



**West Virginia  
State Police Retirement System  
(Plan B)**

**Actuarial Valuation  
As of July 1, 2010**

**Prepared by:**

**buck**consultants

A Xerox Company

**for the  
West Virginia Consolidated Public Retirement Board**

**January 2011**

January 19, 2011

West Virginia Consolidated Public Retirement Board  
4101 MacCorkle Ave SE  
Charleston, WV 25304

**Re: West Virginia State Police Retirement System (Plan B);  
Actuarial Valuation as of July 1, 2010**

Retirement Board Members:

We respectfully present our report on the actuarial valuation of the West Virginia State Police Retirement System (Plan B) as of July 1, 2010. This valuation presents the annual cost and related liabilities of the plan as of the valuation date.

Some key highlights are:

- The valuation was prepared based on an assumed interest rate of 7.50%.
- The valuation indicates that the expected state contribution of 19.5% of payroll plus the member contribution of 13% of payroll is sufficient in meeting the annual funding requirements of the plan.
- The funded percentage of plan assets to the actuarial accrued liability is 76.2%.
- Based on a 15-year projection, the Fund will continue to have a positive cash flow, i.e., contributions plus investment income are expected to exceed benefit payments and expenses through FY 2025. Contributions alone are expected to exceed benefit payments for at least the next 15 years.

This report contains supporting data and background information pertaining to the development of costs and related liabilities of the plan. The valuation is based on:

- Membership data as of June 30, 2010 maintained by the West Virginia Consolidated Public Retirement Board, and
- Financial information received from the West Virginia Investment Management Board.

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This report presents fairly the actuarial position of the West Virginia State Police Retirement System as of July 1, 2010 in accordance with generally accepted actuarial principles applied on a basis consistent with that of the preceding valuation. In our opinion, the assumptions used in preparing the liabilities and costs are individually reasonable in respect to the State Police Retirement System experience and represent our best estimate of anticipated experience under the System. We are prepared to certify the results of this report as required at any time.

I am a Fellow of the Society of Actuaries and a Member of the American Academy of Actuaries. I meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained in this report. This report has been prepared in accordance with all applicable Actuarial Standards of Practice, and I am available to answer questions about it.

Respectfully submitted,

*David L. Driscoll*

David L. Driscoll, FSA, EA  
Principal and Consulting Actuary

Enclosure

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This report presents the results of the July 1, 2010 actuarial valuation of the West Virginia State Police Retirement System. The development of the results is presented in Table 1. The report includes disclosure information under GASB 25 and GASB 27. A summary of the plan features, a summary of the method, factors and assumptions and supplementary membership tables used in the valuation are also included. The Appendix to this report specifies the decrements used in the valuation.

### **Valuation Results**

The West Virginia State Police Retirement System was established to cover State police employed after March 12, 1994. Until 2008, the plan provided unreduced monthly benefits to members upon retirement at age 55 after completing 20 years of contributory service. In March of 2008, legislation (HB 4471) was enacted that lowered the eligibility criteria for unreduced benefits to the earlier of the attainment of age 50 after completion of 25 years of service and the attainment of age 52 after completion of 20 years of service. The legislation also provides for the collection of certain fees for fingerprinting services, which are to be deposited into the System's trust in addition to the employer contribution that is established as a percentage of payroll. These provisions of the legislation are reflected in this valuation. Another provision of the legislation provides for automatic increases in member contributions in the event that the System's funded percentage falls below 90%. Under this statute, the member contribution was increased to 13% effective July 1, 2009, and is to remain at that level until the Plan attains a 90% funded ratio. The plan also provides reduced early retirement benefits, benefits in the event of disability or death while active and deferred benefits to members who terminate prior to retirement, providing plan eligibility conditions are met.

The Plan is funded through employer contributions, currently at 19.5% of base payroll, and member contributions of 13% of base payroll. The major purpose of the valuation is to determine the adequacy of the expected contributions with respect to funding expected Plan liabilities.

The July 1, 2010, valuation results were determined using an interest rate of 7.50%, the same interest assumption used in the prior valuation. The actual return on assets for the year ending

June 30, 2010, for valuation purposes (assumes mid year transactions) was 14.87%, above the assumed rate of return. The yield on a time-weighted basis (excluding administrative expense) determined by the Investment Management Board, was 15.87%.

The valuation indicates that current contribution levels exceed the calculated cost to fund the benefits accruing during the year (the normal cost) plus the amount required to amortize the Plan's primary unfunded liability over a 30-year period from July 1, 2000 and the amount required to amortize the liability for benefit improvements to actives reducing the eligibility for unreduced early retirement under HB4471 over a 10-year period.

Table 1 presents the development of the valuation results as of July 1, 2010 and for comparison purposes July 1, 2009. The calculated State cost is determined as the State's share of the normal cost (the cost to fund benefits accruing during the year), plus amortization of the unfunded actuarial accrued liability segments over the specified periods.

A summary of the calculated and expected State contribution for FY 2011 and projection for FY 2012 follows:

	<u>FY 2011</u>	<u>FY 2012</u>
Calculated State Cost	\$ 4,387,000	\$ 4,516,000
Expected State Contribution	4,770,000	4,989,000

The estimated progress of the Plan assets for the period FY 2011 through FY 2025 is presented in Table 2. The market value of the fund assets as of the valuation date, July 1, 2010, is used as a starting point. This projection is useful in showing the emerging benefit payments of the fund and the concurrent fund growth. The projection is based upon the same assumptions as those used to determine the annual cost and related liabilities of the Plan. The expected contribution for FY 2011 is assumed to be 32.50% of base payroll. The increase in the dollar value of the expected contribution reflects the assumed salary increases.

### Funding Progress

The measure of funding status used by accountants for both the State's and the Plan's financial statements is presented in Table 3, which contains information required under Governmental Accounting Standards Board Statement Numbers 25 and 27 (GASB 25 and GASB 27).

Plan asset information is presented in Tables 4 and 5.

### Plan Membership

A summary of plan membership, with a comparison to the prior valuation, follows:

Group	July 1, 2010	July 1, 2009
Actives	498	472
Retirees and Beneficiaries	17	14
Terminated Vested	8	4
Withdrawals with Contribution Refunds Pending	101	97
Total recognized in the valuation	624	587

Table 6 presents a reconciliation of plan membership over the year. Table 7 presents an age and service distribution of actives showing the number of members in each age/service cell and total annual compensation. Tables 8 and 9 present retired participants and deferred vested participants respectively by 5 year age groups and average monthly benefits.

Table 1

## Development of Valuation Results

	<u>July 1, 2010</u>	<u>July 1, 2009</u>
Membership		
Actives	498	472
Retirees and Disableds	17	14
Deferred Vesteds	8	4
Withdrawals with Contribution Refunds Pending	<u>101</u>	<u>97</u>
	624	587
1. Present Value of Future Benefits		
Actives	\$ 118,122,000	\$ 109,406,000
Retirees and Disableds	5,545,000	4,421,000
Deferred Vesteds	272,000	115,000
Withdrawals with Contribution Refunds Pending	<u>878,000</u>	<u>815,000</u>
Total	\$ 124,817,000	\$ 114,757,000
2. Actuarial Accrued Liability (AAL)	69,171,000	61,628,000
3. Assets (Market Value)	52,735,000	40,321,000
4. Unfunded AAL: (2) - (3)	16,436,000	21,307,000
a. Primary Unfunded	14,848,000	19,577,000
b. Eligibility for unreduced as per HB4471	1,588,000	1,730,000
5. Annual State Entry Age Normal Cost Percentage Rate		
a. Present Value of Future Normal Costs: (1) - (2)	55,646,000	53,128,000
b. PV Future of Future Base Payroll	230,895,000	220,821,000
c. Normal Cost Rate: (5a) / (5b)	24.10%	24.06%
d. Member's Share	13.00% <sup>1</sup>	13.00%
e. State Share	11.10%	11.06%
f. Total Base Payroll FY 2011 (2010)	23,635,000	22,382,000
6. Calculated State Cost FY 2011 (2010)		
a. Amortization of Unfunded AAL over 30 years from 7/1/2000 at a level dollar amount (MOY)	1,405,000	1,813,000
b. Amortization Payment on HB4471	262,000	262,000
b. State Normal Cost (MOY): (5e) x (5f) x 1.036822	<u>2,720,000</u>	<u>2,567,000</u>
c. Total State Cost (MOY)	4,387,000	4,642,000
d. State Cost as a Percent of Payroll: (6c) / (5f)	18.56%	20.74%
7. Expected State Contribution FY 2011 (2010)		
a. State Contribution Rate	19.50%	15.00%
b. Expected percent-of-payroll contribution	4,609,000	3,357,000
c. Expected additional fees under HB4471	161,000	180,000
d. Expected state contribution	4,770,000	3,537,000

