812	42,316	55,184	57,512	78,243	107,661	114,248	-	56,356
60 to 64	5	10	16	26	11	11	11	-	-	90
	46,907	49,599	52,041	44,973	53,750	83,266	103,392	-	-	59,744
65 to 69	1	4	3	8	4	4	-	-	1	25
	44,466	41,612	36,107	62,258	48,011	34,801	-	-	78,239	49,071
70 & up	1	1	-	1	1	3	-	-	2	9
	27,234	27,863	-	75,731	69,076	42,276	-	-	36,459	44,406
<b>Total</b>	<b>203</b>	<b>122</b>	<b>134</b>	<b>132</b>	<b>63</b>	<b>80</b>	<b>33</b>	<b>1</b>	<b>3</b>	<b>771</b>
<b>Average Salary</b>	<b>41,636</b>	<b>51,047</b>	<b>56,187</b>	<b>64,661</b>	<b>67,132</b>	<b>82,556</b>	<b>102,144</b>	<b>114,248</b>	<b>50,386</b>	<b>58,643</b>
							<b>Average Age:</b>	<b>49.4</b>	<b>Average Service:</b>	<b>13.1</b>

Braintree Contributory Retirement System  
Actuarial Valuation as of January 1, 2016

## SECTION 7 - PLAN MEMBER INFORMATION

**Exhibit 7.2 - Retired Plan Members and Beneficiaries Annual Pensions as of January 1, 2016**

Attained Age	Male		Female		Total	
	Count	Total Payments	Count	Total Payments	Count	Total Payments
<20	0	0	0	0	0	0
20-24	0	0	0	0	0	0
25-29	0	0	0	0	0	0
30-34	0	0	0	0	0	0
35-39	0	0	0	0	0	0
40-44	0	0	1	23,706	1	23,706
45-49	2	69,755	0	0	2	69,755
50-54	1	36,758	0	0	1	36,758
55-59	12	436,222	7	217,021	19	653,244
60-64	22	1,339,750	17	340,973	39	1,680,723
65-69	49	2,332,187	34	697,361	83	3,029,548
70-74	39	1,527,980	39	779,321	78	2,307,301
75-79	43	1,669,841	24	416,309	67	2,086,150
80-84	24	636,255	47	758,740	71	1,394,995
85-89	15	381,692	33	610,085	48	991,777
90-94	9	174,386	15	171,740	24	346,127
95+	3	58,008	9	77,530	12	135,539
<b>Total</b>	<b>219</b>	<b>8,662,836</b>	<b>226</b>	<b>4,092,787</b>	<b>445</b>	<b>12,755,623</b>
Average Age	73.5		77.6		75.6	
Average Payment		39,556		18,110		28,664
	49.2%	67.9%	50.8%	32.1%	100.0%	100.0%

Included in above totals is \$112,478 in State reimbursed COLAs.

## SECTION 7 - PLAN MEMBER INFORMATION

### Exhibit 7.3 - Disabled Plan Members Annual Pensions as of January 1, 2016

Attained Age	Male		Female		Total	
	Count	Total Payments	Count	Total Payments	Count	Total Payments
<20	0	0	0	0	0	0
20-24	0	0	0	0	0	0
25-29	0	0	0	0	0	0
30-34	0	0	0	0	0	0
35-39	0	0	0	0	0	0
40-44	0	0	0	0	0	0
45-49	0	0	0	0	0	0
50-54	2	79,776	2	46,819	4	126,595
55-59	3	73,843	0	0	3	73,843
60-64	13	584,324	0	0	13	584,324
65-69	15	695,722	0	0	15	695,722
70-74	13	424,915	2	45,865	15	470,780
75-79	9	255,334	0	0	9	255,334
80-84	4	109,335	0	0	4	109,335
85-89	2	37,870	0	0	2	37,870
90-94	0	0	0	0	0	0
95+	0	0	0	0	0	0
<b>Total</b>	<b>61</b>	<b>2,261,119</b>	<b>4</b>	<b>92,683</b>	<b>65</b>	<b>2,353,802</b>
Average Age	69.5		63.1		69.1	
Average Payment		37,068		23,171		36,212
	93.8%	96.1%	6.2%	3.9%	100.0%	100.0%

Included in above totals is \$50,553 in State reimbursed COLAs.

