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# **Braintree Retirement System**



## **Actuarial Valuation January 1, 2012**





STONE  
CONSULTING, INC.

October 31, 2012

Braintree Retirement Board  
74 Pond St., 2<sup>nd</sup> Floor  
Braintree, MA 02184

Dear Braintree Retirement Board:

Stone Consulting, Inc. has performed a January 1, 2012 actuarial valuation of the Braintree Retirement System. This valuation and report was prepared using generally accepted actuarial principles and practices and meets the parameters set by the Governmental Accounting Standards Board Statement (GASB) No. 25. To the best of our knowledge, this report is complete and accurate, and the assumptions used represent our best estimate of anticipated experience of the system.

As part of performing the valuation, Stone Consulting, Inc. was furnished member data by the Braintree Retirement System's administrative staff. Although examined for general reasonableness, the data was not audited by the actuary. In addition, the administrative staff furnished financial statements that were not audited by the actuary or by the plan's auditors.

The funding objective of the plan is to fully fund the system while attempting to maintain a stable contribution amount for the upcoming fiscal year that is consistent with prior funding schedules or if employer finances allow it, to increase the contribution amount. This funding objective is being met.

We anticipate over time the contribution level to decrease as a percentage of payroll. The contribution rate is determined by adding the normal cost plus an amortization of the unfunded actuarial accrued liability. The normal cost is expected to remain at a level percentage of payroll. The number of years of the amortization and/or the rate of increase of the amortization is adjusted to maintain a stable contribution level for the upcoming fiscal year. The length of the funding schedule contained in this

actuarial valuation report is twenty years (fully funded by 2033) and the amortization increase is 4.00%. The amortization increase cannot exceed 4.50% annually. Section 22F of Chapter 32 of the Massachusetts General Laws has extended the maximum length of the funding schedule from Fiscal 2030 to Fiscal 2040 and reduced the maximum amortization increase to 4% from 4.5%. In developing the funding schedule, the Braintree Retirement Board is using Section 22F of Chapter 32.

The contribution amount for Fiscal Year 2014 is \$8,076,380 that is \$228,957 more than the anticipated contribution amount from the prior funding schedule. Chapter 32, as well as GASB guidelines indicate that actuarial valuations should be conducted at least every other year. The Braintree Retirement Board conducted their previous actuarial valuation effective January 1, 2010. This satisfies the Chapter 32 requirement and GASB guidelines.

We are pleased to present the results of this valuation. If the Retirement Board has any questions on the content of this report, we would be glad to respond. Please note that this report is meant to be used in its entirety. Use of excerpts of this report may result in inaccurate or misleading understanding of the results.

Respectfully submitted,  
*STONE CONSULTING, INC.*  
Actuaries for the Plan

Lawrence B. Stone  
Member, American Academy of Actuaries





# BRAINTREE RETIREMENT SYSTEM

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## BRAINTREE RETIREMENT SYSTEM

### INTRODUCTION

This report presents the results of the actuarial valuation of the Braintree Retirement System. The valuation was performed at the request of the Retirement Board as of January 1, 2012 for the purpose of determining the contribution requirements for Fiscal Year 2014 and beyond. The contribution requirements are based on:

- The financial condition of the system as of December 31, 2011
- The benefit provisions of M.G.L. Chapter 32 and related statutes;
- The demographics of members in the system (i.e., active and inactive participants, retirees and beneficiaries as of January 1, 2012);
- Economic assumptions regarding salary increases and investment earnings; and
- Other actuarial assumptions (i.e., terminations, retirement, death, etc.)

### JANUARY 1, 2012 VALUATION SUMMARY

	January 1, 2012	January 1, 2010	Change
<b>Contribution Fiscal 2014</b>	\$8,076,380	\$7,847,423	\$228,957
<b>Funding Schedule Length</b>	20 years	17 years	3 years
<b>Amortization Increase</b>	4.00%	3.50%	0.50%
<b>Funding Ratio</b>	62%	68%	-5%
<b>Interest Rate Assumption</b>	7.875%	7.875%	0.00%
<b>Salary Increase Rate Assumption</b>	4.00%	4.25%	-0.25%

- The Fiscal Year 2014 contribution is \$228,957 higher than the planned 2014 contribution. The System experienced a \$6.4 million market value actuarial asset loss since January 1, 2010. Stone Consulting, with agreement from the Retirement Board, values assets using a four-year asset smoothing method. In this approach, asset gains and losses are recognized over a four-year period. The purpose of this approach is to avoid wide swings in asset value from one year to the next.



## BRAINTREE RETIREMENT SYSTEM

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The System experienced a 2.6% annual rate of return on the actuarial value of assets and 5.5% on a market value basis versus our assumption of a 7.875% return. The System's asset portfolio, effective December 31, 2011 was 57% equities and 43% fixed income and short-term investments. The interest rate assumption was maintained at 7.875% to reflect anticipated market performance. Note that in the short-term, due to the unrecognized losses, a return of greater than the 7.875% return will be required to avoid additional actuarial asset losses. As we recognize the losses, the unfunded actuarial accrued liability will increase and the future appropriations will be higher than what is shown in the funding schedule which is in this report.

- The salary increase assumption was changed to 4.00% from 4.25% to reflect lower anticipated increases. This decreased the accrued liability by \$1.1 million. Total compensation changed by 4.0% in the two years since the prior valuation; however average annual compensation (compensation divided by number of active members) changed by 6.5% or 3.2% per year.
- The funding level of the Braintree Retirement System is 62% compared to 68% for the January 1, 2010 actuarial valuation. However, if assets were valued with a five-year asset smoothing method, the funding ratio would be over 65%. This would satisfy one of the two tests in Chapter 68 to avoid being labeled an "under performing system". If you are considered an "under performing system" the system assets are required to be transferred to PRIT. The funding level is estimated to be in the top half of Massachusetts' Contributory Retirement Systems.
- The schedule length is twenty years. The FY 2014 contribution was increased over the anticipated schedule. The maximum period permitted under Chapter 32 of the Massachusetts General Laws is 17 years (2030). The maximum amortization permitted under Chapter 32 is 4.5%. Recent legislation has extended the maximum length of the funding schedule to Fiscal 2040 and reduced the maximum amortization increase to 4%. These limitations are contained



## **BRAINTREE RETIREMENT SYSTEM**

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in Section 22F of Chapter 32. The Braintree Retirement Board has used this section of Chapter 32.

- Non-economic assumptions were changed from the January 1, 2010 actuarial valuation. Mortality was changed to the RP2000 mortality table projected 17 years with Scale AA. This change increased the accrued liability by \$2.7 million.



