



**West Virginia  
Public Employees' Retirement System**

**Actuarial Valuation  
As of July 1, 2012**

**Prepared by:**

**buck**consultants<sup>®</sup>

A Xerox Company

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

**January 2013**

January 14, 2013

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

**Re: West Virginia Public Employees' Retirement System: Actuarial Valuation as of July 1, 2012**

Retirement Board Members:

We respectfully present our report on the actuarial valuation of the West Virginia Public Employees' Retirement System (PERS) as of July 1, 2012. This valuation presents the annual cost and related liabilities of the Plan as of the valuation date.

The valuation indicates that the expected state contributions of 14.0% of payroll plus the member contributions of 4.5% of payroll are not sufficient to meet the annual funding requirement of the plan.

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, 2012, maintained by the West Virginia Consolidated Public Retirement Board
- financial information received from the West Virginia Investment Management Board.

This report presents fairly the actuarial position of the West Virginia Public Employees' Retirement System as of July 1, 2012, 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 PERS experience and represent our best estimate of anticipated experience under PERS.

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, FSA, EA  
Principal and Consulting Actuary

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This report presents the results of the July 1, 2012, actuarial valuation of the West Virginia Public Employees' Retirement System (PERS). The development of the results, including for purposes of comparison the previous year's results as of July 1, 2011, is presented in Table 1. The report includes disclosure information under Statements 25 and 27 of the Governmental Accounting Standards Board (GASB). A summary of the plan features, a summary of the methods, factors and assumptions and supplementary membership tables used in the valuation are also included.

### **Valuation Results**

The West Virginia Public Employees' Retirement System is a defined benefit plan providing unreduced monthly benefits to members upon retirement at age 60 after completing 5 years of service, or retirement on or after age 55 and meeting the "Rule of 80." 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 was amended to change the Final Average Salary from the 36 highest consecutive months out of the last 10 years of earnings to the last 15 years of earnings. This change had no impact on the Plan's normal cost or liabilities.

The Plan is funded through employer contributions, currently at 14.0% of payroll, and member contributions of 4.5% of payroll. The major purpose of the valuation is to determine the adequacy of the expected contributions with respect to funding expected Plan liabilities.

The valuation indicates that current contribution levels are less than the calculated cost to fund the benefits accruing during the year (the normal cost) plus the amount required to amortize at a level dollar amount the Plan's primary unfunded liability originally established as of July 1, 2005 over a 23-year period (30 years from July 1, 2005) and the amount required to amortize the liability for benefit improvements to actives under SB173 over a 4-year period (10 years from July 1, 2006).

The remaining balance of the unfunded liability for the retiree benefit improvements under HB3145 was fully funded by a contribution of \$859,800 during FY 2012. The retiree benefit improvements under HB4846 were fully amortized according to the 6-year schedule.

### **Comments on Valuation Results**

Table 1 presents the development of the valuation results as of July 1, 2012, and, for purposes of comparison, July 1, 2011. The calculated Employer cost is determined as the Employer's share of the normal cost (the cost to fund benefits accruing during the year), plus amortization of the unfunded actuarial liability segments over the specified periods.

Table 2a presents a projection of the primary unfunded actuarial accrued liability to June 30, 2035. The primary unfunded actuarial accrued liability at the valuation date is approximately \$1,283 million. This table illustrates the expected pattern of change in the unfunded liability over the remaining 23-year period. Table 2b presents a projection of the unfunded liability for benefit improvements to actives under SB173 to June 30, 2016.

Table 3 presents a cash flow projection of expected asset balances, contributions, disbursements and earnings over the period to FY 2037.

### **Funding Progress**

The measures of funding status used by accountants for both the State's and the Plan's financial statements are presented in Table 4, which contains information required under Governmental Accounting Standards Board Statement Numbers 25 and 27 (GASB 25 and GASB 27).

Table 5a presents the market value and actuarial value of assets for the fiscal year ending June 30, 2012 and, for purposes of comparison, the fiscal year ending June 30, 2011. Table 5b presents the four-year smoothing of deferred gains and losses used in the calculation of the

actuarial value of assets. Table 6 presents the change in market value of assets for the fiscal year ending June 30, 2012.

### Plan Membership

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

Group	July 1, 2012	July 1, 2011
Actives	36,573	36,254
Retirees & Beneficiaries	23,460	22,793
Terminated Vested	3,847	3,859
Terminated Non-Vested	12,671	12,172
Total recognized in the valuation	76,551	75,078

Table 7 presents a reconciliation of plan membership over the year and Table 8 presents supplemental information on plan membership.

Tables 9a and 9b show the number and total compensation for State and Nonstate active participants by five-year age and service groupings as of July 1, 2012.

Table 10 shows the number and average monthly benefits of retirees and beneficiaries included in the valuation distributed by fifth age group. Table 11 shows a similar distribution for terminated participants entitled to deferred benefits.

**Table 1**  
**Development of Valuation Results**  
**(000's omitted)**

	<u>July 1, 2012</u>	<u>July 1, 2011</u>
Membership		
Active	36,573	36,254
Inactive	39,978	38,824
Total	<u>76,551</u>	<u>75,078</u>
1. Present Value of Future Benefits		
a. Active	\$ 3,792,411	\$ 3,694,325
b. Inactive - Retirees	2,349,116	2,209,438
- Disabled Retirees	191,788	185,904
- Beneficiaries	255,824	244,331
- Vested Terminated	141,098	142,030
- Non-Vested Terminated	11,342	10,533
c. Total	<u>\$ 6,741,579</u>	<u>\$ 6,486,561</u>
2. Actuarial Accrued Liability	\$ 5,735,775	\$ 5,515,252
3. Assets at Actuarial Value	\$ 4,452,395	\$ 4,322,668
4. Unfunded Actuarial Accrued Liability (2) - (3)	\$ 1,283,380	\$ 1,192,584
a. Primary Unfunded	1,283,313	1,191,538
b. Improvements for actives per SB 173	67	81
c. Retirement increase per HB 4846	-	105
d. Retirement increase per HB 3145	-	860
5. Annual Normal Cost Rate		
a. Present Value of Future Normal Cost (1c) - (2)	\$ 1,005,804	\$ 971,309
b. Present Value of Future Payroll	\$ 9,997,616	\$ 9,654,542
c. Normal Cost Rate as a % of Payroll (5a) / (5b)	10.06%	10.06%
d. Employee Contribution Rate	4.50%	4.50%
e. Employer Share of Normal Cost	5.56%	5.56%
f. Valuation Compensation FY 2013 (2012)	\$ 1,382,647	\$ 1,327,717
6. Calculated Employer Cost FY 2013 (2012)		
a. Amortization Payment on UAAL MOY <sup>1</sup>	\$ 114,534	\$ 104,637
b. Amortization Payment on SB 173 MOY <sup>2</sup>	19	19
c. Amortization Payment on HB 4846 MOY	-	109
d. Amortization Payment on HB 3145 MOY	-	177
e. Employer Normal Cost MOY	79,706	76,539
f. Total Employer Cost MOY	<u>\$ 194,259</u>	<u>\$ 181,481</u>
g. Employer Cost as Percentage of Compensation	14.05%	13.67%
7. Expected Employer Contributions FY 2013 (2012)		
a. Employer Contribution Rate	14.00%	14.50%
b. Employer Contribution	\$ 193,571	\$ 192,519

<sup>1</sup> FY 2013 amortization payment is over 23 years (30 years from July 1, 2005).

<sup>2</sup> FY 2013 amortization payment is over 4 years (10 years from July 1, 2006).

**Table 2a**  
**Projection of Unfunded Accrued Liability and Annual Contributions**  
**Primary Unfunded Liability Established July 1, 2005**

<b>Fiscal Year Ending 6/30</b>	<b>Unfunded Liability at Beg. of Year</b>	<b>Projected Total Payroll</b>	<b>Employer Contributions</b>	
			<b>% of Payroll</b>	<b>Amount</b>
2013	\$ 1,283,313,000	\$ 1,382,647,000	8.28%	\$ 114,534,000
2014	1,260,810,000	1,451,779,000	7.89%	114,534,000
2015	1,236,619,000	1,524,368,000	7.51%	114,534,000
2016	1,210,615,000	1,600,587,000	7.16%	114,534,000
2017	1,182,659,000	1,680,616,000	6.82%	114,534,000
2018	1,152,607,000	1,764,647,000	6.49%	114,534,000
2019	1,120,302,000	1,852,879,000	6.18%	114,534,000
2020	1,085,573,000	1,945,523,000	5.89%	114,534,000
2021	1,048,239,000	2,042,799,000	5.61%	114,534,000
2022	1,008,106,000	2,144,939,000	5.34%	114,534,000
2023	964,962,000	2,252,186,000	5.09%	114,534,000
2024	918,583,000	2,364,796,000	4.84%	114,534,000
2025	868,726,000	2,483,035,000	4.61%	114,534,000
2026	815,129,000	2,607,187,000	4.39%	114,534,000
2027	757,512,000	2,737,546,000	4.18%	114,534,000
2028	695,574,000	2,874,424,000	3.98%	114,534,000
2029	628,991,000	3,018,145,000	3.79%	114,534,000
2030	557,414,000	3,169,052,000	3.61%	114,534,000
2031	480,468,000	3,327,505,000	3.44%	114,534,000
2032	397,752,000	3,493,880,000	3.28%	114,534,000
2033	308,832,000	3,668,574,000	3.12%	114,534,000
2034	213,243,000	3,852,003,000	2.97%	114,534,000
2035	110,485,000	4,044,603,000	2.83%	114,534,000



**Table 2b**  
**Projection of Unfunded Accrued Liability and Annual Contributions**  
**Liability for Improvements for Actives per SB 173 Established July 1, 2006**

<b>Fiscal Year Ending 6/30</b>	<b>Unfunded Liability at Beg. of Year</b>	<b>Projected Total Payroll</b>	<b>Employer Contributions</b>	
			<b>% of Payroll</b>	<b>Amount</b>
2013	\$ 67,000	\$ 1,382,647,000	0.00%	\$ 19,000
2014	52,000	1,451,779,000	0.00%	19,000
2015	37,000	1,524,368,000	0.00%	19,000
2016	20,000	1,600,587,000	0.00%	19,000

**Table 3**  
**Cash Flow Projection FY 2013 through FY 2037**

<b>FY Ending 6/30</b>	<b>(1) Assets Beg. of Year</b>	<b>(2) Expected Contributions</b>	<b>(3) Benefits</b>	<b>(4) Earnings</b>	<b>(5) Net Income</b>	<b>(6) Assets End of Year</b>
2013	\$ 4,523,302,000	\$ 255,790,000	\$ 347,759,000	\$ 335,799,000	\$ 243,830,000	\$ 4,767,132,000
2014	4,767,132,000	268,580,000	356,243,000	354,248,000	266,585,000	5,033,717,000
2015	5,033,717,000	282,009,000	375,183,000	374,035,000	280,861,000	5,314,578,000
2016	5,314,578,000	296,109,000	394,191,000	394,915,000	296,833,000	5,611,411,000
2017	5,611,411,000	310,914,000	414,645,000	416,966,000	313,235,000	5,924,646,000
2018	5,924,646,000	326,460,000	434,943,000	440,280,000	331,797,000	6,256,443,000
2019	6,256,443,000	342,783,000	455,254,000	465,016,000	352,545,000	6,608,988,000
2020	6,608,988,000	359,922,000	475,415,000	491,343,000	375,850,000	6,984,838,000
2021	6,984,838,000	377,918,000	495,496,000	519,454,000	401,876,000	7,386,714,000
2022	7,386,714,000	396,814,000	514,485,000	549,591,000	431,920,000	7,818,634,000
2023	7,818,634,000	416,655,000	533,062,000	582,032,000	465,625,000	8,284,259,000
2024	8,284,259,000	437,488,000	550,872,000	617,068,000	503,684,000	8,787,943,000
2025	8,787,943,000	459,362,000	567,576,000	655,038,000	546,824,000	9,334,767,000
2026	9,334,767,000	482,330,000	583,320,000	696,320,000	595,330,000	9,930,097,000
2027	9,930,097,000	506,447,000	598,642,000	741,300,000	649,105,000	10,579,202,000
2028	10,579,202,000	531,769,000	612,624,000	790,408,000	709,553,000	11,288,755,000
2029	11,288,755,000	558,357,000	625,291,000	844,147,000	777,213,000	12,065,968,000
2030	12,065,968,000	586,275,000	636,874,000	903,050,000	852,451,000	12,918,419,000
2031	12,918,419,000	615,589,000	647,243,000	967,694,000	936,040,000	13,854,459,000
2032	13,854,459,000	646,368,000	656,488,000	1,038,705,000	1,028,585,000	14,883,044,000
2033	14,883,044,000	678,686,000	664,362,000	1,116,765,000	1,131,089,000	16,014,133,000
2034	16,014,133,000	712,620,000	670,500,000	1,202,639,000	1,244,759,000	17,258,892,000
2035	17,258,892,000	748,251,000	674,643,000	1,297,177,000	1,370,785,000	18,629,677,000
2036	18,629,677,000	785,664,000	676,193,000	1,401,331,000	1,510,802,000	20,140,479,000
2037	20,140,479,000	824,947,000	675,565,000	1,516,138,000	1,665,520,000	21,805,999,000

**Assumed interest rate: 7.50%**

**Earnings:**  $[(1) + [(2) - (3)]/2] \times \text{interest rate}$

**Notes:**

1. The fund balance as of July 1, 2012 is the market value of the fund.
2. The contribution for FY 2013 is determined as 18.5% of anticipated FY 2013 base pay (4.5% Member contributions and 14.0% State contributions). Thereafter, the contribution is assumed to increase at 5.0% per year to reflect the salary increase assumption. No new entrants are assumed in this projection.
3. 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 4

## GASB 25 and GASB 27 Supplementary Disclosure Information as of June 30, 2012

Governmental 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, 2012 and June 30, 2011

Group	June 30, 2012	June 30, 2011
Retirees, disabled retirees and beneficiaries currently receiving benefits	23,460	22,793
Terminated employees entitled to benefits, but not yet receiving benefits	3,847	3,859
Terminated employees entitled to a return of employee contributions	12,671	12,172
Active Plan members:		
Vested	23,570	23,420
Non-Vested	13,003	12,834
Total	76,551	75,078

## 2. Schedule of Funding Progress (000's omitted)

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability - 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)
6/30/98	\$ 2,371,359	\$ 2,524,214	\$ 152,855	93.9%	\$ 836,541	18.3%
6/30/99	2,504,001	2,681,756	177,755	93.4%	854,883	20.8%
6/30/00	2,700,356	2,932,484	232,128	92.1%	930,331	25.0%
6/30/01	2,681,395	3,178,037	496,642	84.4%	972,711	51.1%
6/30/02	2,588,777	3,432,467	843,690	75.4%	1,040,269	81.1%
6/30/03	2,699,941	3,691,001	991,060	73.1%	1,109,272	89.3%
6/30/04	3,095,660	3,870,201	774,541	80.0%	1,134,111	68.3%
6/30/05	3,404,651	4,074,385	669,734	83.6%	1,162,098	57.6%
6/30/06	3,700,186	4,264,700	564,514	86.8%	1,159,715	48.7%
6/30/07	4,293,296	4,426,051	132,755	97.0%	1,191,130	11.1%
6/30/08	3,939,059	4,677,027	737,968	84.2%	1,219,388	60.5%
6/30/09	3,930,701	4,930,158	999,457	79.7%	1,274,485	78.4%
6/30/10	3,974,609	5,325,830	1,351,221	74.6%	1,315,441	102.7%
6/30/11	4,322,668	5,515,252	1,192,584	78.4%	1,327,717	89.8%
6/30/12	4,452,395	5,735,775	1,283,380	77.6%	1,382,647	92.8%

## Table 4 (continued)

## GASB 25 and GASB 27 Supplementary Disclosure Information as of June 30, 2012

3. The information presented in the required supplementary schedules was determined as part of the actuarial valuation at July 1, 2012. Additional information follows.

Valuation date	July 1, 2012
Actuarial cost method	Entry age normal
Amortization method	Level-dollar amount
Remaining amortization period	23 years
Asset valuation method	Four-year 25% level smoothing of actuarial gain or loss on investment return, prospectively implemented on July 1, 2009.
Actuarial assumptions:	
Investment rate of return	7.50%
Projected salary increases	4.25% - 6.00%
Inflation rate	3.00%

**Table 5a**  
**Actuarial Value of Assets as of June 30, 2012**  
**(000's omitted)**

	<u>June 30, 2012</u>	<u>June 30, 2011</u>
<b>Assets</b>		
Cash with State Treasurer	\$ 492	\$ 577
Investments at Fair Value	4,352,142	4,359,025
Contributions Receivable	5,779	5,394
Other Receivables	165,002	180,005
Participant Loans Receivable	-	-
Total Assets	<u>4,523,415</u>	<u>4,545,001</u>
<b>Liabilities</b>		
Accrued Expenses and Other Payables	<u>113</u>	<u>376</u>
Market Value of Assets	\$ 4,523,302	\$ 4,544,625
Smoothing of Deferred Gains / (Losses)	<u>70,907</u>	<u>221,957</u>
Actuarial Value of Assets	\$ 4,452,395	\$ 4,322,668

**Table 5b**  
**Four-Year Asset Smoothing as of June 30, 2012**  
**(000's omitted)**

<u>Fiscal Year</u> <u>Ending</u> <u>6/30</u>	<u>Total Asset</u> <u>Gain / (Loss)</u> <u>for Fiscal Year</u>	<u>Percent</u> <u>Deferred</u>	<u>Gain / (Loss)</u> <u>Deferred</u> <u>for Fiscal Year</u>	<u>Gain / (Loss)</u> <u>First Recognized</u> <u>for Fiscal Year</u>
2012	\$ (280,223)	75%	\$ (210,167)	\$ (70,056)
2011	450,860	50%	225,430	112,715
2010	222,577	25%	55,644	55,644
2009	(909,908)	0%	<u>-</u>	<u>(227,477)</u>
Total for July 1, 2012 Valuation			\$ 70,907	\$ (129,174)

**Table 6**  
**Statement of Changes in Market Value of Assets**  
**for Year Ended June 30, 2012**  
**(000's omitted)**

Market Value of Assets - Beginning of Year	\$ 4,544,625
Additions:	
Contributions:	
Member	59,200
Employer	191,012
Special Appropriation	-
Subtotal	<u>\$ 250,212</u>
Investment Income:	
Net Appreciation <sup>1</sup> and Interest	46,122
Other Return in Investments	-
Subtotal	<u>\$ 46,122</u>
Other Income	1,859
Total	<u>\$ 298,193</u>
Deductions and Transfers:	
Benefit Expense	304,263
Refunds of Contributions	10,844
Administrative Expenses	4,505
Transfers to / (from) Other Plans	(96)
Total	<u>\$ 319,516</u>
Net Increase	(21,323)
Market Value of Assets - End of Year	\$ 4,523,302
Investment Return for Year on Market Value:	
Valuation Purposes (assumes mid-year transactions and offsets investment income by investment and administrative expense)	0.92%
Per Investment Management Board (time-weighted, excluding administrative expense)	1.10%

<sup>1</sup> Net of investment expense

**Table 7**  
**Reconciliation of Plan Participants**

	<u>Active</u>	<u>Non- Vested Terms</u>	<u>Vested Terms</u>	<u>Service Retirees</u>	<u>Disabled Retirees</u>	<u>Beneficiaries</u>	<u>Total</u>
<b>Census as of July 1, 2011</b>	36,254	12,172	3,859	16,672	2,207	3,914	75,078
New Entrants	3,515	673	2	-	-	-	4,190
Returned to Active Status	616	(473)	(135)	(8)	-	-	-
Terminated Non-Vested	(929)	930	-	(1)	-	-	-
Terminated Vested	(523)	(4)	527	-	-	-	-
Withdrew Contributions	(1,215)	(502)	(135)	-	(1)	-	(1,853)
Transfer to Teachers	-	-	(1)	-	-	-	(1)
Transfer to Judges	(1)	-	-	-	-	-	(1)
Transfer to DSRS	-	-	-	-	-	-	-
Transfer to EMSRS	-	-	-	-	-	-	-
Retired	(994)	(15)	(187)	1,196	-	-	-
Disabled	(82)	(6)	(43)	-	131	-	-
Deceased	(68)	(99)	(37)	(610)	(84)	(213)	(1,111)
New Beneficiaries	-	-	-	-	-	237	237
New QDRO's	-	-	-	-	-	25	25
Adjustments	-	(5)	(3)	(1)	(1)	(3)	(13)
<b>Census as of July 1, 2012</b>	36,573	12,671	3,847	17,248	2,252	3,960	76,551

**Table 8**  
**Summary of Membership and Payroll**

	<u>July 1, 2012</u> <u>Valuation</u>	<u>July 1, 2011</u> <u>Valuation</u>
<b>Active Members</b>		
State Employees	24,268	23,971
Nonstate Employees	12,305	12,283
Total	<u>36,573</u>	<u>36,254</u>
Average Age	46.68	46.63
Average Service	10.84	10.91
<b>Inactive Members</b>		
Service Retirees	17,248	16,672
Disabled Retirees	2,252	2,207
Beneficiaries	3,960	3,914
Vested Terminated	3,847	3,859
Non-Vested Terminated	12,671	12,172
Total	<u>39,978</u>	<u>38,824</u>
<b>Payroll For Normal Cost</b>		
State Employees	\$ 946,525,000	\$ 906,856,000
Nonstate Employees	436,122,000	420,861,000
Total	<u>\$ 1,382,647,000</u>	<u>\$ 1,327,717,000</u>
<b>PV of Future Payroll</b>	\$ 9,997,616,000	\$ 9,654,542,000
<b>PV of Member Contributions</b>	\$ 449,893,000	\$ 434,454,000



**Table 9a**  
**Distribution of the Number and Total Annual Compensation**  
**of Active Participants as of July 1, 2012**

State

Attained Age	Years of Credited Service														Total	
	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 - 39	40 & up							
	Count / Total Comp	Count / Total Comp	Count / Total Comp	Count / Total Comp	Count / Total Comp	Count / Total Comp	Count / Total Comp	Count / Total Comp	Count / Total Comp	Count / Total Comp	Count / Total Comp	Count / Total Comp	Count / Total Comp	Count / Total Comp		
Under 25	741 21,925,703	2 57,658	-	-	-	-	-	-	-	-	-	-	-	-	-	743 21,983,361
25 - 29	1,530 48,732,128	264 9,173,344	7 259,477	-	-	-	-	-	-	-	-	-	-	-	-	1,801 58,164,949
30 - 34	1,258 40,886,513	727 26,768,418	204 8,074,194	6 219,202	-	-	-	-	-	-	-	-	-	-	-	2,195 75,948,327
35 - 39	1,036 33,577,282	657 24,741,809	644 26,621,244	194 9,087,102	6 227,405	-	-	-	-	-	-	-	-	-	-	2,537 94,254,842
40 - 44	1,167 37,746,226	648 23,149,075	691 27,784,943	567 27,202,321	178 8,831,633	7 330,913	-	-	-	-	-	-	-	-	-	3,258 125,045,111
45 - 49	991 32,317,113	657 23,465,089	564 22,359,316	468 21,206,855	448 22,512,133	184 8,921,608	22 952,930	-	-	-	-	-	-	-	-	3,334 131,735,044
50 - 54	863 28,414,903	597 21,619,879	637 24,784,887	480 21,655,001	452 21,163,566	401 20,150,467	409 19,313,472	67 3,044,946	-	-	-	-	-	-	-	3,906 160,147,121
55 - 59	687 23,570,874	565 19,736,353	566 22,177,532	462 19,999,665	465 22,006,333	304 14,881,447	367 19,523,354	231 11,222,138	11 523,296	11 523,296	11 523,296	11 523,296	11 523,296	11 523,296	11 523,296	3,658 153,640,992
60 - 64	347 12,529,542	341 12,794,900	365 14,897,097	267 11,269,463	253 11,594,573	162 7,832,977	132 6,896,386	140 8,138,140	53 3,149,416	53 3,149,416	53 3,149,416	53 3,149,416	53 3,149,416	53 3,149,416	53 3,149,416	2,060 89,102,494
65 - 69	77 3,427,155	101 4,072,350	114 4,898,040	88 4,251,464	78 3,870,229	29 1,639,028	26 1,347,132	33 1,878,036	38 2,354,008	38 2,354,008	38 2,354,008	38 2,354,008	38 2,354,008	38 2,354,008	38 2,354,008	584 27,737,442
70 & up	22 932,116	22 891,352	31 1,224,599	25 1,181,059	26 1,142,722	27 1,467,770	13 642,896	10 448,444	16 834,143	16 834,143	16 834,143	16 834,143	16 834,143	16 834,143	16 834,143	192 8,765,101
Total	8,719 284,059,555	4,581 166,470,227	3,823 153,081,329	2,557 116,072,132	1,906 91,348,594	1,114 55,224,210	969 48,676,170	481 24,731,704	118 6,860,863	118 6,860,863	118 6,860,863	118 6,860,863	118 6,860,863	118 6,860,863	118 6,860,863	24,268 946,524,784

**Table 9b**  
**Distribution of the Number and Total Annual Compensation**  
**of Active Participants as of July 1, 2012**

Nonstate

Attained Age	Years of Credited Service														Total
	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 - 39	40 & up						
	Count / Total Comp	Count / Total Comp	Count / Total Comp	Count / Total Comp	Count / Total Comp	Count / Total Comp	Count / Total Comp	Count / Total Comp	Count / Total Comp	Count / Total Comp	Count / Total Comp	Count / Total Comp	Count / Total Comp	Count / Total Comp	
Under 25	434 10,999,154	11 314,233	-	-	-	-	-	-	-	-	-	-	-	-	445 11,313,387
25 - 29	601 17,891,309	160 5,233,458	4 182,500	-	-	-	-	-	-	-	-	-	-	-	765 23,307,267
30 - 34	628 18,419,470	356 13,032,042	104 3,958,629	9 346,907	-	-	-	-	-	-	-	-	-	-	1,097 35,757,048
35 - 39	514 15,419,919	341 12,570,901	265 10,886,665	92 3,850,634	1 39,497	-	-	-	-	-	-	-	-	-	1,213 42,767,616
40 - 44	511 15,510,807	414 14,163,987	318 12,861,720	197 8,508,739	115 4,972,314	4	190,138	-	-	-	-	-	-	-	1,559 56,207,705
45 - 49	503 14,754,091	380 12,985,789	311 12,255,980	214 8,991,033	187 7,679,739	109	4,947,237	13	589,024	-	-	-	-	-	1,717 62,202,893
50 - 54	473 14,389,376	381 12,768,090	337 12,394,333	251 9,899,938	233 10,407,685	176	8,192,185	146	6,483,320	11	462,782	-	-	-	2,008 74,997,709
55 - 59	341 10,859,889	363 12,482,446	278 9,771,981	242 9,281,144	204 8,552,758	127	6,211,859	121	5,329,000	57	2,614,873	4	183,674	4	1,737 65,287,624
60 - 64	186 5,213,398	237 7,841,163	214 8,448,628	175 6,527,688	154 5,975,180	95	4,451,345	70	3,195,520	38	1,842,559	17	835,565	17	1,186 44,331,046
65 - 69	69 1,907,959	88 2,795,065	59 1,822,602	52 2,014,975	38 1,428,424	18	708,595	19	837,851	9	448,190	9	556,178	9	361 12,519,839
70 & up	24 522,001	54 1,487,506	33 1,099,732	33 1,235,670	22 734,044	17	693,505	13	567,155	6	245,138	15	844,830	15	217 7,429,581
Total	4,284 125,887,373	2,785 95,674,680	1,923 73,682,770	1,265 50,656,728	954 39,789,641	546 25,394,864	382 17,001,870	45 2,420,247	121 5,613,542	45 2,420,247	45 2,420,247	45 2,420,247	45 2,420,247	45 2,420,247	12,305 436,121,715

**Table 10**  
**Distribution of the Number and Average Monthly Benefits**  
**of Retired Participants as of July 1, 2012**

Current Age	Service Retirees			Disabled Retirees			Beneficiaries			Total		
	Count	Avg. Age	Avg. Mo. Benefit	Count	Avg. Age	Avg. Mo. Benefit	Count	Avg. Age	Avg. Mo. Benefit	Count	Avg. Age	Avg. Mo. Benefit
Under 30	-	-	-	-	-	-	11	24	777	11	24	777
30 - 34	-	-	-	2	33	1,244	15	32	800	17	32	852
35 - 39	-	-	-	7	38	1,025	19	38	804	26	38	864
40 - 44	-	-	-	33	42	1,207	15	42	904	48	42	1,112
45 - 49	-	-	-	72	47	1,070	65	47	940	137	47	1,008
50 - 54	4	52	998	233	52	1,242	159	52	857	396	52	1,085
55 - 59	1,200	57	2,043	457	57	1,152	277	57	893	1,934	57	1,668
60 - 64	3,463	62	1,631	587	62	1,099	396	62	850	4,446	62	1,491
65 - 69	3,832	67	1,378	407	67	671	473	67	791	4,712	67	1,258
70 - 74	3,109	72	1,109	217	72	502	541	72	701	3,867	72	1,018
75 - 79	2,339	77	923	130	77	454	599	77	632	3,068	77	846
80 - 84	1,759	82	769	46	82	398	606	82	556	2,411	82	708
85 - 89	1,061	87	647	50	87	404	474	87	472	1,585	87	587
90 - 94	374	91	568	7	91	342	233	92	419	614	91	509
95 & over	107	97	499	4	96	461	77	97	372	188	97	446
<b>Total</b>	<b>17,248</b>	<b>71</b>	<b>1,235</b>	<b>2,252</b>	<b>63</b>	<b>920</b>	<b>3,960</b>	<b>73</b>	<b>669</b>	<b>23,460</b>	<b>71</b>	<b>1,109</b>
<b>Total Annual Benefits</b>			<b>255,557,508</b>			<b>24,853,056</b>			<b>31,788,228</b>			<b>312,198,792</b>

**Table 11**  
**Distribution of the Number and Average Monthly Benefits**  
**of Participants Entitled to Deferred Benefits as of July 1, 2012**

<b>Current Age</b>	<b>Deferred Vested</b>		
	<b>Count</b>	<b>Avg. Age</b>	<b>Avg. Mo. Benefit</b>
Under 30	35	28	296
30 - 34	178	32	374
35 - 39	332	37	476
40 - 44	564	42	567
45 - 49	602	47	637
50 - 54	733	52	768
55 - 59	846	57	605
60 - 64	460	61	511
65 - 69	92	66	451
70 - 74	2	72	1,279
75 - 79	2	75	614
80 - 84	1	81	102
85 - 89	-	-	-
90 - 94	-	-	-
95 & over	-	-	-
<b>Total</b>	<b>3,847</b>	<b>50</b>	<b>596</b>
<b>Total Annual Benefits</b>			<b>27,515,820</b>

## A. Definitions

1. **Plan Name:** The West Virginia Public Employees' Retirement System
2. **Effective Date:** The West Virginia Public Employees' Retirement Act was originally enacted March 11, 1961 to be effective July 1, 1961.
3. **Plan Membership:** All employees of the State of West Virginia or of any participating political subdivisions are required (with certain exceptions) to become plan members. Among those employees not eligible for plan membership are members (and retirees) of other State retirement systems, except for retirees from the Department of Public Safety or from municipal police or fire departments. Members of the State legislature and of local legislative bodies may elect plan membership regardless of the above exclusions.
4. **Annual Compensation:** Annual compensation is the total salary paid to a member by a participating employer, including overtime pay and non-cash payments.
5. **Final Average Salary:** Final average salary is the average of the member's annual compensation during the 3 consecutive years of his credited service (during the 15 years preceding the termination of his employment) that produces the highest such average. If the member has less than 3 years of credited service, his final average salary is his average annual compensation during his period of credited service. Special rules apply to members of the legislature.

## B. Contributions

1. **Member Contributions:** Members contribute 4.5% of their salary to the system. Member contributions earn interest at a rate of 4.0%, compounded annually (3.0% prior to July 1, 1968).
2. **Employer Contributions:** The State and its participating political subdivisions contribute 14.0% of members' compensation to the retirement system (14.5% from July

1, 2011 to July 1, 2012, 12.5% from July 1, 2010 to July 1, 2011, 11.0% from July 1, 2009 to July 1, 2010, and 10.5% prior to July 1, 2009).

### C. Service Credits

1. **Prior Service:** Prior service is the period of employment credited to a member who worked for a participating employer before July 1, 1961. To receive credit for prior service, the employee must have worked for a participating employer within the 30-year period prior to July 1, 1961, and the employee must become a member of the system within 15 years of July 1, 1961 (or within 15 years of his employer's participation in the system, if later).
2. **Contributing Service:** Contributing service is the member's period of employment commencing on his date of participation in the plan.
3. **Credited Service:** Credited service is the sum of the member's prior service and his contributing service. Under certain circumstances, credited service may also be granted for periods of military service and for credited service under the West Virginia Teachers' Retirement System.
4. **Reinstated Service:** A member who terminates service with a participating employer, who does not retire and who is not eligible for a deferred vested benefit, will forfeit his credited service. If the member subsequently reenters covered employment and remains employed for at least one year, then his forfeited credited service will be reinstated provided that he repays to the fund any member contributions (with interest) that he withdrew upon termination. Such repayment must commence no later than 2 years following his reemployment, and full repayment must be accomplished within 5 years following his reemployment.
5. **Applied Unused Leave:** A retiring member may have his unused sick or annual leave applied as credited service to increase the amount of his pension, but cannot apply it for purposes of gaining eligibility for benefits. Credited service for this purpose is

determined by first doubling the number of unused leave days so applied, and then each 240 days of (doubled) leave counts as one year of credited service in the benefit formula used to compute the amount of the member's pension.

#### **D. Normal Retirement Benefit**

- 1. Eligibility:** A member who has attained age 60 and has earned 5 or more years of contributing service is eligible for a normal retirement benefit.
- 2. Benefit Amount:** The annual normal retirement benefit, payable in monthly installments, is equal to 2% of the member's final average salary *times* the number of years of his credited service.
- 3. Normal Form of Benefit:** The normal form of the retirement benefit is a single life cash refund annuity. This means that the pension is payable only during the member's lifetime, but if he dies before receiving pension payments that total the amount of his accumulated contributions (with interest) at the time of his retirement, then the difference will be paid to his beneficiary.
- 4. Optional Forms of Benefit:** The retiring member may elect an actuarially reduced joint and survivor annuity with his or her spouse as beneficiary, with either 100% or 50% of the amount payable while both are alive continuing to the surviving spouse during the spouse's remaining lifetime. This is a contingent joint and survivor annuity, which reduces in amount only if the retiree dies first (and not upon the spouse's death).

#### **E. Early Retirement Benefit (Unreduced)**

- 1. Eligibility:** Rule of 80. A member who has completed at least 3 years of contributing service and who has attained age 55 with the sum of his age *plus* years of contributing service equal to or greater than 80, may retire at any age on or after age 55.
- 2. Amount:** The early retirement benefit is equal to the member's normal retirement benefit based on final average salary and years of credited service as of early retirement

date, without reduction for early commencement. The early retirement benefit is payable in monthly installments under the same normal or optional forms as the normal retirement benefit.

#### **F. Early Retirement Benefit (Reduced)**

- 1. Eligibility:* A terminating member who has completed at least 3 years of contributing service and who either (i) has attained age 55 and completed 10 years of credited service, or (ii) has completed 20 years of credited service, may elect to have his deferred vested benefit commence on the first of any month following his 55th birthday. A terminating member with 30 years of credited service, at least 3 of which are contributing service, may retire early at any age.
- 2. Amount:* The early retirement benefit is equal to the normal retirement benefit based on final average salary and years of credited service as of early retirement date actuarially reduced for the number of years by which the early retirement benefit commencement date precedes the retiring member's 62nd birthday. A member retiring after 30 years of service (who is not eligible for an unreduced benefit) receives a benefit actuarially reduced for the number of years by which his early retirement precedes age 60. The early retirement benefit is payable in monthly installments under the same normal or optional forms as the normal retirement benefit.

#### **G. Disability Benefit**

- 1. Eligibility:* A member who has completed 10 years of credited service, including 3 years of contributing service, and who is found to be totally and permanently disabled, is eligible for a disability benefit. A member with less than 10 years of credited service (or less than 3 years of contributing service) who incurs a service-connected total and permanent disability and who is receiving workers' compensation on account of this disability is also eligible for a disability benefit.



2. **Amount:** The monthly disability benefit is 2% of the member's final average salary *times* his credited service when disabled. Prior to age 65, the disability benefit is not less than 50% of the member's final average salary. At age 65, the benefit is the greater of (i) 2% of the member's final average salary *times* his credited service at the time of disablement or (ii) 20% of the member's final average salary.

## H. Deferred Vested Benefit

1. **Eligibility:** A terminating member who has completed 5 years of credited service, including at least 3 years of contributing 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 pension is equal to 2% of the member's final average salary *times* his years of credited service. The deferred vested pension benefit is payable in monthly installments under the same normal or optional forms as the normal retirement benefit.

## I. Pre-Retirement Death Benefits

1. **Eligibility:** A life annuity is paid to the surviving spouse or other designated beneficiary of an active member (or former member entitled to a deferred benefit) who dies after completing 10 years of credited service and before retiring. If a member has no spouse or designated beneficiary, his children (if any) receive annuities until they reach age 21 or marry, if earlier. If there is no spouse, child, or qualified beneficiary, or if the member dies with less than 10 years of credited service, then the member's accumulated contributions will be paid to his estate as a death benefit.
2. **Amount:** The spouse's or designated beneficiary's pension is calculated as if the member had retired on the day of his death and elected a 100% joint and survivor annuity with his spouse or designated beneficiary as co-annuitant. There is no reduction for early commencement of benefits.

The amount of a (non-designated beneficiary) surviving child's annuity is based upon the annuity reserve the member would have had if he had retired on his date of death. This annuity is payable until the child reaches age 21 or is married, if earlier. In no event is a surviving child paid more than \$250 monthly, and the total paid to all surviving children will not exceed 60% of the member's final average salary.

**J. Post-Retirement 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 post-retirement death benefits are payable under this retirement plan.

**K. Other Terminations**

A member who terminates employment other than by death and prior to becoming eligible for a normal retirement, early retirement, deferred vested or disability benefit, may upon his request receive a refund of his contributions. If the member has at least 2 years of service in the plan, the refund will include accrued interest on the member's contributions. After receiving a refund of contributions, a member has no further right to benefits under this retirement system.

**A. Valuation Date**

July 1, 2012.

**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 is based on date of hire.

Experience studies are performed at least once in every five-year period. This valuation was prepared on the basis of assumptions that were recommended to and adopted by the Board on the basis of an experience study covering the period from July 1, 2004, to June 30, 2009. These assumptions will remain in effect for valuation purposes until such time as the Board adopts revised assumptions.

**C. Interest Rate and Expenses**

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

**D. Salary Scales**

The salary scales are shown in the Appendix. Projected salary increases for State and Nonstate employees range from 4.25% to 6.0% per year.

**E. Mortality**

The mortality tables are as follows:

- Healthy males: 1983 GAM male
- Healthy females: 1971 GAM female, set back 1 year
- Disabled males: 1971 GAM male, set forward 8 years
- Disabled females: Revenue Ruling 96-7 disabled female table

**F. Withdrawal from Service**

Withdrawal rates are shown in the Appendix. All withdrawal is assumed to result in refund of contributions if non-vested or a deferred annuity if vested. The liability for a refund of

contributions for nonactive non-vested members as of the valuation date is assumed to be 60% of the total employee contribution balance of such members.

**G. Disablement Rates**

Disablement rates are shown in the Appendix.

**H. Retirement Rates**

The retirement rates are shown in the Appendix.

**I. Family Composition**

It is assumed that 85% of males and 80% of females are married, with husbands 3 years older than wives. Remarriage rates are not used.

**J. Accrual of Future Service**

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

**K. Noncontributory Service Loadings**

Noncontributory service for active members is estimated from member's contributory service by adjusting the present value of benefits projected from contributory service alone. A 10.8% load is used for male State employees and a 10.0% load is used for male Nonstate employees. A 2.4% load is used for female State and Nonstate employees.

**L. Asset Valuation Method**

Four-year 25% level smoothing of actuarial gain or (loss) on trust fund return:

- Implemented over four years, prospectively commencing July 1, 2009 for the experience for the trust year ending June 30, 2009.
- Actuarial gain or (loss) on assets is calculated as the difference between the expected return under valuation assumptions based on the smoothed Actuarial Value of Assets and the actual trust fund return.
- Actuarial gain or (loss) is recognized at 25% of the original amount each year until fully recognized in the fourth year.

- Total accumulated deferred gain or (loss) amounts are used to adjust the reported Market Value of Assets to determine the Actuarial Value of Assets.

**M. Plan Contributions**

Both employee and employer contributions to the Plan are assumed to be paid in the middle of the year.

## Salary Scales

<u>Age</u>	<u>State</u>	<u>Nonstate</u>	<u>Age</u>	<u>State</u>	<u>Nonstate</u>
19	1.06000	1.06000	45	1.04875	1.04875
20	1.06000	1.06000	46	1.04800	1.04850
21	1.05950	1.05950	47	1.04725	1.04825
22	1.05900	1.05900	48	1.04650	1.04800
23	1.05850	1.05850	49	1.04575	1.04775
24	1.05800	1.05800	50	1.04500	1.04750
25	1.05750	1.05750	51	1.04500	1.04700
26	1.05700	1.05700	52	1.04500	1.04650
27	1.05650	1.05650	53	1.04500	1.04600
28	1.05600	1.05600	54	1.04500	1.04550
29	1.05550	1.05550	55	1.04500	1.04500
30	1.05500	1.05500	56	1.04450	1.04450
31	1.05450	1.05450	57	1.04400	1.04400
32	1.05400	1.05400	58	1.04350	1.04350
33	1.05350	1.05350	59	1.04300	1.04300
34	1.05300	1.05300	60	1.04250	1.04250
35	1.05250	1.05250	61	1.04250	1.04250
36	1.05200	1.05200	62	1.04250	1.04250
37	1.05150	1.05150	63	1.04250	1.04250
38	1.05100	1.05100	64	1.04250	1.04250
39	1.05050	1.05050	65	1.04250	1.04250
40	1.05000	1.05000	66	1.04250	1.04250
41	1.04975	1.04975	67	1.04250	1.04250
42	1.04950	1.04950	68	1.04250	1.04250
43	1.04925	1.04925	69	1.04250	1.04250
44	1.04900	1.04900	70	1.04250	1.04250

**Withdrawal Rates  
State (less than 1 year)**

<u>Age</u>	<u>Male</u>	<u>Female</u>	<u>Age</u>	<u>Male</u>	<u>Female</u>	<u>Age</u>	<u>Male</u>	<u>Female</u>
19	0.26000	0.26000	33	0.20410	0.20540	47	0.16380	0.16380
20	0.26000	0.26000	34	0.20020	0.20020	48	0.16120	0.16120
21	0.25480	0.25480	35	0.19760	0.19500	49	0.15860	0.15860
22	0.25090	0.24960	36	0.19240	0.19240	50	0.15600	0.15600
23	0.24700	0.24440	37	0.18980	0.18980	51	0.15340	0.15340
24	0.24310	0.23920	38	0.18720	0.18720	52	0.15080	0.15080
25	0.23790	0.23400	39	0.18460	0.18460	53	0.14820	0.14820
26	0.23400	0.23140	40	0.18200	0.18200	54	0.14560	0.14560
27	0.23010	0.22880	41	0.17940	0.17940	55	0.14300	0.14300
28	0.22620	0.22620	42	0.17680	0.17680	56	0.14300	0.14300
29	0.22100	0.22360	43	0.17420	0.17420	57	0.14300	0.14300
30	0.21580	0.22100	44	0.17160	0.17160	58	0.14300	0.14300
31	0.21190	0.21580	45	0.16900	0.16900	59	0.14300	0.14300
32	0.20800	0.21060	46	0.16640	0.16640	60	0.14300	0.14300

**Withdrawal Rates  
State (1 to 2 years)**

<u>Age</u>	<u>Male</u>	<u>Female</u>	<u>Age</u>	<u>Male</u>	<u>Female</u>	<u>Age</u>	<u>Male</u>	<u>Female</u>
19	0.26250	0.22500	33	0.18750	0.18500	47	0.13750	0.13250
20	0.26250	0.22500	34	0.18125	0.18000	48	0.13750	0.13000
21	0.25750	0.22250	35	0.17500	0.17500	49	0.13750	0.12750
22	0.25250	0.22000	36	0.17000	0.17000	50	0.13750	0.12500
23	0.24750	0.21750	37	0.16500	0.16500	51	0.13500	0.12250
24	0.24250	0.21500	38	0.16000	0.16000	52	0.13250	0.12000
25	0.23750	0.21250	39	0.15500	0.15500	53	0.13000	0.11750
26	0.23125	0.21000	40	0.15000	0.15000	54	0.12750	0.11500
27	0.22500	0.20750	41	0.14750	0.14750	55	0.12500	0.11250
28	0.21875	0.20500	42	0.14500	0.14500	56	0.12500	0.11250
29	0.21250	0.20250	43	0.14250	0.14250	57	0.12500	0.11250
30	0.20625	0.20000	44	0.14000	0.14000	58	0.12500	0.11250
31	0.20000	0.19500	45	0.13750	0.13750	59	0.12500	0.11250
32	0.19375	0.19000	46	0.13750	0.13500	60	0.12500	0.11250

**Withdrawal Rates  
State (2 to 3 years)**

<u>Age</u>	<u>Male</u>	<u>Female</u>	<u>Age</u>	<u>Male</u>	<u>Female</u>	<u>Age</u>	<u>Male</u>	<u>Female</u>
19	0.24700	0.20000	33	0.16640	0.16000	47	0.09460	0.10750
20	0.24700	0.20000	34	0.16120	0.15500	48	0.09240	0.10500
21	0.24180	0.19750	35	0.15600	0.15000	49	0.09020	0.10250
22	0.23660	0.19500	36	0.15080	0.14500	50	0.08800	0.10000
23	0.23140	0.19250	37	0.14560	0.14000	51	0.08580	0.09750
24	0.22620	0.19000	38	0.14040	0.13500	52	0.08360	0.09500
25	0.22100	0.18750	39	0.13520	0.13000	53	0.08140	0.09250
26	0.21320	0.18500	40	0.13000	0.12500	54	0.07920	0.09000
27	0.20540	0.18250	41	0.12740	0.12250	55	0.07700	0.08750
28	0.19760	0.18000	42	0.12480	0.12000	56	0.07480	0.08500
29	0.18980	0.17750	43	0.12220	0.11750	57	0.07260	0.08250
30	0.18200	0.17500	44	0.11960	0.11500	58	0.07040	0.08000
31	0.17680	0.17000	45	0.09900	0.11250	59	0.06820	0.07750
32	0.17160	0.16500	46	0.09680	0.11000	60	0.06600	0.07500

**Withdrawal Rates  
State (3 to 4 years)**

<u>Age</u>	<u>Male</u>	<u>Female</u>	<u>Age</u>	<u>Male</u>	<u>Female</u>	<u>Age</u>	<u>Male</u>	<u>Female</u>
19	0.20800	0.16800	33	0.14040	0.12960	47	0.08580	0.08760
20	0.20800	0.16800	34	0.13520	0.12480	48	0.08320	0.08640
21	0.20280	0.16560	35	0.13000	0.12000	49	0.08060	0.08520
22	0.19760	0.16320	36	0.12480	0.11520	50	0.07800	0.08400
23	0.19240	0.16080	37	0.11960	0.11040	51	0.07540	0.08160
24	0.18720	0.15840	38	0.11440	0.10560	52	0.07280	0.07920
25	0.18200	0.15600	39	0.10920	0.10080	53	0.07020	0.07680
26	0.17680	0.15360	40	0.10400	0.09600	54	0.06760	0.07440
27	0.17160	0.15120	41	0.10140	0.09480	55	0.06500	0.07200
28	0.16640	0.14880	42	0.09880	0.09360	56	0.06240	0.06960
29	0.16120	0.14640	43	0.09620	0.09240	57	0.05980	0.06720
30	0.15600	0.14400	44	0.09360	0.09120	58	0.05720	0.06480
31	0.15080	0.13920	45	0.09100	0.09000	59	0.05460	0.06240
32	0.14560	0.13440	46	0.08840	0.08880	60	0.05200	0.06000



**Withdrawal Rates  
State (4 to 5 years)**

<u>Age</u>	<u>Male</u>	<u>Female</u>	<u>Age</u>	<u>Male</u>	<u>Female</u>	<u>Age</u>	<u>Male</u>	<u>Female</u>
19	0.18200	0.13500	33	0.12320	0.10500	47	0.06440	0.07375
20	0.18200	0.13500	34	0.11760	0.10250	48	0.06160	0.07313
21	0.17640	0.13365	35	0.11200	0.10000	49	0.05880	0.07250
22	0.17080	0.13230	36	0.10640	0.09750	50	0.05600	0.07188
23	0.16520	0.13095	37	0.10080	0.09500	51	0.05320	0.07063
24	0.15960	0.12960	38	0.09520	0.09250	52	0.05040	0.06938
25	0.15400	0.12825	39	0.08960	0.09000	53	0.04760	0.06813
26	0.15120	0.12690	40	0.08400	0.08750	54	0.04480	0.06688
27	0.14840	0.12555	41	0.08120	0.08500	55	0.04200	0.06563
28	0.14560	0.12420	42	0.07840	0.08250	56	0.03920	0.06250
29	0.14280	0.12285	43	0.07560	0.08000	57	0.03640	0.05938
30	0.14000	0.11250	44	0.07280	0.07750	58	0.03360	0.05625
31	0.13440	0.11000	45	0.07000	0.07500	59	0.03080	0.05313
32	0.12880	0.10750	46	0.06720	0.07438	60	0.02800	0.05000

**Withdrawal Rates  
State (greater than 5 years)**

<u>Age</u>	<u>Male</u>	<u>Female</u>	<u>Age</u>	<u>Male</u>	<u>Female</u>	<u>Age</u>	<u>Male</u>	<u>Female</u>
19	0.12000	0.12100	33	0.07320	0.07150	47	0.03120	0.03800
20	0.12000	0.12100	34	0.06960	0.06600	48	0.02880	0.03700
21	0.11520	0.11880	35	0.06600	0.05500	49	0.02640	0.03600
22	0.11040	0.11660	36	0.06240	0.05300	50	0.02400	0.03500
23	0.10560	0.11440	37	0.05880	0.05100	51	0.02160	0.03200
24	0.10080	0.11220	38	0.05520	0.04900	52	0.01920	0.02900
25	0.09600	0.11000	39	0.05160	0.04700	53	0.01680	0.02600
26	0.09360	0.10560	40	0.04800	0.04500	54	0.01440	0.02300
27	0.09120	0.10120	41	0.04560	0.04400	55	0.01200	0.02000
28	0.08880	0.09680	42	0.04320	0.04300	56	0.01200	0.01800
29	0.08640	0.09240	43	0.04080	0.04200	57	0.01200	0.01600
30	0.08400	0.08800	44	0.03840	0.04100	58	0.01200	0.01400
31	0.08040	0.08250	45	0.03600	0.04000	59	0.01200	0.01200
32	0.07680	0.07700	46	0.03360	0.03900	60	0.01200	0.01000

**Withdrawal Rates  
Nonstate (less than 1 year)**

<u>Age</u>	<u>Male</u>	<u>Female</u>	<u>Age</u>	<u>Male</u>	<u>Female</u>	<u>Age</u>	<u>Male</u>	<u>Female</u>
19	0.31200	0.28750	33	0.24960	0.24035	47	0.18240	0.19320
20	0.31200	0.28750	34	0.24480	0.23575	48	0.17760	0.18630
21	0.30720	0.28405	35	0.24000	0.23000	49	0.17280	0.17940
22	0.30240	0.28060	36	0.23520	0.22770	50	0.16800	0.17250
23	0.29760	0.27715	37	0.23040	0.22540	51	0.16320	0.16790
24	0.29280	0.27370	38	0.22560	0.22310	52	0.15840	0.16330
25	0.28800	0.26910	39	0.22080	0.22080	53	0.15360	0.15870
26	0.28320	0.26565	40	0.21600	0.21850	54	0.14880	0.15410
27	0.27840	0.26220	41	0.21120	0.21620	55	0.14400	0.14950
28	0.27360	0.25875	42	0.20640	0.21390	56	0.13920	0.14720
29	0.26880	0.25530	43	0.20160	0.21160	57	0.13440	0.14490
30	0.26400	0.25070	44	0.19680	0.20930	58	0.13200	0.14260
31	0.25920	0.24725	45	0.19200	0.20700	59	0.13200	0.14030
32	0.25440	0.24380	46	0.18720	0.20010	60	0.13200	0.13800

**Withdrawal Rates  
Nonstate (1 to 2 years)**

<u>Age</u>	<u>Male</u>	<u>Female</u>	<u>Age</u>	<u>Male</u>	<u>Female</u>	<u>Age</u>	<u>Male</u>	<u>Female</u>
19	0.25200	0.24150	33	0.18960	0.21160	47	0.11600	0.14200
20	0.25200	0.24150	34	0.18480	0.20930	48	0.11400	0.13800
21	0.24960	0.23920	35	0.18000	0.20700	49	0.11200	0.13400
22	0.24720	0.23690	36	0.17520	0.20355	50	0.11000	0.13000
23	0.24480	0.23460	37	0.17040	0.20010	51	0.10800	0.12800
24	0.24240	0.23230	38	0.16560	0.19665	52	0.10600	0.12600
25	0.24000	0.23000	39	0.16080	0.19320	53	0.10400	0.12400
26	0.23280	0.22770	40	0.15600	0.18975	54	0.10200	0.12200
27	0.22560	0.22540	41	0.15360	0.18630	55	0.10000	0.12000
28	0.21840	0.22310	42	0.15120	0.18285	56	0.10000	0.11800
29	0.21120	0.22080	43	0.14880	0.17940	57	0.10000	0.11600
30	0.20400	0.21850	44	0.14640	0.17595	58	0.10000	0.11400
31	0.19920	0.21620	45	0.12000	0.15000	59	0.10000	0.11200
32	0.19440	0.21390	46	0.11800	0.14600	60	0.10000	0.11000