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## SECTION 8 - GLOSSARY OF TERMS

**Actuarial Accrued Liability** – That portion of the Actuarial Present Value of pension plan benefits which is not provided by future Normal Costs or employee contributions. It is the portion of the Actuarial Present Value attributable to service rendered as of the Valuation Date.

**Actuarial Assumptions** – Assumptions, based upon past experience or standard tables, used to predict the occurrence of future events affecting the commencement, amount and duration of pension benefits, such as: changes in compensation, mortality, withdrawal, disablement and retirement; rates of investment earnings and asset appreciation or depreciation; and any other relevant items.

**Actuarial Cost Method (or Funding Method)** – A procedure for allocating the Actuarial Present Value of all past and future pension plan benefits to the current year (Normal Cost) and the past (Actuarial Accrued Liability).

**Actuarial Gain or Loss (or Experience Gain or Loss)** – A measure of the difference between actual experience and that expected based upon the set of Actuarial Assumptions, during the period between the valuation date and the most recent immediately preceding valuation date.

**Actuarial Present Value** – The dollar value on the valuation date of all benefits expected to be paid to current members based upon the Actuarial Assumptions and the terms of the Plan.

**Amortization Payment** – That portion of the pension plan appropriation which represents payments made to pay interest on and the reduction of the Unfunded Accrued Liability.

**Annual Statement** – The statement submitted by the local retirement board to PERAC each year that describes the asset holdings and Fund balances as of December 31 and the transactions during the calendar year that affected the financial condition of the retirement system.

**Annuity Reserve Fund** – The fund into which total accumulated Member Contributions, including interest, is transferred at the time a member retires, and from which annuity payments are made.

**Annuity Savings Fund** – The fund in which Member Contributions plus interest credited are held for active members and for former members who have not withdrawn their contributions and are not yet receiving a benefit (inactive members).

**Assets** – The total value of the investments held by the Plan trust that are for the payment of promised benefits.

**Cost of Benefits** – The estimated payment from the pension system for benefits for the fiscal year.

**Expense Fund** – The fund into which the appropriation for administrative expenses is paid and from which all such expenses are paid.

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## SECTION 8 - GLOSSARY OF TERMS

**Funded Ratio** – The Actuarial Value of Assets expressed as a percentage of the Actuarial Accrued Liability.

**Funding Schedule** – The schedule based upon the most recently approved actuarial valuation which sets forth the amount which would be appropriated to the pension system in accordance with Section 22D of M.G.L. Chapter 32.

**GASB** – Governmental Accounting Standards Board.

**Normal Cost** – Total Normal Cost is that portion of the Actuarial Present Value of pension plan benefits which is expected to accrue in the current fiscal year. The Employee Normal Cost is the amount of the expected Member Contributions for the current fiscal year. The Employer Normal Cost is the difference between the Total Normal Cost and the Employee Normal Cost.

**Pension Fund** – The fund into which appropriation amounts as determined by PERAC are paid and from which pension benefits are paid.

**Pension Reserve Fund** – The fund which shall be credited with all amounts set aside by a system for the purpose of establishing a reserve to meet future pension liabilities. These amounts would include excess interest earnings.

**Present Value of Future Benefits** – The actuarial present value of the cost to finance benefits payable in the future, discounted to reflect the expected effects of the time value of money and the probabilities of payment.

**Special Fund for Military Service Credit** – The fund which is credited with amounts paid by the retirement board equal to the amount which would have been contributed by a member during a military leave of absence as if the member had remained in active service of the retirement board. In the event of retirement or a non-job related death, such amount is transferred to the Annuity Reserve Fund. In the event of termination prior to retirement or death, such amount shall be transferred to the Pension Fund.

**Total Pension Liability** – The portion of the Actuarial Present Value attributable to past service in accordance with the Entry Age cost method as stipuated by GASB Statement Number 67 (GASB 67).

**Unfunded Actuarial Accrued Liability** – The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets.