

# West Virginia Public Employees' Retirement System

## Actuarial Valuation as of July 1, 2014

February 2015



**David L. Driscoll**  
*Principal, Consulting Actuary*

Buck Consultants, LLC  
101 Federal Street, Suite 900  
Boston, MA 02110

david.driscoll@xerox.com  
tel 617.275.8028  
fax 617.275.8307

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

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, 2014. This valuation presents the annual cost and related liabilities of the System 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 sufficient to meet the annual funding requirement of the System.

This report contains supporting data and background information pertaining to the development of costs and related liabilities of the System. The valuation is based on membership data as of June 30, 2014, maintained by the West Virginia Consolidated Public Retirement Board, and financial information received from the West Virginia Investment Management Board.

The valuation results incorporate estimates of the impact of the recent West Virginia Supreme Court's *Wood* Decision. This decision granted additional military service to active members and retirees who served in armed conflicts that were not specifically cited in state law. These estimates were developed by the Board Actuary and were provided to us. We did not independently verify or review these estimates. The accuracy of the results presented in this valuation is dependent upon the accuracy of the estimated impact of the Wood decision. The additional liability included in the valuation associated with this decision is approximately 3%, so any reasonable adjustment that would ever be necessary to the results due to changes in this estimate would not be material to the overall results of the valuation or the relationship to the actuarially determined cost in comparison with the expected contributions.

This report presents fairly the actuarial position of the West Virginia Public Employees' Retirement System as of July 1, 2014, 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. The assumptions were developed in accordance with the guidance set forth in the various Actuarial Standards of Practice, including ASOP 27 and 35. In particular, the mortality assumptions were developed in accordance with the mandate that an appropriate margin for future improvement in mortality beyond the measurement date be included.

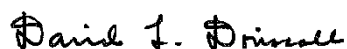
Future actuarial measurements may differ significantly from current measurements due to system experience differing from that anticipated by the economic and demographic assumptions, changes expected as part of the natural operation of the methodology used for these measurements, and changes in system provisions, or applicable law or regulations. An analysis of the potential range of such future differences is beyond the scope of this report.

The valuation results are based on liabilities used for funding purposes only. They do not reflect any changes under GASB 67 and 68, which are effective for fiscal years beginning after June 15, 2013, and June 15, 2014, respectively. The changes made under the new GASB standards only affect liabilities used for financial statement accounting disclosure purposes.

Use of this report for any other purpose may not be appropriate and may result in mistaken conclusions due to failure to understand applicable assumptions, methodologies, or inapplicability of the report for that purpose. Because of the risk of misinterpretation of actuarial results, you should ask us to review any statement you wish to make on the results contained in this report. Buck will not accept any liability for any such statement made without our prior review.

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,

A handwritten signature in black ink that reads "David L. Driscoll".

David L. Driscoll, FSA, EA, MAAA, FCA  
Principal, Consulting Actuary

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# Section 1 – Summary of Valuation

This report presents the results of the July 1, 2014, actuarial valuation of the West Virginia Public Employees' Retirement System (PERS). The development of the results, including for comparison purposes the previous year's results as of July 1, 2013, is presented in Table 1. The report includes disclosure information under Statement 27 of the Governmental Accounting Standards Board (GASB). A summary of the system 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 System 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 System eligibility conditions are met.

The System 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 System liabilities.

The valuation indicates that current contribution levels are more 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 System's primary unfunded liability originally established as of July 1, 2005 over a 21-year period (30 years from July 1, 2005) and the amount required to amortize the liability for benefit improvements to actives under SB 173 over a 2-year period (10 years from July 1, 2006).

## Comments on Valuation Results

Table 1 presents the development of the valuation results as of July 1, 2014, and, for comparison purposes, July 1, 2013. 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.

The actual unfunded liability of approximately \$1,063 million differed from the expected amount of approximately \$1,178 million, primarily due to the following reasons:

- The state Supreme Court's Wood Decision in March of 2014 granted additional military service to active members and retirees who served in armed conflicts that were not specifically cited in state law. The Board Actuary has estimated that the Wood Decision increased the unfunded liability by approximately \$197.2 million.
- The combined actual demographic experience of turnover, mortality, retirement, and pay increases resulted in a liability gain of approximately \$63.5 million. This gain was the result of turnover and retirement experience, as well as lower pay increases and lower benefit payments than expected. These gains were partially offset by the losses incurred from fewer pensioner deaths than expected.
- The return on the actuarial value of assets for the year ending June 30, 2014 was approximately 12.81%, which was significantly higher than the assumed return of 7.50%. This resulted in an asset gain of approximately \$248.9 million.

# Section 1 – Summary of Valuation

Table 2a presents a projection of the primary unfunded actuarial accrued liability to June 30, 2035. As noted above, the primary unfunded actuarial accrued liability at the valuation date is approximately \$1,063 million. This table illustrates the expected pattern of change in the unfunded liability over the remaining 21-year period. Table 2b presents a projection of the unfunded liability for benefit improvements to actives under SB 173 to June 30, 2016.

Table 3 presents a cash flow projection of expected asset balances, contributions, disbursements and earnings over the period to FY 2039.

## Funding Progress

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

Table 5a presents the market value and actuarial value of assets for the fiscal year ending June 30, 2014 and, for comparison purposes, the fiscal year ending June 30, 2013. 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, 2014.

## System Membership

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

Group	July 1, 2014	July 1, 2013
Actives	36,413	36,637
Retirees and Beneficiaries	24,931	24,205
Terminated Vested	4,001	3,909
Terminated Non-Vested	<u>14,402</u>	<u>13,500</u>
Total	79,747	78,251

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

Tables 9a and 9b show the number and total compensation for State and Nonstate active members by five-year age and service groupings as of July 1, 2014.

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 members entitled to deferred benefits.

# Section 1 – Summary of Valuation

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

	July 1, 2014	July 1, 2013
Membership:		
• Active	36,413	36,637
• Inactive	43,334	41,614
• Total	<u>79,747</u>	<u>78,251</u>
1. Present Value of Future Benefits <sup>1</sup>		
a. Active	\$ 3,783,390	\$ 3,783,739
b. Inactive:		
• Retirees	2,663,485	2,520,052
• Disabled Retirees	197,960	194,871
• Beneficiaries	274,702	264,436
• Vested Terminated	150,362	145,799
• Non-Vested Terminated	13,364	12,319
c. Total	<u>\$ 7,083,263</u>	<u>\$ 6,921,216</u>
2. Actuarial Accrued Liability		
a. Baseline	\$ 6,074,627	\$ 5,911,263
b. Additional Military Service under Wood Decision <sup>2</sup>	197,200	0
c. Total	<u>\$ 6,271,827</u>	<u>\$ 5,911,263</u>
3. Assets at Actuarial Value	\$ 5,208,828	\$ 4,709,530
4. Unfunded Actuarial Accrued Liability (2c) - (3)	\$ 1,062,999	\$ 1,201,733
a. Primary Unfunded	1,062,963	1,201,681
b. Improvements for actives per SB 173	36	52
5. Annual Normal Cost Rate		
a. Present Value of Future Normal Cost (1c) - (2a) <sup>1</sup>	\$ 1,008,636	\$ 1,009,953
b. Present Value of Future Payroll	\$ 9,989,625	\$ 10,035,652
c. Normal Cost Rate as a % of Payroll (5a) / (5b)	10.10%	10.06%
d. Employee Contribution Rate	4.50%	4.50%
e. Employer Share of Normal Cost	5.60%	5.56%
f. Valuation Compensation FY 2015 (2014)	\$ 1,389,089	\$ 1,389,850
6. Calculated Employer Cost FY 2015 (2014)		
a. Amortization Payment on Baseline UAAL MOY <sup>3</sup>	\$ 80,186	\$ 109,163
b. Amortization Payment on SB 173 MOY <sup>4</sup>	19	19
c. Amortization Payment under Wood Decision <sup>2</sup>	18,600	0
d. Employer Normal Cost MOY	80,653	80,121
e. Additional Employer NC under Wood Decision MOY <sup>2</sup>	4,200	0
f. Total Employer Cost MOY	<u>\$ 183,658</u>	<u>\$ 189,303</u>
g. Employer Cost as Percentage of Compensation	13.22%	13.62%
7. Expected Employer Contributions FY 2015 (2014)		
a. Employer Contribution Rate	14.00%	14.50%
b. Employer Contribution	\$ 194,472	\$ 201,528

<sup>1</sup> Does not reflect the impact of additional military service credits under the Wood Decision.

<sup>2</sup> Estimate provided by the Board actuary.

<sup>3</sup> FY 2015 amortization payment is over 21 years (30 years from July 1, 2005).

<sup>4</sup> FY 2015 amortization payment is over 2 years (10 years from July 1, 2006).

# Section 1 – Summary of Valuation

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

Fiscal Year Ending 6/30	Unfunded Liability at Beg. of Year	Projected Total Payroll	Employer Contributions	
			% of Payroll	Amount
2015	\$ 1,062,963,000	\$ 1,389,089,000	7.11%	\$ 98,786,000
2016	1,040,262,000	1,458,543,000	6.77%	98,786,000
2017	1,015,858,000	1,531,471,000	6.45%	98,786,000
2018	989,624,000	1,608,044,000	6.14%	98,786,000
2019	961,422,000	1,688,446,000	5.85%	98,786,000
2020	931,105,000	1,772,869,000	5.57%	98,786,000
2021	898,514,000	1,861,512,000	5.31%	98,786,000
2022	863,480,000	1,954,588,000	5.05%	98,786,000
2023	825,817,000	2,052,317,000	4.81%	98,786,000
2024	785,330,000	2,154,933,000	4.58%	98,786,000
2025	741,806,000	2,262,680,000	4.37%	98,786,000
2026	695,018,000	2,375,814,000	4.16%	98,786,000
2027	644,721,000	2,494,604,000	3.96%	98,786,000
2028	590,651,000	2,619,334,000	3.77%	98,786,000
2029	532,527,000	2,750,301,000	3.59%	98,786,000
2030	470,043,000	2,887,816,000	3.42%	98,786,000
2031	402,872,000	3,032,207,000	3.26%	98,786,000
2032	330,664,000	3,183,817,000	3.10%	98,786,000
2033	253,041,000	3,343,008,000	2.96%	98,786,000
2034	169,595,000	3,510,159,000	2.81%	98,786,000
2035	79,891,000	3,685,667,000	2.68%	98,786,000

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

Fiscal Year Ending 6/30	Unfunded Liability at Beg. of Year	Projected Total Payroll	Employer Contributions	
			% of Payroll	Amount
2015	\$ 36,000	\$ 1,389,089,000	0.00%	\$ 19,000
2016	19,000	1,458,543,000	0.00%	19,000



# Section 1 – Summary of Valuation

**Table 3**  
**Cash Flow Projection FY 2015 through FY 2039 (000's omitted)**

FY Ending 6/30	(a) Assets Beg. of Year	(b) Expected Contributions	(c) Benefits	(d) Earnings	(e) Net Income	(f) Assets End of Year
2015	\$ 5,761,109	\$ 256,981	\$ 390,744	\$ 427,067	\$ 293,304	\$ 6,054,413
2016	6,054,413	269,830	396,692	449,324	322,462	6,376,875
2017	6,376,875	283,322	415,432	473,312	341,202	6,718,077
2018	6,718,077	297,488	434,106	498,733	362,115	7,080,192
2019	7,080,192	312,362	452,721	525,751	385,392	7,465,584
2020	7,465,584	327,980	471,549	554,535	410,966	7,876,550
2021	7,876,550	344,379	490,492	585,262	439,149	8,315,699
2022	8,315,699	361,598	508,495	618,169	471,272	8,786,971
2023	8,786,971	379,678	526,162	653,530	507,046	9,294,017
2024	9,294,017	398,662	543,423	691,623	546,862	9,840,879
2025	9,840,879	418,595	559,748	732,773	591,620	10,432,499
2026	10,432,499	439,525	575,394	777,342	641,473	11,073,972
2027	11,073,972	461,501	590,647	825,705	696,559	11,770,531
2028	11,770,531	484,576	604,952	878,276	757,900	12,528,431
2029	12,528,431	508,805	617,850	935,543	826,498	13,354,929
2030	13,354,929	534,245	629,980	998,030	902,295	14,257,224
2031	14,257,224	560,957	641,020	1,066,289	986,226	15,243,450
2032	15,243,450	589,005	651,300	1,140,923	1,078,628	16,322,078
2033	16,322,078	618,455	660,287	1,222,587	1,180,755	17,502,833
2034	17,502,833	649,378	667,898	1,312,018	1,293,498	18,796,331
2035	18,796,331	681,847	673,883	1,410,023	1,417,987	20,214,318
2036	20,214,318	715,939	677,657	1,517,509	1,555,791	21,770,109
2037	21,770,109	751,736	679,646	1,635,462	1,707,552	23,477,661
2038	23,477,661	789,323	679,491	1,764,943	1,874,775	25,352,436
2039	25,352,436	828,789	676,952	1,907,127	2,058,964	27,411,400

**Assumed interest rate: 7.50%**

**Earnings:  $[a + (b - c) / 2] \times \text{interest rate}$**

**Notes:**

1. The fund balance as of July 1, 2014 is the market value of the fund.
2. The contribution for FY 2015 is determined as 18.5% of anticipated FY 2015 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 members included in the valuation, including active and terminated vested members who are not yet receiving benefits.