## BRAINTREE RETIREMENT SYSTEM

### JANUARY 1, 2012 ACTUARIAL VALUATION RESULTS

	January 1, 2012	January 1, 2010	Percentage Change
<b>Funding</b>			
• Contribution for Fiscal 2014	\$8,076,380		
• Contribution for Fiscal 2014 based on current schedule		\$7,847,423	3%
<b>Members *</b>			
• <i>Actives</i>			
a. Number	714	731	-2.3%
b. Annual Compensation	\$36,452,974	\$35,050,919	4.0%
c. Average Annual Compensation	\$51,055	\$47,949	6.5%
d. Average Attained Age	49.7	48.6	2.3%
e. Average Past Service	12.9	12.0	7.5%
• <i>Retired, Disabled and Beneficiaries</i>			
a. Number	496	501	-1.0%
b. Total Benefits*	\$12,928,754	\$12,030,712	7.5%
c. Average Benefits*	\$26,066	\$24,013	8.5%
c. Average Age	74.0	73.5	0.7%
• <i>Inactives</i>			
a. Number	68	62	9.7%
<b>Normal Cost</b>			
a. Total Normal Cost	\$4,740,428	\$4,772,667	-0.7%
b. Less Expected Members' Contributions	<u>3,321,283</u>	<u>3,192,377</u>	4.0%
c. Normal Cost to be funded by the Municipality	\$1,419,145	\$1,580,290	-10.2%
d. Eighteen Month Adjustment	85,995	101,806	-15.5%
e. Administrative Expense Assumption	<u>366,000</u>	<u>357,000</u>	2.5%
f. Normal Cost Adjusted by Eighteen Months	\$1,871,140	\$2,039,096	-8.2%

\*Excluding State reimbursed COLA



## BRAINTREE RETIREMENT SYSTEM

### SUMMARY OF JANUARY 1, 2012 VALUATION (Continued)

	<u>January 1, 2012</u>	<u>January 1, 2010</u>	<u>Percentage Change</u>
<b>Actuarial Accrued Liability as of January 1, 2012</b>			
a. Active Members	\$99,059,104	\$89,591,332	10.6%
b. Inactive Members	964,087	824,522	16.9%
c. Retired Members and Beneficiaries	<u>120,484,381</u>	<u>112,360,848</u>	7.2%
d. Total	\$220,507,572	\$202,776,702	8.7%
<b>Unfunded Actuarial Accrued Liability</b>			
a. Actuarial Accrued Liability	\$220,507,572	\$202,776,702	8.7%
b. Less Actuarial Value of Assets	<u>137,542,466</u>	<u>137,153,350</u>	0.3%
c. Unfunded Actuarial Accrued Liability	\$82,965,106	\$65,623,352	26.4%
d. Eighteen Month Adjustment	<u>\$ 4,581,579</u>	<u>\$3,538,956</u>	
e. Unfunded Actuarial Accrued Liability adjusted by Eighteen Months	\$87,546,685	\$69,162,308	



## BRAINTREE RETIREMENT SYSTEM

### DEMOGRAPHIC INFORMATION

<b>Members</b>	<b>January 1, 2012</b>	<b>Percentage Change</b>
• <b>Actives</b>		
a. Number	714	-2.3%
b. Annual Compensation	\$36,452,974	4.0%
c. Average Annual Compensation	\$51,055	6.5%
d. Average Attained Age	49.7	2.3%
e. Average Past Service	12.9	7.5%
• <b>Retired, Disabled and Beneficiaries</b>		
a. Number	496	-1.0%
b. Total Annual Retirement Allowance excluding State-reimbursed COLA	\$12,928,754	7.5%
• <b>Inactives</b>		
a. Number	68	9.7%

- The data was supplied by the Braintree Retirement Board. The data was checked under broad parameters for reasonableness. With the assistance of the staff of the Braintree Retirement Board, we were able to develop a database sufficient for valuation purposes.
- Payroll changed by 4.0% over the course of the past two years. Average annual compensation changed by 6.5% over the same two-year time period.
- The salary increase assumption includes general wage adjustments, step increases, and promotional increases.



## BRAINTREE RETIREMENT SYSTEM

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### *HISTORY OF ACTIVE PARTICIPANTS*

<b>Valuation Year</b>	<b>Number</b>	<b>Average Age</b>	<b>Average Past Service</b>	<b>Average Ann'l Compensation</b>
2012	714	49.7	12.9	\$51,055
2010	731	48.6	12.0	\$47,949
2008	744	48.2	11.7	\$45,556
2006	719	47.8	11.5	\$42,922
2004	700	47.8	11.6	\$42,072
2002	742	47.2	11.2	\$38,781
2000	685	46.8	12.9	\$35,440

- Employee age has increased by 2.9 years and service has remained constant over the course of the past twelve years. Average annual compensation has grown by 35.3% (3.1% annually) over the same time period.

The charts on the following pages summarize demographic information regarding active and retiree members.