<sup>1</sup> Under Statute this percentage was increased to 13% effective July 1, 2009 and remains at that level until the fund reaches a 90% funded ratio.



Table 2  
Estimated Progress of Pension Plan from Fiscal Year 2011 through Fiscal Year 2025

Fiscal Year	Fund Balance at Beginning of Year	Contributions During Year	Disbursements	Income	Increase to Fund During Year	Fund Balance at End of Year
2011	\$ 52,735,000	\$ 7,842,000	\$ 1,704,000	\$ 4,185,000	\$ 10,323,000	\$ 63,058,000
2012	63,058,000	8,207,000	954,000	5,001,000	12,254,000	75,312,000
2013	75,312,000	8,589,000	1,069,000	5,930,000	13,450,000	88,762,000
2014	88,762,000	8,989,000	1,093,000	6,953,000	14,849,000	103,611,000
2015	103,611,000	9,408,000	1,190,000	8,079,000	16,297,000	119,908,000
2016	119,908,000	9,847,000	1,385,000	9,310,000	17,772,000	137,680,000
2017	137,680,000	10,307,000	1,487,000	10,657,000	19,477,000	157,157,000
2018	157,157,000	10,789,000	1,688,000	12,128,000	21,229,000	178,386,000
2019	178,386,000	11,133,000	1,957,000	13,723,000	22,899,000	201,285,000
2020	201,285,000	11,662,000	2,599,000	15,436,000	24,499,000	225,784,000
2021	225,784,000	12,216,000	4,018,000	17,241,000	25,439,000	251,223,000
2022	251,223,000	12,796,000	5,455,000	19,117,000	26,458,000	277,681,000
2023	277,681,000	13,404,000	6,672,000	21,079,000	27,811,000	305,492,000
2024	305,492,000	14,041,000	8,514,000	23,119,000	28,646,000	334,138,000
2025	334,138,000	14,708,000	10,469,000	25,219,000	29,458,000	363,596,000

## Notes:

- The fund balance as of July 1, 2010 is the market value of the fund.
- The contribution for FY 2011 is determined as 32.50% of anticipated FY 2011 base pay (13% Member contributions, 19.5% State contributions), plus additional fees of \$180,000 under HB4471. Thereafter, the contribution is assumed to increase at 4.75% per year to reflect the salary increase assumption. The additional fees under HB4471 are assumed to remain constant, and are payable through FY 2018. The 19.5% State contribution rate is assumed to remain constant for projection purposes. No new entrants are assumed in this projection.
- The projection of future benefit payments is based on all participants included in the valuation, including active and terminated vested participants who are not yet receiving benefits.

Table 3

## GASB 25 and GASB 27 Supplementary Disclosure Information as of June 30, 2010

Government Accounting Standards Board Statements 25 and 27 set forth certain items of required supplementary information to be disclosed in the financial statement of the System and the employer. The following information is intended to be used for this purpose in conjunction with other information prepared by the auditor.

## 1. Number of Members as of June 30, 2010 and June 30, 2009

Group	June 30, 2010	June 30, 2009
Retirees, disabled retirees and beneficiaries currently receiving benefits	17	14
Terminated employees entitled to benefits but not yet receiving benefits	8	4
Terminated employees entitled to a return of employee contributions	101	97
Active		
Vested	225	181
Nonvested	273	291
	624	587
Total		