# Section 1 – Summary of Valuation

**Table 4**  
**GASB 27 Supplementary Disclosure Information as of June 30, 2014**

Governmental Accounting Standards Board Statement 27 sets forth certain items of required supplementary information to be disclosed in the financial statements of the System sponsor. 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, 2014 and June 30, 2013

Group	June 30, 2014	June 30, 2013
Retirees and beneficiaries currently receiving benefits	24,931	24,205
Terminated employees entitled to, but not yet receiving, benefits	4,001	3,909
Terminated employees entitled to a return of contributions	14,402	13,500
Active system members:		
• Vested	23,341	23,491
• Non-Vested	<u>13,072</u>	<u>13,146</u>
Total members	79,747	78,251

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

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (b)	Unfunded Accrued Liability (b - a)	Funded Ratio (a / b)	Covered Payroll (c)	UAL as a Percentage of Covered Payroll (b - a) / (c)
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%
6/30/13	4,709,530	5,911,263	1,201,733	79.7%	1,389,850	86.5%
6/30/14	5,208,828	6,271,827	1,062,999	83.1%	1,389,089	76.5%

# Section 1 – Summary of Valuation

**Table 4 (continued)**  
**GASB 27 Supplementary Disclosure Information as of June 30, 2014**

**3. The information presented in the required supplementary schedules was determined as part of the actuarial valuation at July 1, 2014. Additional information follows.**

Valuation date	July 1, 2014
Actuarial cost method	Entry age normal
Amortization method	Level-dollar amount
Remaining amortization period	21 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%

# Section 1 – Summary of Valuation

**Table 5a**  
**Actuarial Value of Assets as of June 30, 2014 (000's omitted)**

	June 30, 2014	June 30, 2013
<b>Assets</b>		
• Cash with State Treasurer	\$ 289	\$ 524
• Investments at Fair Value	5,629,812	4,848,377
• Contributions Receivable	6,276	5,987
• Other Receivables	125,003	145,003
• Total Assets	<u>\$ 5,761,380</u>	<u>\$ 4,999,891</u>
<b>Liabilities</b>		
• Accrued Expenses and Other Payables	<u>271</u>	<u>258</u>
Market Value of Assets	\$ 5,761,109	\$ 4,999,633
<b>Adjustments for Actuarial Value of Assets</b>		
• Smoothing of Deferred Gains / (Losses)	\$ 427,281	\$ 145,103
• DHSS Settlement Accrual	125,000	145,000
• Total Adjustments	<u>\$ 552,281</u>	<u>\$ 290,103</u>
Actuarial Value of Assets	\$ 5,208,828	\$ 4,709,530

**Table 5b**  
**Four-Year Asset Smoothing as of June 30, 2014 (000's omitted)**

Fiscal Year Ending 6/30	Total Asset Gain / (Loss) for Fiscal Year	Percent Deferred	Gain / (Loss) Deferred for Fiscal Year	Gain / (Loss) First Recognized for Fiscal Year
2014	\$ 509,783	75%	\$ 382,337	\$ 127,446
2013	229,999	50%	115,000	57,500
2012	(280,223)	25%	(70,056)	(70,056)
2011	450,860	0%	0	112,715
Total			<u>\$ 427,281</u>	<u>\$ 227,605</u>

# Section 1 – Summary of Valuation

**Table 6**

**Changes in Market Value of Assets for Year Ended June 30, 2014  
(000's omitted)**

Item	Amount
Market Value of Assets - Beginning of Year	\$ 4,999,633
Additions:	
• Contributions:	
○ Member	60,230
○ Employer	194,183
○ Reinstatements	-
○ Special Appropriation	-
○ Subtotal	<u>\$ 254,413</u>
• Investment Income:	
○ Net Appreciation <sup>1</sup> and Interest	864,023
○ Other Return in Investments	-
○ Subtotal	<u>\$ 864,023</u>
• Other Income	<u>1,263</u>
• Total	<u>\$ 1,119,699</u>
Deductions and Transfers:	
• Benefit Expense	342,682
• Refunds of Contributions	10,929
• Administrative Expenses	4,695
• Transfers to / (from) Other Plans	<u>(83)</u>
• Total	<u>\$ 358,223</u>
Net Increase	761,476
Market Value of Assets - End of Year	\$ 5,761,109
Investment Return for Year on Market Value:	
• Valuation Purposes (assumes mid-year transactions and offsets investment income by investment and administrative expense)	17.36%
• Per Investment Management Board (time-weighted, excluding administrative expense)	17.94%