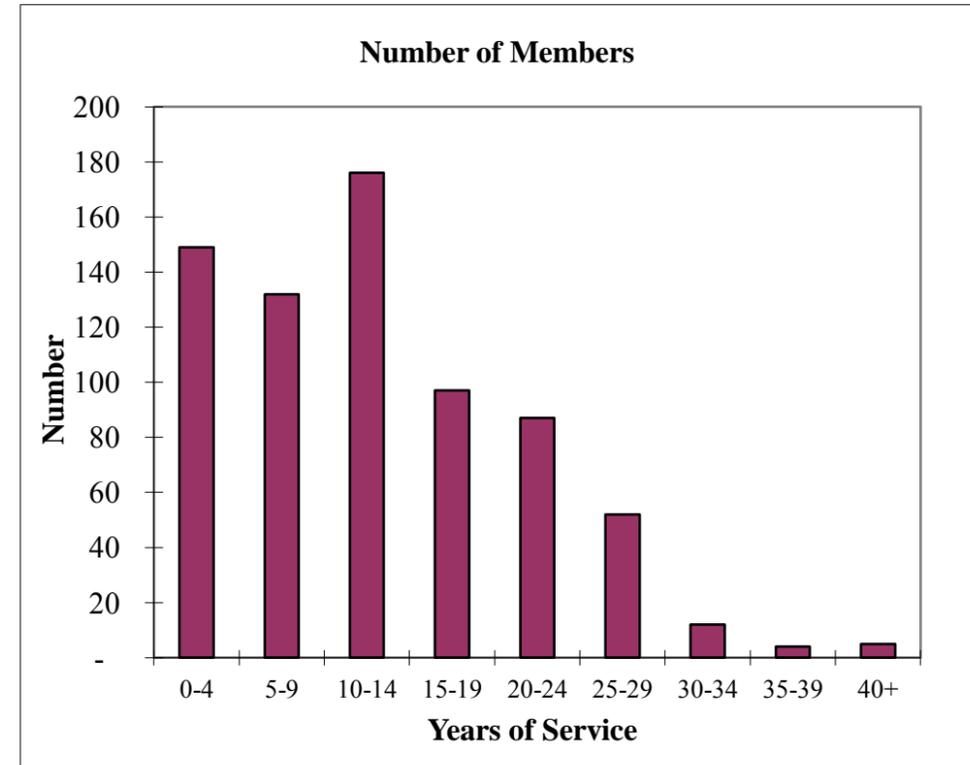
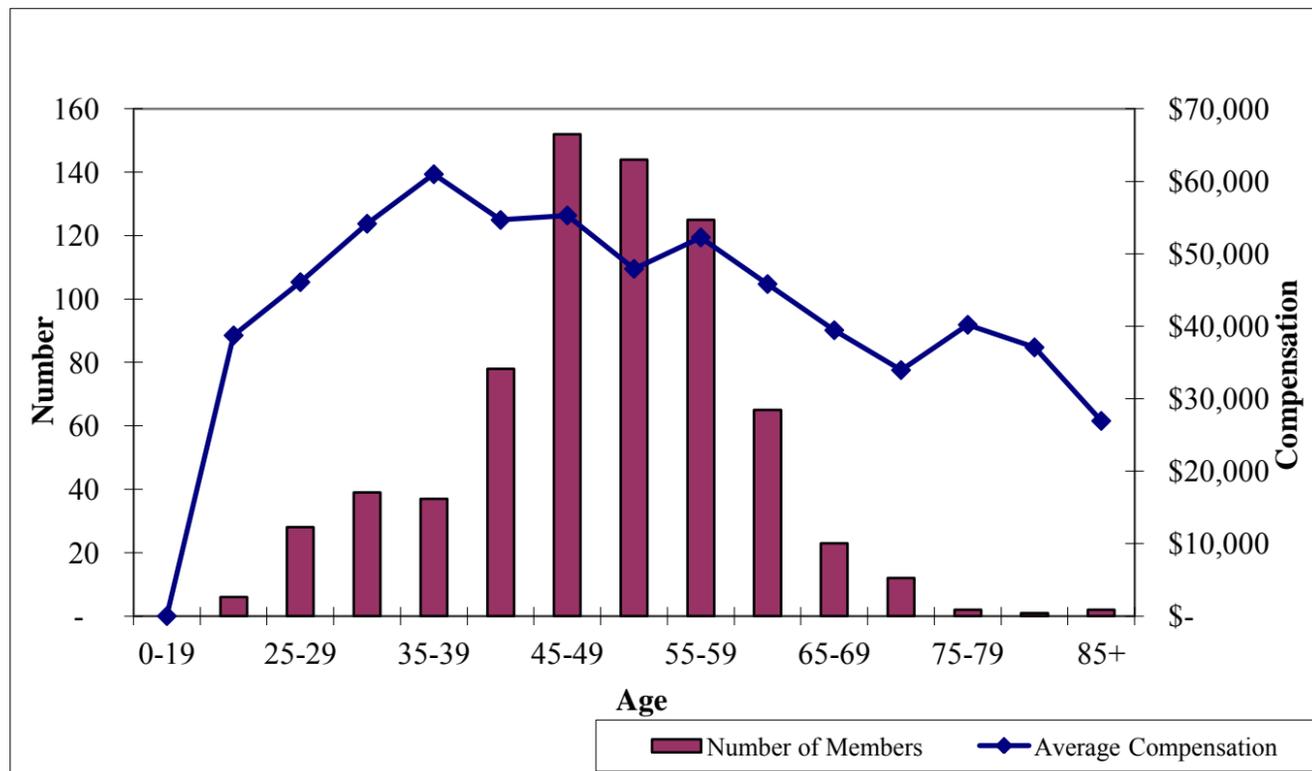


## BRAINTREE CONTRIBUTORY RETIREMENT SYSTEM

### Distribution of Plan Members as of January 1, 2012

#### Active Members

AGE	0-4 Years	5-9 Years	10-14 Years	15-19 Years	20-24 Years	25-29 Years	30-34 Years	35-39 Years	40 + Years	Total	Total Compensation	Average Compensation
0-19	-	-	-	-	-	-	-	-	-	-	\$ -	\$ -
20-24	6	-	-	-	-	-	-	-	-	6	232,380	38,730
25-29	25	3	-	-	-	-	-	-	-	28	1,290,394	46,086
30-34	15	16	8	-	-	-	-	-	-	39	2,111,504	54,141
35-39	6	12	13	6	-	-	-	-	-	37	2,256,084	60,975
40-44	24	15	15	19	5	-	-	-	-	78	4,263,720	54,663
45-49	32	30	31	18	33	8	-	-	-	152	8,402,934	55,282
50-54	23	26	37	17	20	19	2	-	-	144	6,899,680	47,914
55-59	9	20	34	24	13	17	7	1	-	125	6,531,800	52,254
60-64	5	5	24	11	10	4	2	2	2	65	2,978,504	45,823
65-69	4	2	10	1	3	1	-	1	1	23	907,267	39,446
70-74	-	3	4	-	2	2	-	-	1	12	407,368	33,947
75-79	-	-	-	1	1	-	-	-	-	2	80,398	40,199
80-84	-	-	-	-	-	1	-	-	-	1	37,078	37,078
85+	-	-	-	-	-	-	1	-	1	2	53,864	26,932
<b>TOTAL</b>	<b>149</b>	<b>132</b>	<b>176</b>	<b>97</b>	<b>87</b>	<b>52</b>	<b>12</b>	<b>4</b>	<b>5</b>	<b>714</b>	<b>\$ 36,452,974</b>	<b>\$ 51,055</b>



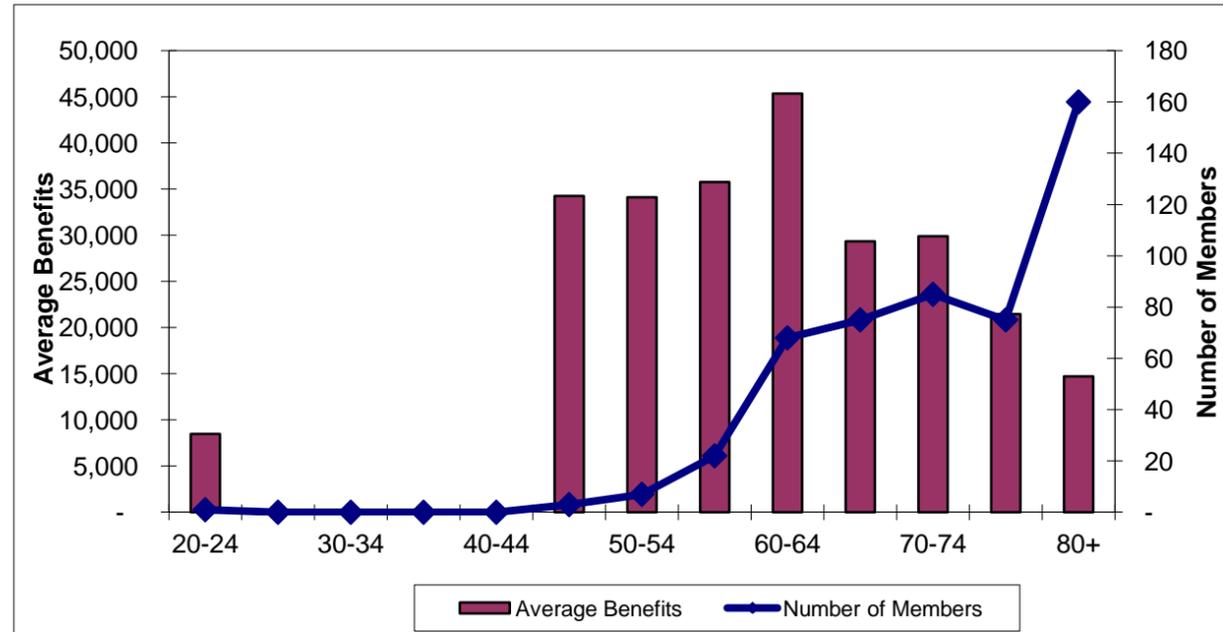


**BRAINTREE CONTRIBUTORY RETIREMENT SYSTEM**  
**Distribution of Plan Members as of January 1, 2012**  
**Retired Members**