## 2. Schedule of Funding Progress

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) - Entry Age (b)	Unfunded Accrued Liability (UAL) (b-a)	Funded Ratio (a/b)	Covered Payroll (c)	UAL as a Percentage of Covered Payroll (b-a)/(c)
6/30/2000	\$ 7,514,000	\$ 8,585,000	\$ 1,071,000	87.5%	\$ 9,799,000	10.9%
6/30/2001	\$ 9,825,000	\$ 10,819,000	\$ 994,000	90.8%	\$10,175,000	9.8%
6/30/2002	\$11,644,000	\$ 13,708,000	\$ 2,064,000	84.9%	\$10,134,000	20.4%
6/30/2003*	\$14,741,000	\$ 16,892,000	\$ 2,151,000	87.3%	\$11,449,000	18.8%
6/30/2004	\$19,882,000	\$ 22,102,000	\$ 2,220,000	90.0%	\$13,233,000	16.8%
6/30/2005	\$25,297,000	\$ 26,050,000	\$ 753,000	97.1%	\$14,311,000	5.3%
6/30/2006	\$30,747,000	\$ 33,552,000	\$ 2,805,000	91.6%	\$15,870,000	17.7%
6/30/2007	\$40,350,000	\$ 40,786,000	\$ 436,000	98.9%	\$18,850,000	2.3%
6/30/2008	\$41,564,000	\$ 51,388,000	\$ 9,824,000	80.9%	\$20,285,000	48.4%
6/30/2009	\$40,321,000	\$ 61,628,000	\$21,307,000	65.4%	\$22,382,000	95.2%
6/30/2010	\$52,735,000	\$ 69,171,000	\$16,436,000	76.2%	\$23,635,000	69.5%

\* The 6/30/2003 assets have been changed to reflect the final audited financial statements which were unavailable at the issuance of the July 1, 2003 valuation report.

3. The information presented in the required supplementary schedules was determined as part of the actuarial valuation at July 1, 2010. Additional information follows.

Valuation date	July 1, 2010
Actuarial cost method	Entry Age Normal
Allocation of employer normal cost	Level percentage of payroll
Asset valuation method	Market value
Actuarial assumptions:	
Investment rate of return	7.5%
Projected salary increases	6.5% per annum for the first 2 years of service, 6.0% for the next 3 years 5.5% for the next 5 years and 4.75% thereafter
Inflation Rate	3.0%

Table 4

## Valuation Assets as of June 30, 2010

Assets	<u>June 30, 2010</u>	<u>June 30, 2009</u>
Cash with State Treasurer	\$ 0	\$ 0
Investments at Fair Value	52,739,000	40,321,000
Contributions Receivable	0	0
Participant Loans Receivable	0	0
Miscellaneous Revenue Receivable	0	0
Total Assets	<u>52,739,000</u>	<u>40,321,000</u>
Liabilities		
Accrued Expenses and other Payables	\$ <u>4,000</u>	\$ <u>0</u>
Net Assets for Pension Benefits	\$ 52,735,000	\$ 40,321,000
Post Audit Adjustment	<u>0</u>	<u>0</u>
Net Assets after Audit Adjustment	\$ 52,735,000	\$ 40,321,000

Table 5

**Statement of Changes in Net Assets for Benefits  
For Year Ended June 30, 2010**

Net Assets for Pension Benefits - Beginning of Year	\$ 40,321,000
Additions	
Contributions	
Member	2,943,000
Employer	3,396,000
Other (Fingerprinting Fee)	143,000
Subtotal	<u>6,482,000</u>
Investment Income	
Net Appreciation in Fair Value *	6,476,000
Loan Interest	0
Subtotal	<u>6,476,000</u>
Other Income	62,000
Total	<u>13,020,000</u>
Deductions and Transfers	
Benefit Expense	369,000
Refunds of Contributions	202,000
Administrative Expenses	35,000
Transfers (to)/from plan	0
Total	<u>606,000</u>
Net Increase	12,414,000
Net Assets for Pension Benefits - End of Year	52,735,000
Investment Return for Year:	
Valuation purposes (assumes mid-year transactions and offsets investment income by investment and administrative expense)	14.87%
Per Investment Management Board (time-weighted, excluding administrative expense)	15.87%