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

# Section 1 – Summary of Valuation

**Table 7**  
**Reconciliation of Plan Members**

	Active	Non-Vested Terms	Vested Terms	Service Retirees	Disabled Retirees	Beneficiaries	Total
<b>Census as of July 1, 2013</b>	36,637	13,500	3,909	17,958	2,262	3,985	78,251
• New Entrants	3,399	918	2	1	-	-	4,320
• Returned to Active Status	563	(439)	(118)	(6)	-	-	-
• Terminated Non-Vested	(1,141)	1,143	(2)	-	-	-	-
• Terminated Vested	(610)	(3)	613	-	-	-	-
• Withdrew Contributions	(1,213)	(616)	(155)	-	-	-	(1,984)
• Transfer to Teachers	-	(1)	-	-	-	-	(1)
• Transfer to Judges	(1)	-	-	-	-	-	(1)
• Transfer to DSRS	-	(2)	-	-	-	-	(2)
• Transfer to EMSRS	(1)	-	-	-	-	-	(1)
• Retired	(1,081)	(19)	(173)	1,273	-	-	-
• Disabled	(84)	(2)	(36)	-	122	-	-
• Deceased	(55)	(66)	(35)	(619)	(103)	(203)	(1,081)
• New Beneficiaries	-	-	-	-	-	245	245
• New QDRO's	-	-	-	-	-	22	22
• Adjustments	-	(11)	(4)	(3)	1	(4)	(21)
<b>Census as of July 1, 2014</b>	36,413	14,402	4,001	18,604	2,282	4,045	79,747

# Section 1 – Summary of Valuation

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

	July 1, 2014	July 1, 2013
<b>Active Members</b>		
• State Employees	23,991	24,269
• Nonstate Employees	<u>12,422</u>	<u>12,368</u>
• Total	36,413	36,637
• Average Age	46.71	46.64
• Average Service	10.75	10.75
<b>Inactive Members</b>		
• Service Retirees	18,604	17,958
• Disabled Retirees	2,282	2,262
• Beneficiaries	4,045	3,985
• Vested Terminated	4,001	3,909
• Non-Vested Terminated	<u>14,402</u>	<u>13,500</u>
• Total	43,334	41,614
<b>Payroll for Normal Cost</b>		
• State Employees	\$ 937,510,000	\$ 949,414,000
• Nonstate Employees	<u>451,579,000</u>	<u>440,436,000</u>
• Total	\$ 1,389,089,000	\$ 1,389,850,000
<b>PV of Future Payroll</b>	\$ 9,989,625,000	\$ 10,035,652,000
<b>PV of Member Contributions</b>	\$ 449,533,000	\$ 451,604,000

# Section 1 – Summary of Valuation

**Table 9a**  
**Distribution of Active Members as of July 1, 2014 - 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	Total			
	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	769 / 22,578,422	12 / 378,368	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	781 / 22,956,790
25 - 29	1,450 / 46,725,720	300 / 10,321,693	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	1,750 / 57,047,413
30 - 34	1,225 / 39,750,142	738 / 27,102,826	165 / 6,484,182	2 / 64,109	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	2,130 / 73,401,259
35 - 39	1,122 / 36,323,776	679 / 25,592,716	577 / 24,307,425	181 / 7,788,638	6 / 253,762	- / -	- / -	- / -	- / -	- / -	- / -	- / -	2,565 / 94,266,317
40 - 44	1,067 / 34,382,222	698 / 25,671,252	645 / 26,138,850	647 / 31,068,009	178 / 9,111,061	8 / 347,322	- / -	- / -	- / -	- / -	- / -	- / -	3,243 / 126,718,716
45 - 49	955 / 30,812,471	637 / 23,004,312	542 / 21,465,223	521 / 23,859,453	412 / 20,625,744	176 / 8,513,928	13 / 645,579	- / -	- / -	- / -	- / -	- / -	3,256 / 128,926,710
50 - 54	849 / 27,834,204	620 / 22,097,897	586 / 23,030,790	496 / 21,903,808	436 / 21,446,359	406 / 20,827,661	292 / 14,691,150	62 / 2,941,947	- / -	- / -	- / -	- / -	3,747 / 154,773,816
55 - 59	622 / 20,666,841	600 / 21,986,671	565 / 22,324,821	512 / 21,767,511	388 / 18,320,002	309 / 15,255,352	233 / 12,300,324	236 / 11,757,334	20 / 999,344	- / -	- / -	- / -	3,485 / 145,378,200
60 - 64	338 / 11,986,237	400 / 14,790,156	348 / 13,846,336	339 / 14,233,524	217 / 10,527,300	189 / 9,533,724	116 / 5,963,832	169 / 9,703,510	56 / 3,213,759	- / -	- / -	- / -	2,172 / 93,798,378
65 - 69	87 / 3,717,014	111 / 4,602,956	120 / 5,024,711	104 / 4,713,381	67 / 3,440,609	39 / 2,181,092	32 / 1,463,469	41 / 2,567,430	45 / 2,810,713	- / -	- / -	- / -	646 / 30,521,375
70 & up	31 / 1,294,595	24 / 1,070,853	36 / 1,400,517	35 / 1,589,632	22 / 898,180	21 / 1,002,794	12 / 661,645	14 / 606,983	21 / 1,196,331	- / -	- / -	- / -	216 / 9,721,530
Total	8,515 / 276,071,644	4,819 / 176,619,700	3,584 / 144,022,855	2,837 / 126,988,065	1,726 / 84,623,017	1,148 / 57,661,873	698 / 35,725,999	522 / 27,577,204	142 / 8,220,147	- / -	- / -	- / -	23,991 / 937,510,504