**Withdrawal Rates  
Nonstate (2 to 3 years)**

<u>Age</u>	<u>Male</u>	<u>Female</u>	<u>Age</u>	<u>Male</u>	<u>Female</u>	<u>Age</u>	<u>Male</u>	<u>Female</u>
19	0.25000	0.20900	33	0.15620	0.18040	47	0.09900	0.12400
20	0.25000	0.20900	34	0.14960	0.17820	48	0.09600	0.12100
21	0.24625	0.20680	35	0.14300	0.17600	49	0.09300	0.11800
22	0.24250	0.20460	36	0.13970	0.17160	50	0.09000	0.11500
23	0.23875	0.20240	37	0.13640	0.16720	51	0.08900	0.11300
24	0.23500	0.20020	38	0.13310	0.16280	52	0.08800	0.11100
25	0.23125	0.19800	39	0.12980	0.15840	53	0.08700	0.10900
26	0.22500	0.19580	40	0.12650	0.14000	54	0.08600	0.10700
27	0.21875	0.19360	41	0.12430	0.13800	55	0.08500	0.10500
28	0.21250	0.19140	42	0.12210	0.13600	56	0.08400	0.10300
29	0.20625	0.18920	43	0.11990	0.13400	57	0.08300	0.10100
30	0.17600	0.18700	44	0.11770	0.13200	58	0.08200	0.09900
31	0.16940	0.18480	45	0.10500	0.13000	59	0.08100	0.09700
32	0.16280	0.18260	46	0.10200	0.12700	60	0.08000	0.09500

**Withdrawal Rates  
Nonstate (3 to 4 years)**

<u>Age</u>	<u>Male</u>	<u>Female</u>	<u>Age</u>	<u>Male</u>	<u>Female</u>	<u>Age</u>	<u>Male</u>	<u>Female</u>
19	0.20900	0.18000	33	0.13420	0.14300	47	0.08600	0.10600
20	0.20900	0.18000	34	0.12760	0.13900	48	0.08400	0.10400
21	0.20460	0.17800	35	0.12100	0.13500	49	0.08200	0.10200
22	0.20020	0.17600	36	0.11880	0.13400	50	0.08000	0.10000
23	0.19580	0.17400	37	0.11660	0.13300	51	0.07800	0.09800
24	0.19140	0.17200	38	0.11440	0.13200	52	0.07600	0.09600
25	0.18700	0.17000	39	0.11220	0.13100	53	0.07400	0.09400
26	0.18040	0.16700	40	0.10000	0.13000	54	0.07200	0.09200
27	0.17380	0.16400	41	0.09800	0.12600	55	0.07000	0.09000
28	0.16720	0.16100	42	0.09600	0.12200	56	0.06800	0.08800
29	0.16060	0.15800	43	0.09400	0.11800	57	0.06600	0.08600
30	0.15400	0.15500	44	0.09200	0.11400	58	0.06400	0.08400
31	0.14740	0.15100	45	0.09000	0.11000	59	0.06200	0.08200
32	0.14080	0.14700	46	0.08800	0.10800	60	0.06000	0.08000

**Withdrawal Rates  
Nonstate (4 to 5 years)**

<u>Age</u>	<u>Male</u>	<u>Female</u>	<u>Age</u>	<u>Male</u>	<u>Female</u>	<u>Age</u>	<u>Male</u>	<u>Female</u>
19	0.20400	0.20400	33	0.12840	0.13440	47	0.07320	0.09120
20	0.20400	0.20400	34	0.12120	0.12720	48	0.07080	0.08880
21	0.19800	0.19920	35	0.11400	0.12000	49	0.06840	0.08640
22	0.19200	0.19440	36	0.10920	0.11760	50	0.06600	0.08400
23	0.18600	0.18960	37	0.10440	0.11520	51	0.06360	0.08160
24	0.18000	0.18480	38	0.09960	0.11280	52	0.06120	0.07920
25	0.17400	0.18000	39	0.09480	0.11040	53	0.05880	0.07680
26	0.16920	0.17520	40	0.09000	0.10800	54	0.05640	0.07440
27	0.16440	0.17040	41	0.08760	0.10560	55	0.05400	0.07200
28	0.15960	0.16560	42	0.08520	0.10320	56	0.05160	0.06960
29	0.15480	0.16080	43	0.08280	0.10080	57	0.04920	0.06720
30	0.15000	0.15600	44	0.08040	0.09840	58	0.04680	0.06480
31	0.14280	0.14880	45	0.07800	0.09600	59	0.04440	0.06240
32	0.13560	0.14160	46	0.07560	0.09360	60	0.04200	0.06000

**Withdrawal Rates  
Nonstate (greater than 5 years)**

<u>Age</u>	<u>Male</u>	<u>Female</u>	<u>Age</u>	<u>Male</u>	<u>Female</u>	<u>Age</u>	<u>Male</u>	<u>Female</u>
19	0.16500	0.16000	33	0.08910	0.08800	47	0.04600	0.04400
20	0.16500	0.16000	34	0.08580	0.08400	48	0.04400	0.04100
21	0.15840	0.15400	35	0.07500	0.08000	49	0.04200	0.03800
22	0.15180	0.14800	36	0.07200	0.07700	50	0.04000	0.03500
23	0.14520	0.14200	37	0.06900	0.07400	51	0.03800	0.03300
24	0.13860	0.13600	38	0.06600	0.07100	52	0.03600	0.03100
25	0.13200	0.13000	39	0.06300	0.06800	53	0.03400	0.02900
26	0.12540	0.12400	40	0.06000	0.06500	54	0.03200	0.02700
27	0.11880	0.11800	41	0.05800	0.06200	55	0.03000	0.02500
28	0.11220	0.11200	42	0.05600	0.05900	56	0.02800	0.02400
29	0.10560	0.10600	43	0.05400	0.05600	57	0.02600	0.02300
30	0.09900	0.10000	44	0.05200	0.05300	58	0.02400	0.02200
31	0.09570	0.09600	45	0.05000	0.05000	59	0.02200	0.02100
32	0.09240	0.09200	46	0.04800	0.04700	60	0.02000	0.02000

**Disability Rates  
State and Nonstate**

<u>Age</u>	<u>Male</u>	<u>Female</u>	<u>Age</u>	<u>Male</u>	<u>Female</u>	<u>Age</u>	<u>Male</u>	<u>Female</u>
19	0.00000	0.00000	33	0.00039	0.00069	47	0.00353	0.00180
20	0.00008	0.00008	34	0.00042	0.00072	48	0.00398	0.00195
21	0.00009	0.00014	35	0.00045	0.00075	49	0.00443	0.00210
22	0.00011	0.00020	36	0.00059	0.00083	50	0.00488	0.00225
23	0.00012	0.00026	37	0.00072	0.00090	51	0.00525	0.00285
24	0.00014	0.00032	38	0.00086	0.00098	52	0.00563	0.00345
25	0.00015	0.00038	39	0.00099	0.00105	53	0.00600	0.00405
26	0.00018	0.00042	40	0.00113	0.00113	54	0.00638	0.00465
27	0.00021	0.00047	41	0.00143	0.00120	55	0.00675	0.00525
28	0.00024	0.00051	42	0.00173	0.00128	56	0.00690	0.00563
29	0.00027	0.00056	43	0.00203	0.00135	57	0.00705	0.00600
30	0.00030	0.00060	44	0.00233	0.00143	58	0.00720	0.00638
31	0.00033	0.00063	45	0.00263	0.00150	59	0.00735	0.00675
32	0.00036	0.00066	46	0.00308	0.00165	60	0.00750	0.00750

**Retirement Rates  
State and Nonstate**

<u>Age</u>	<u>Rates</u>
55	0.25
56	0.15
57	0.15
58	0.15
59	0.15
60	0.15
61	0.15
62	0.30
63	0.18
64	0.18
65	0.25
66	0.20
67	0.20
68	0.20
69	0.20
70+	1.00