\* Net of Investment Expense

Table 6  
Reconciliation of Plan Participants

	Active	Non-Vested Terms	Vested Terms	Disabled Retirees	Service Retirees	Beneficiaries	Total
<b>Census as of July 1, 2009</b>	472	97	4	7	2	5	587
New Entrants	38	3	0	0	0	0	41
Returned to Active Status	3	-3	0	0	0	0	0
Retired	-2	0	0	0	2	0	0
Died	0	0	0	0	0	-1	-1
Terminated	-4	0	4	0	0	0	0
- Vested	-6	6	0	0	0	0	0
- Non Vested	-3	-2	0	0	0	0	-5
- Withdrew Contributions	0	0	0	0	0	2	2
New Beneficiaries	0	0	0	0	0	0	0
New QDROs	0	0	0	0	0	0	0
Adjustments	0	0	0	0	0	0	0
<b>Census as of July 1, 2010</b>	498	101	8	7	4	6	624

Table 7  
Number and Total Annual Base Compensation of Active Participants

Attained Age	Years of Credited Service													TOTAL	
	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up	No./		Tot. Comp.			
	No./ Comp.	No./ Comp.	No./ Comp.	No./ Comp.	No./ Comp.	No./ Comp.	No./ Comp.	No./ Comp.	No./ Comp.	No./ Comp.	No./ Comp.	No./ Comp.	No./ Comp.		
Under 25	31 1,306,581	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	31 1,306,581	
25 to 29	71 3,072,753	16 713,158	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	87 3,785,911	
30 to 34	36 1,573,626	49 2,219,781	31 1,528,506	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	116 5,321,913	
35 to 39	16 698,844	32 1,465,802	83 4,178,996	29 1,585,426	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	160 7,929,068	
40 to 44	3 131,791	9 416,503	41 2,107,757	24 1,306,903	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	77 3,962,954	
45 to 49	3 127,164	4 187,151	7 348,927	5 273,090	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	19 936,332	
50 to 54	1 41,597	1 46,324	2 97,645	1 50,051	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	5 235,617	
55 to 59	1 41,597	0 0	0 0	1 58,858	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	2 100,455	
60 to 64	0 0	0 0	0 0	1 55,683	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	1 55,683	
65 to 69	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	
70 & up	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	
TOTAL	162 6,993,953	111 5,048,719	164 8,261,831	61 3,330,011	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	498 23,634,514	

Table 8  
 Distribution of the Number and Average Monthly Benefits  
 Of Retired Participants as of July 1, 2010

Current Age	Healthy Retirees			Disabled Retirees			Beneficiaries			Total		
	Number	Avg. Age	Average Monthly Benefit	Number	Avg. Age	Average Monthly Benefit	Number	Avg. Age	Average Monthly Benefit	Number	Avg. Age	Average Monthly Benefit
15 - 19	0	0	\$ 0	0	0	\$ 0	1	16	\$ 373	1	16	\$ 373
20 - 24	0	0	0	0	0	0	1	20	373	1	20	373
25 - 29	0	0	0	0	0	0	0	0	0	0	0	0
30 - 34	0	0	0	1	34	1,647	2	32	2,397	3	33	2,147
35 - 39	0	0	0	5	38	2,545	1	37	2,398	6	38	2,520
40 - 44	0	0	0	1	40	1,208	1	41	101	2	41	654
45 - 49	0	0	0	0	0	0	0	0	0	0	0	0
50 - 54	1	54	4,469	0	0	0	0	0	0	1	54	4,469
55 - 59	2	58	3,044	0	0	0	0	0	0	2	58	3,044
60 - 64	1	63	2,781	0	0	0	0	0	0	1	63	2,781
>64	0	0	0	0	0	0	0	0	0	0	0	0
Total	4	58	\$ 3,334	7	38	\$ 2,226	6	30	\$ 1,340	17	40	\$ 2,174

Total annual benefits \$ 160,053 \$ 186,946 \$ 96,483 \$ 443,482



Table 9

**Distribution Of The Number And Average Monthly Benefits  
Of Participants Entitled To Deferred Benefits As Of July 1, 2010**

Deferred Vested			
Current Age	Number	Average Age	Average Monthly Benefit
Under 30	-	-	-
30-34	1	33	1,383
35-39	4	39	1,360
40-44	3	42	1,207
45-49	-	-	-
50-54	-	-	-
55-59	-	-	-
60-64	-	-	-
Total	8	39	1,305
Total annual benefits			125,302