# Section 1 – Summary of Valuation

**Table 9b**  
Distribution of Active Members as of July 1, 2014 - 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		
Under 25	494 13,031,980	12 381,323	-	-	-	-	-	-	-	-	-	-	-	506 13,413,303
25 - 29	703 21,524,106	171 5,867,474	2 99,805	-	-	-	-	-	-	-	-	-	-	876 27,491,385
30 - 34	560 17,307,040	355 13,314,057	104 4,235,042	5 198,279	-	-	-	-	-	-	-	-	-	1,024 35,054,418
35 - 39	592 17,462,033	358 14,356,083	225 9,468,849	94 4,053,849	4 150,967	-	-	-	-	-	-	-	-	1,273 45,491,194
40 - 44	551 16,623,480	360 12,462,771	293 12,211,380	197 8,752,049	107 4,795,608	5 218,006	-	-	-	-	-	-	-	1,513 55,063,294
45 - 49	513 16,396,191	379 13,413,231	283 11,135,507	255 11,393,892	165 7,394,103	103 4,564,460	4 178,228	-	-	-	-	-	-	1,702 64,475,612
50 - 54	480 13,902,872	371 12,716,943	309 11,613,740	233 9,607,048	192 8,269,519	178 8,851,618	118 5,650,512	15 757,678	-	-	-	-	-	1,876 71,369,930
55 - 59	381 11,868,118	372 13,074,666	288 11,033,940	258 9,988,336	211 9,345,103	154 7,197,763	93 4,596,179	64 3,098,837	6 258,842	-	-	-	-	1,827 70,461,784
60 - 64	190 6,193,261	226 7,213,877	204 7,457,045	188 7,541,072	141 5,918,170	93 4,025,036	64 2,810,739	49 2,650,992	21 1,040,964	-	-	-	-	1,176 44,851,156
65 - 69	67 2,031,970	81 2,843,539	66 2,418,583	68 2,435,654	38 1,708,518	37 1,762,324	19 921,639	16 678,731	12 743,244	-	-	-	-	404 15,544,202
70 & up	46 1,260,975	54 1,728,971	30 920,326	34 1,129,421	26 940,357	15 569,827	12 498,824	10 477,985	18 835,676	-	-	-	-	245 8,362,362
Total	4,557 137,602,026	2,739 97,372,935	1,804 70,593,630	1,332 55,099,600	884 38,522,345	585 27,189,034	310 14,656,121	154 7,664,223	57 2,878,726	-	-	-	-	12,422 451,578,640