<u>Disabled Member</u>			
Age	Number	Average Benefit	Total Benefit
20-24	-	-	-
25-29	-	-	-
30-34	-	-	-
35-39	-	-	-
40-44	-	-	-
45-49	2	33,665	67,330
50-54	1	50,090	50,090
55-59	8	37,558	300,462
60-64	17	44,077	749,301
65-69	14	30,662	429,273
70-74	10	27,593	275,934
75-79	7	26,071	182,499
80+	5	25,720	128,598
<b>TOTAL</b>	<b>64</b>	<b>\$ 34,117</b>	<b>\$ 2,183,487</b>

<u>Retired Members and Beneficiaries</u>			
Age	Number	Average Benefit	Total Benefit
20-24	1	8,459	8,459
25-29	-	-	-
30-34	-	-	-
35-39	-	-	-
40-44	-	-	-
45-49	1	35,438	35,438
50-54	6	31,477	188,862
55-59	14	34,764	486,693
60-64	51	45,791	2,335,363
65-69	61	29,043	1,771,628
70-74	75	30,210	2,265,714
75-79	68	20,993	1,427,506
80+	155	14,359	2,225,607
<b>TOTAL</b>	<b>432</b>	<b>\$ 24,873</b>	<b>\$ 10,745,267</b>

<u>Total</u>			
Age	Number	Average Benefit	Total Benefit
20-24	1	8,459	8,459
25-29	-	-	-
30-34	-	-	-
35-39	-	-	-
40-44	-	-	-
45-49	3	34,256	102,768
50-54	7	34,136	238,952
55-59	22	35,780	787,155
60-64	68	45,363	3,084,663
65-69	75	29,345	2,200,901
70-74	85	29,902	2,541,648
75-79	75	21,467	1,610,005
80+	160	14,714	2,354,205
<b>TOTAL</b>	<b>496</b>	<b>\$ 26,066</b>	<b>\$ 12,928,754</b>



Benefits shown are net of State reimbursed COLA.



## BRAINTREE RETIREMENT SYSTEM

### VALUATION METHODOLOGY

Stone Consulting, Inc. used the Entry Age Normal actuarial funding method in this actuarial valuation. The use of the Entry Age Normal actuarial funding method is consistent with the requirements of Chapter 32 of the Massachusetts General Laws.

### NORMAL COST

		<b>January 1, 2012</b>	<b>% of Payroll*</b>
Gross Normal Cost (GNC)	\$	4,740,428	13.0%
Employees Contribution		<u>3,321,283</u>	<u>9.1%</u>
Net Normal Cost (NNC)	\$	1,419,145	3.9%
Adjusted to Beginning of Fiscal Year 2014	\$	85,995	
Administrative Expense	\$	<u>366,000</u>	1.0%
Adjusted Net Normal Cost With Admin. Expense	\$	1,871,140	

\*Payroll paid in 2011 for employees as of January 1, 2012 is \$36,452,974. Payroll for new hires in 2011 was annualized.

- The gross normal cost (GNC) is the “price” of benefits accruing in the current year if the assumptions underlying the normal cost were realized.
- An individual normal cost represents that part of the cost of a member’s future benefits that are assigned to the current year as if the costs are to remain level as a percentage of the member’s pay. Benefits payable under all circumstances (i.e., retirement, death, disability, and terminations) are included in this calculation.
- Anticipated employee contributions to be made during the year are subtracted from the GNC to determine employer normal cost, or net normal cost (NNC).
- Administrative expenses added to the NNC. The administrative expense does not include investment manager and custodial fees. These fees are considered part of the interest rate assumption that is net of fees.



## BRAINTREE RETIREMENT SYSTEM

### ACTUARIAL ACCRUED LIABILITY AND FUNDED STATUS

		<b>January 1, 2012</b>	<b>Percentage Change</b>
<b>Active Actuarial Accrued Liability</b>		\$ 99,059,104	10.6%
Superannuation	\$ 82,529,093		
Death	\$ 2,472,380		
Disability	\$ 11,758,602		
Termination	\$ 2,299,029		
<b>Retiree, Inactive, Survivor and Beneficiary Actuarial Accrued Liability</b>		<u>121,448,468</u>	7.3%
Retirees and Beneficiaries	\$ 97,153,808		
Disabled	\$ 23,330,573		
Inactive	\$ 964,087		
<b>Total Actuarial Accrued Liability (AAL)</b>		\$ <u>220,507,572</u>	8.7%
<b>Actuarial Value of Assets (AVA)</b>		\$ <u>137,542,466</u>	0.3%
<b>Unfunded Actuarial Accrued Liability</b>		\$ 82,965,106	26.4%
<b>Funded Ratio (AVA / AAL)</b>			
2012 (7.875% interest rate):	62%		
2010 (7.875% interest rate):	68%		