**A. DEFINITIONS**

1. ***Plan Name:*** The West Virginia State Police Retirement System
2. ***Effective Date:*** Plan created on March 12, 1994 under §15-2A of West Virginia Code.
3. ***Plan Membership:*** West Virginia state police employed after the effective date.
4. ***Compensation:***
  - ***Base Salary:*** A trooper's compensation from the Department (exclusive of overtime) in the 12 months preceding his death or disability. If the member had not yet worked 12 months, an annualized amount is used.
  - ***Gross Salary:*** A trooper's compensation from the Department, including overtime compensation.
  - ***Final Average Salary:*** The average of the highest annual compensation from employment in the Department, including overtime pay, received by the member during any 5 years within the last 10 years of service.
5. ***Service:***
  - ***Contributory Service:*** A member's period of service in the Department during which he makes contributions to this retirement system.
  - ***Unused Sick or Annual Leave:*** A retiring member may at his option convert unused sick and/or annual leave to pension service credit at the rate of two days of service credited per day of unused leave. After doubling, 260 unused leave days are counted as one year of credited service. Such service counts for the purpose of increasing the member's benefit, but it does not count for determining eligibility for benefits.
  - ***Military Service:*** Members can receive service credit for time they served on active military duty, up to 5 years maximum. Such service counts for the purpose of increasing the member's benefit, but it does not count for determining eligibility.

- ***Reinstated:*** If a member terminates service with the Department, receives a refund of contributions, and subsequently rejoins the Department, the member's original service will be reinstated if the member repays to the Plan the amount refunded, with compound interest at 7.50% per annum.

## B. CONTRIBUTIONS

1. ***Member Contributions:*** Members contribute 13% of their base salary, excluding overtime, to the retirement fund.
2. ***Employer Contributions:*** The State of West Virginia currently contributes 19.5% of the base payroll of members of the Plan as well as fees stipulated in HB4471.

## C. NORMAL RETIREMENT BENEFIT

1. ***Eligibility:*** A member who has attained age 50 and has earned 25 or more years of contributory service, or has attained age 52 and has earned 20 or more years of contributory service, is eligible for a normal retirement benefit.
2. ***Benefit Amount:*** The annual normal retirement benefit, payable in monthly installments, is equal to 2.75% of the member's final average salary times the number of years of service.
3. ***Normal Form of Benefit:*** The normal form of the retirement benefit is a life annuity with 66-2/3% of the amount payable continuing to the member's surviving spouse after the death of the member, for the spouse's remaining lifetime, or until remarriage.
4. ***Optional Forms of Benefit:*** The retiring member may choose an actuarially reduced joint and survivor annuity with his or her spouse as beneficiary, increasing the amount payable to the surviving spouse for the spouse's remaining lifetime after the death of the member above the 66-2/3% level.

**D. DEFERRED VESTED BENEFIT**

1. **Eligibility:** A terminating member who has completed ten years of contributory service and who does not withdraw his accumulated contributions, is entitled to a deferred vested benefit commencing at age 62.
  
2. **Amount:** The deferred vested annual pension, payable in monthly installments, is equal to 2.75% of the member's final average salary times his years of service. It is payable in the same form as the normal retirement benefit would be or alternatively, the member may elect to receive an actuarially adjusted joint and survivor annuity with 50% of the amount payable while both are alive continuing to the surviving spouse during the spouse's remaining lifetime.

**E. EARLY RETIREMENT BENEFIT**

1. **Eligibility:** A member who has earned 20 or more years of contributory service, may retire early at any age.
  
2. **Amount:** The early retirement benefit is payable in monthly installments under the same normal or optional forms as the normal retirement benefit. It is equal to the deferred benefit actuarially reduced for the number of years by which his early retirement precedes age 55.