# Section 1 – Summary of Valuation

**Table 10**  
**Distribution of Retired Members as of July 1, 2014**

Current Age	Service Retirees			Disabled Retirees		
	Count	Avg. Age	Avg. Mo. Benefit	Count	Avg. Age	Avg. Mo. Benefit
Under 30	-	-	-	-	-	-
30 - 34	-	-	-	1	34	1,265
35 - 39	-	-	-	5	37	1,068
40 - 44	-	-	-	32	42	1,163
45 - 49	1	49	1,006	70	47	1,250
50 - 54	6	53	975	212	52	1,220
55 - 59	1,206	58	2,131	434	57	1,231
60 - 64	3,463	62	1,666	560	62	1,155
65 - 69	4,642	67	1,450	474	67	713
70 - 74	3,332	72	1,222	247	72	601
75 - 79	2,588	77	995	142	77	447
80 - 84	1,700	82	822	55	82	412
85 - 89	1,103	87	740	36	87	470
90 - 94	453	91	576	13	91	301
<u>95 &amp; over</u>	<u>110</u>	<u>97</u>	<u>542</u>	<u>1</u>	<u>98</u>	<u>307</u>
<b>Total</b>	<b>18,604</b>	<b>71</b>	<b>1,304</b>	<b>2,282</b>	<b>63</b>	<b>949</b>
<b>Total Annual Benefits</b>			<b>291,079,416</b>	<b>25,978,248</b>		

Current Age	Beneficiaries			Total Pensioners		
	Count	Avg. Age	Avg. Mo. Benefit	Count	Avg. Age	Avg. Mo. Benefit
Under 30	7	24	849	7	24	849
30 - 34	12	32	733	13	32	774
35 - 39	16	37	901	21	37	941
40 - 44	28	42	997	60	42	1,086
45 - 49	53	48	859	124	47	1,081
50 - 54	137	52	916	355	52	1,099
55 - 59	269	57	900	1,909	58	1,753
60 - 64	429	62	901	4,452	62	1,528
65 - 69	520	67	809	5,636	67	1,329
70 - 74	594	72	751	4,173	72	1,118
75 - 79	589	77	666	3,319	77	913
80 - 84	562	82	600	2,317	82	758
85 - 89	531	87	520	1,670	87	664
90 - 94	231	92	472	697	91	536
<u>95 &amp; over</u>	<u>67</u>	<u>97</u>	<u>424</u>	<u>178</u>	<u>97</u>	<u>496</u>
<b>Total</b>	<b>4,045</b>	<b>73</b>	<b>709</b>	<b>24,931</b>	<b>71</b>	<b>1,175</b>
<b>Total Annual Benefits</b>			<b>34,397,820</b>	<b>351,455,484</b>		

# Section 1 – Summary of Valuation

**Table 11**  
**Distribution of Members Entitled to Deferred Benefits as of July 1, 2014**

Current Age	Deferred Vested		
	Count	Avg. Age	Avg. Mo. Benefit
Under 30	35	28	332
30 - 34	181	33	376
35 - 39	336	37	495
40 - 44	568	42	596
45 - 49	644	47	654
50 - 54	805	52	742
55 - 59	809	57	635
60 - 64	514	61	525
65 - 69	101	66	454
70 - 74	6	71	699
75 - 79	1	78	513
80 - 84	1	80	19
85 - 89	-	-	-
90 - 94	-	-	-
95 & over	-	-	-
<b>Total</b>	<b>4,001</b>	<b>50</b>	<b>609</b>
<b>Total Annual Benefits</b>		<b>29,236,080</b>	

# Section 2 – Summary of Plan Provisions

## System Name

The West Virginia Public Employees' Retirement System

## Effective Date

The West Virginia Public Employees' Retirement Act was originally enacted March 11, 1961 to be effective July 1, 1961.

## System Membership

All employees of the State of West Virginia or of any participating political subdivisions are required (with certain exceptions) to become system members. Among those employees not eligible for system 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 system membership regardless of the above exclusions.

## Annual Compensation

Annual compensation is the total salary paid to a member by a participating employer, including overtime pay and non-cash payments.

## 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.

## Contributions

### 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).

### Employer Contributions

The State and its participating political subdivisions contribute 14.0% of members' compensation to the retirement system. Prior employer contribution rates are as follows:

- July 1, 2013 to July 1, 2014: 14.5%
- July 1, 2012 to July 1, 2013: 14.0%
- July 1, 2011 to July 1, 2012: 14.5%
- July 1, 2010 to July 1, 2011: 12.5%
- July 1, 2009 to July 1, 2010: 11.0%
- Prior to July 1, 2009: 10.5%

# Section 2 – Summary of Plan Provisions

## Services Credits

### 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).

### Contributing Service

Contributing service is the member's period of employment commencing on his date of participation in the system.

### 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.

### 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.

### 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.

## Normal Retirement Benefit

### 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.

### 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.

### Normal Form

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.

### Optional Forms

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).