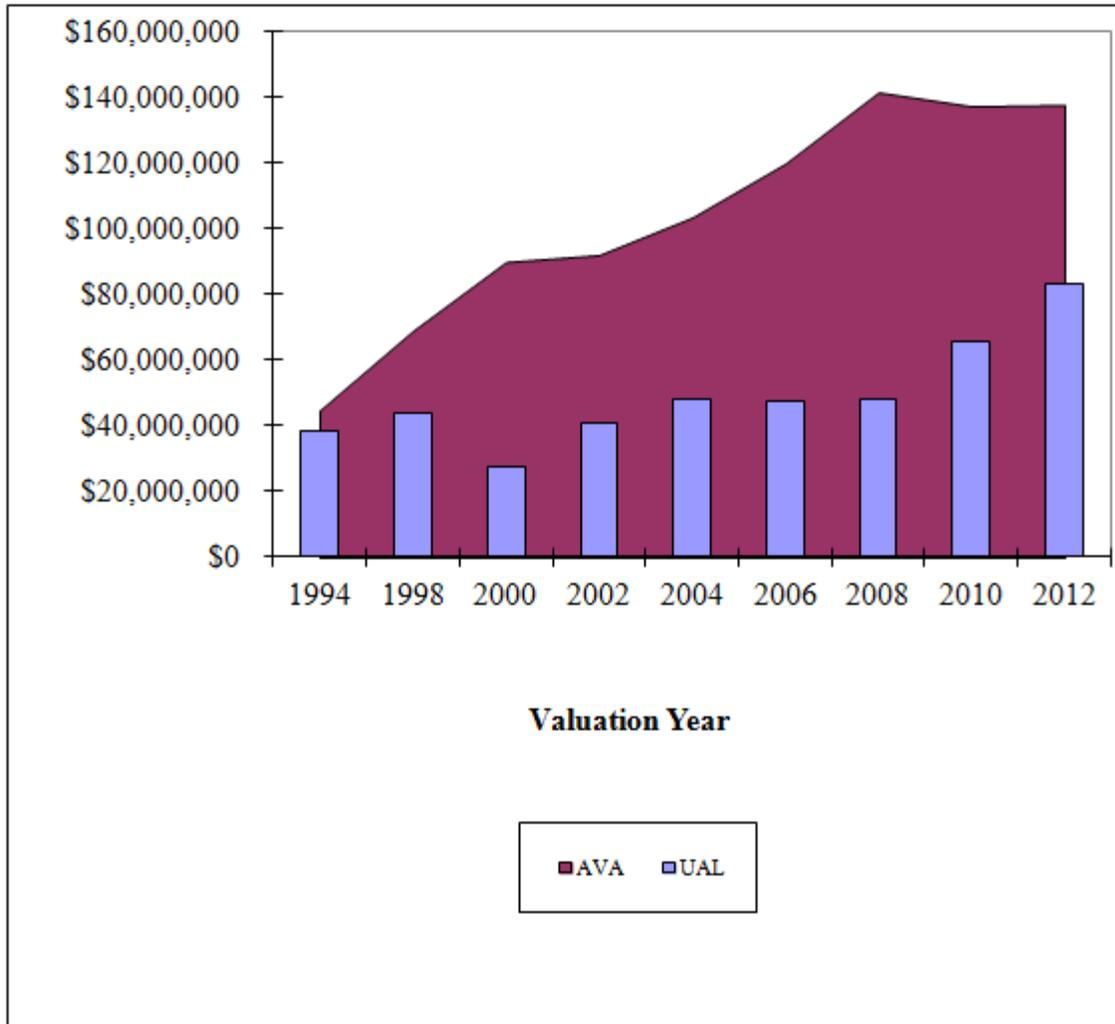
- Actuarial Accrued Liability (AAL) is the “price” of benefits attributable to benefits earned in past years, or in other words, represents today’s value of all benefits earned by active and inactive members.
- The total AAL is \$220,507,572. This along with an actuarial value of assets of \$137,542,466 produces a funded status of 62%. This compares to a funded status of 68% for the 2010 valuation.

The chart on the following page is a history of the unfunded actuarial accrued liability (UAL) and the valuation assets (AVA) over the course of the past nine actuarial valuations.



## BRAINTREE RETIREMENT SYSTEM

### HISTORY OF ACTUARIAL VALUATION OF ASSETS (AVA) AND UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAL)





## BRAINTREE RETIREMENT SYSTEM

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### DEVELOPMENT OF FUNDING SCHEDULE

Net Employer Normal Cost for Fiscal 2014	\$	1,871,140
Amortization	\$	6,070,797
Net 3(8)(c) payments		<u>134,443</u>
Total Appropriation required for Fiscal 2014	\$	8,076,380

- The funding schedule is composed of the normal cost, and the amortization of the actuarial accrued unfunded liability and is adjusted by the administrative expense assumption. The contribution is assumed to be made in the beginning of the fiscal year. In addition, a net amount for the difference between the annual amount of money paid out by the Braintree Retirement System under Section 3(8)(c) of Chapter 32 offset by the amount received under the same section.
- The contribution amount for Fiscal 2014 is \$8,076,380. The funding schedule is presented on page 15. The schedule's length is twenty (20) years (for the fresh start base) which is three years more than the January 1, 2010 valuation schedule's length. The maximum funding schedule length allowed by Chapter 32 of the Massachusetts General Laws is seventeen years to 2030. Under Section 22F of Chapter 32 the maximum length of the funding schedule was extended to Fiscal 2040 and the maximum amortization increase is reduced to 4%.
- In developing the funding schedule, we used a fresh start approach in which the unfunded actuarial accrued liability is reamortized instead of maintaining the existing amortization amount and separately amortizing the actuarial gain or loss. The use of a fresh-start approach results in a funding schedule in which the changes in contribution amounts from year to year are more consistent. The amortization percentage increase is 4.00% whereas prior valuation amortization increase was 3.50%.
- Under Section 22F of Chapter 32, the contribution is not allowed to decrease from the scheduled amount of the contribution. This limitation is in place until the plan is fully funded.



## BRAINTREE RETIREMENT SYSTEM FUNDING SCHEDULE

Fiscal Year	Normal Cost	Unfunded Liability	Funding		Schedule Contribution	Adjusted Payments
			Amortization of UAL	Net 3(8)(c) Payments		
2014	1,871,140	87,546,685	6,070,797	134,443	8,076,380	8,076,380
2015	1,945,986	87,892,115	6,312,997	134,443	8,393,425	8,393,425
2016	2,023,825	88,003,474	6,564,885	134,443	8,723,153	8,723,153
2017	2,104,778	87,851,878	6,826,848	134,443	9,066,069	9,066,069
2018	2,188,969	87,405,750	7,099,291	134,443	9,422,703	9,422,703
2019	2,276,528	86,630,594	7,382,630	134,443	9,793,601	9,793,601
2020	2,367,589	85,488,740	7,666,064	134,443	10,168,096	10,168,096
2021	2,462,293	83,951,212	7,967,971	134,443	10,564,706	10,564,706
2022	2,560,784	81,966,922	8,286,689	134,443	10,981,917	10,981,917
2023	2,663,216	79,482,550	8,618,157	134,443	11,415,816	11,415,816
2024	2,769,744	76,444,964	8,962,883	134,443	11,867,071	11,867,071
2025	2,880,534	72,796,295	9,321,399	134,443	12,336,376	12,336,376
2026	2,995,755	68,473,544	9,694,255	134,443	12,824,453	12,824,453
2027	3,115,586	63,408,159	10,082,025	134,443	13,332,053	13,332,053
2028	3,240,209	57,525,567	10,485,306	134,443	13,859,958	13,859,958
2029	3,369,817	50,744,682	10,904,718	134,443	14,408,978	14,408,978
2030	3,504,610	42,977,361	11,340,907	134,443	14,979,960	14,979,960
2031	3,644,795	34,127,825	11,794,543	134,443	15,573,781	15,573,781
2032	3,790,586	24,092,028	12,266,325	134,443	16,191,354	16,191,354
2033	3,942,210	12,756,978	12,756,978	134,443	16,833,630	16,833,630
2034	4,099,898	-	-	134,443	4,234,341	4,234,341