**F. DISABILITY BENEFIT - DUTY RELATED**

1. *Eligibility:* A member disabled in the line of duty and rendered unable to perform his duties is eligible for a duty-related disability retirement. If he can hold other employment, then he is partially disabled. If he is unable to work, then he is totally disabled.
2. *Amount for partial disability:* The duty related partial disability benefit is a monthly annuity equal to 60% of the member's base salary. This is payable until recovery or until age 55, when a retirement pension is substituted, equal to his Normal Retirement Benefit based on his Final Average Salary at the time of disablement. After changing the benefit at age 55, for purposes of subsequent annual annuity adjustments the retirement is then treated as a service retirement at age 55.
3. *Amount for total disability:* The duty related total disability benefit is monthly annuity equal to 100% of the member's base salary, payable for life or until recovery from the disability.

**G. DISABILITY BENEFIT - NONDUTY RELATED**

1. *Eligibility:* A member who is disabled other than in the line of duty and rendered unable to perform his duties as a member of the Department is also eligible for disability retirement.
2. *Amount:* The non-duty related disability benefit is a monthly annuity equal to 50% of the member's base salary. This is payable until recovery or until age 55, when a retirement pension is substituted, equal to his Normal Retirement Benefit based on his Final Average Salary at the time of disablement. After changing the benefit at age 55, for purposes of subsequent annual annuity adjustments, the retirement is then treated as a service retirement at age 55.

## H. PRERETIREMENT DEATH BENEFITS

1. *Eligibility:* The surviving spouse, or in some cases surviving children or dependent parents, of a member who dies from duty-related causes, is eligible for a survivor's pension. If death is unrelated to his duties as a state trooper, the surviving family is eligible for a nonduty-related pension. In the nonduty case the benefits payable depend on whether or not the deceased trooper had 20 years of service.

### 2. *Amount*

#### - *Duty-Related Death*

- *To the surviving spouse:* A monthly life annuity to the surviving spouse equal to nine-tenths (9/10) of the member's base salary, but not less than \$10,000 annually. The surviving spouse also receives \$150 monthly for each dependent child. These benefits continue even after the surviving spouse remarries.
- *To surviving dependent children:* If no spouse survives, each surviving child receives one-third (1/3) of what would have been a surviving spouse's entitlement. Each child is also eligible for an academic scholarship to West Virginia schools, paying up to \$7,500.
- *To surviving dependent parents:* If there is no surviving spouse or children, then each surviving dependent parent of the deceased member will receive one-half of what would have been a surviving spouse's entitlement.

#### - *Nonduty-Related Death after Completing 20 Years of Service*

- *To the surviving spouse:* A monthly life annuity equal to two-thirds (2/3) of the member's Normal Retirement Benefit, but not less than \$5,000 annually. The spouse also receives \$100 monthly for each dependent child. These benefits cease upon remarriage.
- *To surviving dependent children:* If there is no surviving spouse, or the spouse remarries, each surviving child receives one-fourth (1/4) of what would have been the spouse's entitlement. Such children are not eligible for scholarships from the retirement fund.

- *To surviving dependent parents:* If there is no surviving spouse or children, then each surviving dependent parent of the deceased member will receive one-half of what would have been a surviving spouse's entitlement.
- *Nonduty-Related Death before Completing 20 Years of Service*
- *To the surviving spouse:* A monthly life annuity equal to one-half (½) of the member's base salary.
  - *To the surviving dependent children:* If there is no surviving spouse, or the spouse remarries, each surviving child receives one-fourth (¼) of what would have been the spouse's entitlement.
  - *To the surviving dependent parents:* If there is no surviving spouse or children, then each surviving dependent parent of the deceased member will receive one-half (½) of what would have been a surviving spouse's entitlement.

#### **I. POSTRETIREMENT DEATH BENEFITS**

Other than the death benefit inherent in the cash refund feature of the normal form of benefit, or the survivor's annuity in the case of a joint and survivor pension, no postretirement death benefits are payable under this retirement plan.

#### **J. ANNUAL ANNUITY ADJUSTMENT**

An annual annuity adjustment of 1% of the amount of pension is made to all annuities paid under this Plan except the Deferred Vested Benefit. This increase is made on July 1 each year, beginning on the July 1 of the year first following the initial retirement award in the case of beneficiaries and disabled troopers, or the July 1 coinciding with or first following the 63rd birthday, in the case of service retirees. A prorata increase is given as the initial adjustment, if it represents only a partial year.