## Section 2 – Summary of Plan Provisions

### Early Retirement Benefit (Unreduced)

#### 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.

#### 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.

### Early Retirement Benefit (Reduced)

#### 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.

#### 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.

### Disability Benefit

#### 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.

#### 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.

## Section 2 – Summary of Plan Provisions

### Deferred Vested Benefit

#### 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.

#### 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.

### Pre-Retirement Death Benefits

#### 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.

#### 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.

### 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 system.

### 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 system, 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.

# Section 3 – Actuarial Assumptions and Methods

## Valuation Date

July 1, 2014

## 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.

## Basis for Assumptions

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.

## Interest Rate and Expenses

The valuation interest assumption is 7.50% per annum, with no loading for system expenses.

## 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.

## Mortality

The mortality assumptions were selected to be used from July 1, 2010, to July 1, 2014, and include an appropriate level of conservatism that reflects expected future mortality improvements beyond those valuation dates. 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

## 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.

## Disablement Rates

Disablement rates are shown in the Appendix.

## Retirement Rates

Retirement rates are shown in the Appendix.

## 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.

## Accrual of Future Service

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



# Section 3 – Actuarial Assumptions and Methods

## 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.

## 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.

## System Contributions

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

# Appendix – Detailed Assumptions

## Salary Scales

Age	State	Nonstate	Age	State	Nonstate
19	6.000%	6.000%	45	4.875%	4.875%
20	6.000	6.000	46	4.800	4.850
21	5.950	5.950	47	4.725	4.825
22	5.900	5.900	48	4.650	4.800
23	5.850	5.850	49	4.575	4.775
24	5.800	5.800	50	4.500	4.750
25	5.750	5.750	51	4.500	4.700
26	5.700	5.700	52	4.500	4.650
27	5.650	5.650	53	4.500	4.600
28	5.600	5.600	54	4.500	4.550
29	5.550	5.550	55	4.500	4.500
30	5.500	5.500	56	4.450	4.450
31	5.450	5.450	57	4.400	4.400
32	5.400	5.400	58	4.350	4.350
33	5.350	5.350	59	4.300	4.300
34	5.300	5.300	60	4.250	4.250
35	5.250	5.250	61	4.250	4.250
36	5.200	5.200	62	4.250	4.250
37	5.150	5.150	63	4.250	4.250
38	5.100	5.100	64	4.250	4.250
39	5.050	5.050	65	4.250	4.250
40	5.000	5.000	66	4.250	4.250
41	4.975	4.975	67	4.250	4.250
42	4.950	4.950	68	4.250	4.250
43	4.925	4.925	69	4.250	4.250
44	4.900	4.900	70	4.250	4.250

# Appendix – Detailed Assumptions

## Withdrawal Rates for State (less than 1 year)

Age	Male	Female	Age	Male	Female	Age	Male	Female
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 for State (1 to 2 years)

Age	Male	Female	Age	Male	Female	Age	Male	Female
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

# Appendix – Detailed Assumptions

## Withdrawal Rates for State (2 to 3 years)

Age	Male	Female	Age	Male	Female	Age	Male	Female
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 for State (3 to 4 years)

Age	Male	Female	Age	Male	Female	Age	Male	Female
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

# Appendix – Detailed Assumptions

## Withdrawal Rates for State (4 to 5 years)

Age	Male	Female	Age	Male	Female	Age	Male	Female
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 for State (greater than 5 years)

Age	Male	Female	Age	Male	Female	Age	Male	Female
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

# Appendix – Detailed Assumptions

## Withdrawal Rates for Nonstate (less than 1 year)

Age	Male	Female	Age	Male	Female	Age	Male	Female
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 for Nonstate (1 to 2 years)

Age	Male	Female	Age	Male	Female	Age	Male	Female
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

# Appendix – Detailed Assumptions

## Withdrawal Rates for Nonstate (2 to 3 years)

Age	Male	Female	Age	Male	Female	Age	Male	Female
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	0.22750	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 for Nonstate (3 to 4 years)

Age	Male	Female	Age	Male	Female	Age	Male	Female
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

# Appendix – Detailed Assumptions

## Withdrawal Rates for Nonstate (4 to 5 years)

Age	Male	Female	Age	Male	Female	Age	Male	Female
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 for Nonstate (greater than 5 years)

Age	Male	Female	Age	Male	Female	Age	Male	Female
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



# Appendix – Detailed Assumptions

## Disability Rates for State and Nonstate

Age	Male	Female	Age	Male	Female	Age	Male	Female
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 for State and Nonstate

Age	Rates
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