### Amortization of Unfunded Liability as of July 1, 2013

Year	Type	Original Amort. Amount	Percentage Increasing	Original # of Years	Current Amort. Amount	Years Remaining
2005	ERI-BHA2002	11,240	0.0%	15	11,240	6
2006	ERI_BHA2003	4,554	0.0%	15	4,554	7
2014	Fresh Start	6,055,003	4.00%	20	6,055,003	20

#### Notes on Amortization of Unfunded Liability

**Year** is the year the amortization base was established.

**Type** is the reason for the creation of the base. Examples are Gain/(Loss) or Fresh Start.

**Original Amortization Amount** is the annual amortization amount when the base was established.

**Percentage Increasing** is the percentage that the Original Amortization Amount increases per year.

**Original # of Years** is the number of years over which the base is being amortized.

**Current Amortization Amount** is the amortization payment amount for this year.

**Years Remaining** is the number of years left to amortize the base.



## BRAINTREE RETIREMENT SYSTEM

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### ASSUMPTIONS AND METHODOLOGY SUMMARY

The principal actuarial assumptions used in this valuation are the same as the assumptions used in the previous valuation, except where noted, and are summarized in the following table:

<u>Assumption</u>	<u>January 1, 2012 Valuation</u>
Interest Rate	7.875% (same as prior valuation)
Salary Increase	4.00% (4.25%, prior valuation)
COLA	3% of \$12,000
COLA Frequency	Granted every year
Mortality	RP-2000 table (sex-distinct) projected 17 years with scale AA. For members retired under an Accidental Disability (job-related), 50% of deaths are assumed to be from the same cause as the disability. Disabled mortality RP-2000 projected table, ages set forward 2 years. <i>(prior valuation used RP-2000 with 10 year projection.)</i>
Overall Disability	<u>Groups 1 and 2</u> 33% ordinary disability 67% accidental disability  <u>Group 4</u> 10% ordinary disability 90% accidental disability
Retirement Rates	<u>Groups 1 and 2</u> Ages 55 – 70  <u>Group 4</u> Ages 50 – 65
Administrative Expense	\$366,000 budget estimated for FY 2014 provided by Braintree Retirement Board.



## BRAINTREE RETIREMENT SYSTEM

### ASSETS

a.	Cash	\$	2,129,536.60
b.	Pooled Domestic Equity Funds		31,809,128.28
c.	Pooled International Equity Funds		15,823,306.49
d.	Pooled Domestic Fixed Income Funds		52,600,104.61
e.	Pooled Alternative Investments		767,501.00
f.	Pooled Real Estate Funds		5,030,952.55
g.	PRIT Absolute		6,448,305.02
h.	PRIT Fund		20,649,272.20
i.	Sub-Total:	\$	135,258,106.75
j.	Interest Due and Accrued	\$	.00
k.	Accounts Receivable		89,262.00
l.	Accounts Payable		(50,935.92)
m.	Blue Hills 3(8)(c) Payable		(275,705)
n.	Sub-Total:	\$	(237,378.92)
o.	Market Value of Assets [(i) + (n)]	\$	135,020,727.83

- We were furnished with the System's annual report by the Board. The market value of assets as of December 31, 2011 (adjusted for interest due and accrued, payables and receivables) is \$135,020,727.83. Based on consultations with the Braintree Retirement System staff, we have adjusted the assets to reflect an estimated payable amount of \$275,705 that will be due to the Blue Hills Retirement System. This amount is not shown as part of the Braintree Retirement System's financial statement filed with PERAC as of December 31, 2011.
- The asset allocation as of December 31, 2011 is approximately 43% fixed income, cash, receivables, payables and short-term investments and 57% equities.
- Historically, 10 to 11% has been the expected long-term rate of return for equities, and 6 to 7% has been the expected long-term rate of return for fixed income securities. Many economists and investment professionals are projecting lower long-term returns of 8.00% to 9.50% for equities and 3.50% to 4.50% for fixed income securities. In light of these projections, as well as historical investment returns, the 7.875% interest rate assumption is within the reasonable assumption range. We encourage monitoring of investment performance against the assumption.



## BRAINTREE RETIREMENT SYSTEM

### CALCULATION OF VALUATION ASSETS as of January 1, 2012 4-Year Phase-In of Asset Gains and Losses

1.	Market value of assets including receivable/payable as of 01/01/2012				\$135,296,433
2.	Phase-in of asset gains and losses				
		<b>Plan Year (1)</b>	<b>Original Amount (2)</b>	<b>Percent Unrecognized (3)</b>	<b>Amount Unrecognized (2) x (3)</b>
	a.	2011	(\$10,003,955)	75%	(\$7,502,966)
	b.	2010	\$3,629,554	50%	\$1,814,777
	c.	2009	\$12,665,805	25%	\$3,166,451
	d.	Total			(\$2,521,738)
3.	Valuation assets without corridor as of 01/01/2012 (1. - 2.d.)				\$137,818,171
4.	Corridor Check				
	a.	90% of Market Value			\$121,766,790
	b.	110% of Market Value			\$148,826,076
5.	Valuation assets with corridor as of 01/01/2012 3. within Corridor				\$137,542,466
6.	Calculation of return on valuation assets				
	a.	Valuation assets as of 01/01/2010			\$137,153,350
	b.	ER contribs + EE contribs - Ben Pymts - Expenses			(6,345,005)
	c.	Actual return on valuation assets 5. - (6.a. + 6.b.)			\$7,009,827
	d.	Weighted value of valuation assets			\$134,723,247
	e.	Return on valuation assets 6.c. / 6.d.			5.2%
	f.	Annualized return on assets			2.6%



## BRAINTREE RETIREMENT SYSTEM

### DISCLOSURE INFORMATION UNDER GASB STATEMENT 25

#### *Schedules of Funding Progress*

(Dollars In Thousands)

<b>Actuarial Valuation Date</b>	<b>Actuarial Value of Assets</b>	<b>Actuarial Accrued Liability</b>	<b>Unfunded AAL (UAAL)</b>	<b>Funded Ratio</b>	<b>Covered Payroll</b>	<b>UAAL as a % of Covered Payroll (B-A)/C</b>
	<b>A</b>	<b>B</b>	<b>B-A</b>	<b>A/B</b>	<b>C</b>	
1/1/2012	\$137,542	\$220,508	\$82,966	62%	\$36,453	228%
1/1/2010	\$137,153	\$202,777	\$65,623	68%	\$35,051	187%
1/1/2008	\$141,346	\$189,266	\$47,920	75%	\$33,894	141%
1/1/2006	\$119,722	\$167,313	\$47,592	72%	\$30,861	154%
1/1/2004	\$103,345	\$151,324	\$47,979	68%	\$29,450	163%

#### *Notes to Schedules*

Additional information as of the latest actuarial valuation follows:

Valuation date	1/1/2012
Actuarial cost method	Entry Age Normal
Amortization method	Approximate level percent of payroll Closed
Remaining amortization period	20 years, 7 years for the 2003 ERI's and 6 years for the 2002 ERI's.
Asset valuation method	Market value adjusted by accounts payable and receivables adjusted to phase in over 4 years investment gains or losses above or below the expected rate of investment return. The actuarial value of assets must be no less than 90% of the adjusted market value nor more than 110% of the adjusted market value. Market value of assets is \$135,296,433.
Actuarial assumptions:	
Investment Rate of Return	7.875% per year
Projected Salary Increases	4.00% per year



## BRAINTREE RETIREMENT SYSTEM

### PERAC INFORMATION DISCLOSURE

The most recent actuarial valuation of the System was prepared by Stone Consulting, Inc. as of January 1, 2012  
 The normal cost for employees on that date was: \$3,321,283 9.1% of payroll  
 The normal cost for the employer was: \$1,419,145 3.9% of payroll

The actuarial liability for active members was: \$99,059,104  
 The actuarial liability for retired members was (includes inactives): \$121,448,468  
 Total actuarial accrued liability: \$220,507,572  
 System assets as of that date: \$137,542,466  
 Unfunded actuarial accrued liability: \$82,965,106

The ratio of system's assets to total actuarial liability was: 62%

As of that date the total covered employee payroll was: \$36,452,974

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

Investment Return: 7.875% per annum  
 Rate of Salary Increase: 4.00% per annum

#### SCHEDULE OF FUNDING PROGRESS (Dollars in \$000's)

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (UAAL) (b-a)	Funded Ratio (a/b)	Covered Payroll (c)	UAAL as a % of Covered Payroll ((b-a)/c)
1/1/2012	\$137,542	\$220,508	\$82,966	62%	\$36,453	228%
1/1/2010	\$137,153	\$202,777	\$65,623	68%	\$35,051	187%
1/1/2008	\$141,346	\$189,266	\$47,920	75%	\$33,894	141%
1/1/2006	\$119,722	\$167,313	\$47,592	72%	\$30,861	154%
1/1/2004	\$103,345	\$151,324	\$47,979	68%	\$29,450	163%



## BRAINTREE RETIREMENT SYSTEM

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### ACTUARIAL METHODS AND ASSUMPTIONS

#### Actuarial Methods

- 1. Actuarial Cost Method**

The Entry Age Normal Actuarial Cost Method has been used in this valuation. Under this method, the normal cost is the amount calculated as the level percentage of compensation necessary to fully fund the prospective benefits from each member's entry age to retirement age.

The actuarial accrued liability represents the theoretical accumulation of all prior years' normal costs for the plan members as if the program had always been in effect. The unfunded actuarial accrued liability is the excess of the actuarial accrued liability over plan assets.
- 2. Asset Valuation Method**

Market value of assets (adjusted by payables and receivables) adjusted to phase in investment gains or losses above or below the expected rate of investment return over a four-year rolling period starting with the 2008 calendar year investment return. The phase-in is 25% for year one, 50% for year two, 75% for year three and 100% for year four. The actuarial value of assets may be no less than 90%, or more than 110% of the market value of assets plus payables and receivables.
- 3. Fiscal Year Adjustment**

The actuarial results are adjusted by the valuation interest rate and salary scale to the beginning of Fiscal Year 2014. The unfunded actuarial accrued liability is rolled forward with normal cost and further adjusted by anticipated contributions and interest.

#### Actuarial Assumptions

- 1. Investment Return**

7.875% per year net of investment expenses. (Same as the prior valuation)
- 2. Salary Increases**

4.00% per year. (4.25%, prior valuation)



# BRAINTREE RETIREMENT SYSTEM

## ACTUARIAL METHODS AND ASSUMPTIONS (Continued)

### 3. Withdrawal Prior to Retirement

The rates shown at the following sample ages illustrate the withdrawal assumption. Withdrawal rates are set to zero if the retirement rate at that age is nonzero.

<i>Age</i>	<b>Rate of Withdrawal</b>	
	<i>Group 1 and 2</i>	<i>Group 4</i>
20	37.51%	2.63%
25	28.23%	2.38%
30	17.35%	2.06%
35	10.07%	1.56%
40	7.21%	0.70%
45	5.68%	0.05%
50	4.57%	0.00%
55	0.00%	0.00%

### 4. Disability Prior to Retirement

The rates shown at the following sample ages illustrate the assumption regarding the incidence of disability:

<i>Age</i>	<b>Rate of Disability</b>	
	<i>Group 1 and 2</i>	<i>Group 4</i>
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%

Disability is assumed to be 33% ordinary and 67% accidental for Group 1 and 2 and 10% ordinary and 90% accidental for Group 4.



# BRAINTREE RETIREMENT SYSTEM

## ACTUARIAL METHODS AND ASSUMPTIONS (Continued)

5. Rates of Retirement

The rates shown at the following ages illustrate the assumption regarding the incidence of retirement, once the member has achieved 10 years of service:

Age	Rates of Retirement	
	Group 1 and 2	Group 4
50	N/A	2%
51	N/A	2%
52	N/A	2%
53	N/A	2%
54	N/A	2%
55	10%	5%
56	3%	5%
57	3%	5%
58	3%	5%
59	5%	5%
60	5%	10%
61	5%	10%
62	10%	20%
63	10%	20%
64	10%	20%
65	50%	100%
66	35%	N/A
67	35%	N/A
68	35%	N/A
69	35%	N/A
70	100%	N/A

6. Mortality

The RP-2000 mortality table for healthy annuitants projected 17 years with Scale AA (sex-distinct).  
*(previously RP-2000 with 10 year projection)*

7. Disabled Life Mortality

The RP-2000 mortality table for healthy annuitants (sex-distinct) projected 17 years with Scale AA set-forward by 2 years. Prior valuation used RP-2000 projected by 10 years and set forward by 2 years. Death is assumed to be due to the same cause as the disability 50% of the time.

8. Regular Interest Rate Credited to Annuity Savings Account

2% per year.



## BRAINTREE RETIREMENT SYSTEM

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### ACTUARIAL METHODS AND ASSUMPTIONS (Continued)

- |                              |   |
|------------------------------|---|
| 9. Family Composition        | Members assumed married with 2 dependent children – one male and one female both age 15; age difference between member and spouse assumed to be 3 years (the male being the older). |
| 10. Cost-of-Living Increases | A 3% COLA on the first \$12,000 of a member's retirement allowance is assumed to be granted every year.   |
| 11. Administrative Expenses  | Estimated budgeted amount of \$366,000 for the Fiscal Year 2014 excluding investment management fees and custodial fee is added to the Normal Cost.                                 |
| 12. Step Increases           | Step increases are assumed to be part of the salary increase assumption.  |
| 13. Credited Service         | Service between date of hire and date of membership is assumed to be purchased by all members.  |
| 14. Contribution Timing      | Contributions are assumed to be made July 1.  |
| 15. Valuation Date           | January 1, 2012.  |



## BRAINTREE RETIREMENT SYSTEM

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### SUMMARY OF PRINCIPAL PROVISIONS

1. Participant Participation is mandatory for all full-time employees whose employment commences before age 65. There are three classes of members in the retirement system:

*Group 1:* general employees

*Group 2:* employees in specified hazardous occupations (e.g., electricians)

*Group 4:* police and firefighters

2. Member Contributions Member contributions vary depending upon date hired as follows:

<b>Date of Hire</b>	<b>Member Contribution Rate</b>
Prior to 1975	5% of Pay
1975 – 1983	7% of Pay
1984 – June 30, 1996	8% of Pay
After June 30, 1996	9% of Pay

Members hired after 1978 contribute an additional 2% of pay over \$30,000.