#### **K. REFUND OF CONTRIBUTIONS**

1. **Eligibility:** A member who leaves employment and is not eligible for any other benefit will receive a refund of his or her contributions to the retirement fund. After receiving a refund of contributions, a member has no further rights to benefits under the retirement fund.
  
2. **Amount:** A lump sum of the member's accumulated contributions, with compound interest based on an annual interest rate of 4.00%.



**A. Valuation Date**

July 1, 2010.

**B. Funding Method**

The valuation is prepared under the Entry Age Normal Cost method with individually computed accrued liabilities. The Normal Cost is computed in aggregate. Entry age is based on date of hire. The unfunded liability segments are amortized as a level dollar amount over their specified periods.

**C. Interest Rate and Expenses**

The valuation interest assumption is 7.50% annually, with no loading for plan expenses.

**D. Mortality**

The RP-2000 Mortality Tables for Healthy Annuitants and Employees are used for males and females. Mortality for non-disabled retirees is projected 10 years using Scale AA. Mortality for active members in service is projected 5 years with Scale AA in recognition of increased duty related accidental deaths. Mortality for disabled retirees is assumed to follow the unadjusted RP-2000 Mortality Tables for Disabled Retirees. It is assumed that 70% of deaths of members in service are duty related.

**E. Salary Scales**

Compensation is assumed to increase 6.50% per year for the first 2 years of service, 6.00% for the next 3 years, 5.50% for the next 5 years, and 4.75% per year thereafter. This corresponds to an assumed underlying inflation rate of 3.00%.

**F. Withdrawal from Service**

Withdrawal rates are shown in the Appendix. Withdrawal rates cease once an employee is eligible for normal retirement.

**G. Disablement Rates**

Disablement rates and the probability of each type of disability are shown in the Appendix. No disablements are assumed to occur after the later of age 55 and the age first eligible for retirement.

**H. Family Composition**

It is assumed that 90% of members are married, with husbands 3 years older than wives. Remarriage rates are not used.

**I. Accrual of Future Service**

It is assumed that active members will accrue one year of service for each future year of employment.

**J. Noncontributory Service**

It is assumed that state troopers at retirement will have a 13.3% increase over contributory service added for all sources.

**K. Retirement Rates**

70% of members are assumed to retire when first eligible for unreduced benefits at the earlier of age 50 and 25 years of service or age 52 and 20 years of service. An active member who has already attained eligibility for normal retirement has a 20% probability of retiring each year thereafter with 100% retiring on or after attainment of age 55.

**L. Asset Valuation Method**

Assets for valuation purposes are included at Market Value.

**M. Plan Contributions**

Plan Contributions, both employee and employer, are assumed to be paid in the middle of the year.

<u>Age</u>	<u>Rate of Withdrawal<sup>1</sup></u>	<u>Rate of Disability</u>
19	0.08000	0.00050
20	0.08000	0.00050
21	0.07770	0.00050
22	0.07540	0.00050
23	0.07310	0.00050
24	0.07090	0.00050
25	0.06860	0.00050
26	0.06630	0.00080
27	0.06400	0.00110
28	0.06170	0.00140
29	0.05940	0.00170
30	0.05710	0.00200
31	0.05490	0.00240
32	0.05260	0.00280
33	0.05030	0.00320
34	0.04800	0.00360
35	0.04570	0.00400
36	0.04340	0.00440
37	0.04110	0.00480
38	0.03890	0.00520
39	0.03660	0.00560
40	0.03430	0.00600
41	0.03200	0.00600
42	0.02970	0.00600
43	0.02740	0.00600
44	0.02510	0.00600
45	0.02290	0.00600
46	0.02060	0.00560
47	0.01830	0.00520
48	0.01600	0.00480
49	0.01370	0.00440
50	0.01140	0.00400
51	0.00910	0.00400
52	0.00690	0.00400
53	0.00460	0.00400
54	0.00230	0.00400
55	-	0.00400
56	-	-

<u>Type of Disability</u>	<u>Probability</u>
Duty Related Full	0.25
Duty Related Partial	0.50
Non Duty Full	0.20
Non Duty Partial	0.05

<sup>1</sup>Withdrawals are assumed to cease once employee attains eligibility for reduced early retirement