3. Pay
- a. Pay Gross regular compensation excluding bonuses, overtime, severance pay, unused sick pay, and other similar compensation.
- b. Average Pay The average of pay during the 3 consecutive years that produce the highest average or, if greater, during the last three years (whether or not consecutive) preceding retirement.
4. Credited Service Period during which an employee contributes to the retirement system plus certain periods of military service and “purchased” service.



# BRAINTREE RETIREMENT SYSTEM

## SUMMARY OF PRINCIPAL PROVISIONS (Continued)

### 5. Service Retirement

- a. Eligibility Completion of 20 years of credited service or attainment of age 55 and completion of 10 years of credited service. If hired prior to 1978 or a member of group 4, attainment of age 55.
- b. Retirement Allowance Determined as the product of the member’s benefit percentage, average pay and credited service, where the benefit percentage is shown below (maximum allowance of 80% of average pay):

<b>Benefit Percentage</b>	<b>Group 1</b>	<b>Group 2</b>	<b>Group 4</b>
2.5%	65+	60+	55+
2.4	64	59	54
2.3	63	58	53
2.2	62	57	52
2.1	61	56	51
2.0	60	55	50
1.9	59	N/A	49
1.8	58	N/A	48
1.7	57	N/A	47
1.6	56	N/A	46
1.5	55	N/A	45

In addition, veterans receive an additional \$15 per year for each year of credited service up to 20 years.

### 6. Deferred Vested Retirement

- a. Eligibility Completion of 10 years of credited service (for elected and appointed members, 6 years in the event of involuntary termination).



## BRAINTREE RETIREMENT SYSTEM

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### SUMMARY OF PRINCIPAL PROVISIONS (Continued)

6. Deferred Vested Retirement (*continued*)
- b. Retirement Allowance                      Determined in the same manner as 5b. with the benefit payable at age 55, unless deferred until later at the member's option.
- Member contributions with interest may be withdrawn after separation from service. If contributions are withdrawn, eligibility for retirement benefits is forfeited. Members hired before 1984 receive full interest on contributions that are withdrawn; otherwise, one half the credited interest is provided for members who withdraw after 5 but before 10 years of credited service and no interest is provided for withdrawals before 5 years of credited service.
7. Ordinary Disability Retirement
- a. Eligibility                                      Non-job related disability after completion of 10 years of credited service.
- b. Retirement Allowance                      Determined in the same manner as 5b. with the benefit payable immediately. Veterans receive 50% of pay (during final year) plus an annuity based on accumulated member contributions with interest.
8. Accidental Disability Retirement
- a. Eligibility                                      Disabled as a result of an accident in the performance of duties. No age or service requirement.
- b. Retirement Allowance                      72% of pay plus an annuity based on accumulated member contributions with interest. Also, a dependent's allowance per year for each child. Total allowance not to exceed 100% of pay (75% for members hired after 1987).



## BRAINTREE RETIREMENT SYSTEM

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### SUMMARY OF PRINCIPAL PROVISIONS (Continued)

9. Non-Occupational Death
- a. Eligibility Dies while in active service, but not due to occupational injury. 2 years of service.
  - b. Retirement Allowance Benefit as if Option C had been elected (see below). Minimum monthly benefits provided as follows: spouse - \$250, first child - \$120, each additional child - \$90.
10. Occupational Death
- a. Eligibility Dies as a result of an occupational injury.
  - b. Benefit Amount Same as 8b.
11. Cost-of-Living Increases An increase of up to 3% applied to the first \$12,000 of annual benefit. Funded by the Municipality from Fiscal Year 1999. Percentage increase is voted on each year by the Retirement Board. Cost-of-living increases granted during Fiscal Year 1982 through Fiscal 1998 are reimbursed by the Commonwealth.
12. Optional Forms of Payment
- a. Option A Allowance payable monthly for the life of the member.
  - b. Option B Allowance payable monthly for the life of the member with a guarantee of remaining member contributions with interest.
  - c. Option C Allowance payable monthly for the life of the member with 66-2/3% continuing to the member's beneficiary upon the member's death. If the beneficiary predeceases the member, the allowance amount "pops up" to the non-reduced amount.



## BRAINTREE RETIREMENT SYSTEM

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### GLOSSARY OF TERMS

1. Present Value of Benefits Represents the dollar value today of all benefits expected to be earned by current members if all actuarial assumptions are exactly realized.
2. Actuarial Cost Method The procedure that is used to allocate the present value of benefits between the liability that is attributable to past service (Actuarial Accrued Liability) and that attributable to future service.
3. Actuarial Assumptions Estimates are made as to the occurrence of certain events that determine the level of benefits to be paid and how long they will be provided. The more important actuarial assumptions include the investment return on assets, salary increases and the rates of turnover, disability, retirement and mortality.
4. Actuarial Accrued Liability The portion of the Present Value of Benefits that is attributable to past service.
5. Normal Cost The portion of the Present Value of Benefits that is attributable to benefits to be earned in the coming year.
6. Actuarial Assets Market value of assets (adjusted by payables and receivables) adjusted to phase in investment gains or losses above or below the expected rate of investment return over a four-year rolling period starting with the 2008 calendar year investment return. The phase-in is 25% for year one, 50% for year two, 75% for year three and 100% for year four. The actuarial value of assets may be no less than 90%, or more than 110% of the market value of assets plus payables and receivables.
7. Unfunded Actuarial Accrued Liability That portion of the Actuarial Accrued Liability not covered by System Assets.
8. PERAC Public Employee Retirement Administration Commission, a division of the State government which has regulatory authority over the administration of the retirement system.



## BRAINTREE RETIREMENT SYSTEM

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9. PRIT Pension Reserves Investment Trust Fund is the state controlled and administered fund for the investment of assets for members of the retirement system.
  
10. GASB Government Accounting Standards Board (issues guidance for disclosure of retirement system liabilities).



## BRAINTREE RETIREMENT SYSTEM

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### Acknowledgement of Qualification

Acknowledgement of Qualification for January 1, 2012 actuarial valuation of the Braintree Retirement System:

I, Lawrence Stone, am a consultant for Stone Consulting, Inc. I am a member of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Lawrence B. Stone  
Member, American Academy of Actuaries