



August 16, 2016

Senator Krebsbach, Chair  
Legislative Employee Benefits Programs Committee  
North Dakota State Government

**Re: Legislative Studies**

Dear Senator Krebsbach:

In accordance with your request, we have analyzed the impact of Bill No. 17.0119.01000 on the North Dakota Public Employees Retirement System (NDPERS).

**Systems Affected:**

North Dakota Public Employees Retirement System (PERS) and Defined Contribution Plan

**Summary:**

Bill No. 17.0119.01000 (Affects the Main System and the Defined Contribution Plan)

- The employee contribution rate on behalf of temporary employees increases by 2.00% of salary effective with the monthly reporting period of January 2018.
  - The rate increases from 14.12% of salary to 16.12% of salary for the Main System and the Defined Contribution Plan
- The employee contribution rate on behalf of full time employees increases by 1.00% of salary effective with the monthly reporting period of January 2018.
  - The rate increases from 7.00% of salary to 8.00% of salary for the Main System and the Defined Contribution Plan
- The employer contribution rate increases by 1.00% of salary effective with the monthly reporting period of January 2018.
  - The rate increases from 7.12% of salary to 8.12% of salary for the Main System and the Defined Contribution Plan

**Actuarial Impact of Bill 119 on the Main System**

The table on the following page presents a summary of the projected funded ratio on an actuarial value of assets basis and a market value of assets basis under the current provisions and the proposed provisions of Bill 119.

Year	Main System					
	Funded Ratio (AVA)			Funded Ratio (MVA)		
	Current Provisions	Bill 119		Current Provisions	Bill 119	
Proposed Provisions		Change	Proposed Provisions		Change	
2015	65.7%	65.7%	-0.1%	74.4%	74.4%	-0.1%
2016	66.0%	65.9%	-0.1%	74.9%	74.8%	-0.1%
2017	67.4%	67.3%	-0.1%	75.6%	75.5%	-0.1%
2018	68.3%	68.7%	0.3%	76.3%	76.6%	0.3%
2019	68.4%	69.3%	0.9%	77.0%	77.9%	0.9%
2020	69.0%	70.4%	1.4%	77.6%	79.1%	1.5%
2025	71.4%	75.6%	4.1%	80.5%	85.0%	4.5%
2030	73.6%	80.7%	7.1%	83.0%	90.8%	7.8%
2035	75.9%	86.2%	10.3%	85.6%	97.1%	11.5%
2040	78.3%	92.3%	14.0%	88.3%	103.9%	15.6%
2045	81.0%	99.2%	18.2%	91.4%	111.7%	20.3%

The change in contribution rates is projected to increase the future funded ratio for the Main System. After 30 years (by the year 2045):

1. The Main System funded ratio is projected to be 18.2 percentage points higher (99.2 percent compared to 81.0 percent) on an actuarial value of assets basis
2. The Main System funded ratio is projected to be 20.3 percentage points higher (111.7 percent compared to 91.4 percent) on a market value of assets basis

We have assumed that there will be no additional future changes in the employer contribution rates.

The following exhibits provide additional information on the impact on NDPERS of the proposed changes:

- Exhibit I: Summary of Actuarial Valuation Results as of July 1, 2015
- Graph I: Comparison of Projected Valuation Results for the Main System Under the Current and Proposed Provisions
- Exhibit II(a): Projected Valuation Results for the Main System Under the Current Provisions
- Exhibit II(b): Projected Valuation Results for the Main System Under the Proposed Provisions

**Actuarial Impact of Bill 119 on the Defined Contribution Plan**

Under Bill 119, the employee contribution rate and the employer contribution rate to the Defined Contribution Plan would each increase by 1.00 percent of pay. By definition, a defined contribution plan is always 100 percent funded. Therefore, there is no impact to the funded status of the defined contribution plan as a result of this change.

**Policy Issue Analysis**

**Benefits Policy Issues**

- Adequacy of Retirement Benefits

The 1.00 percent increase in both member and employer contributions would have no impact on retirement benefits for existing members in the Main System.

The additional 1.00 percent increase in both member and employer contributions to the Defined Contribution Plan will provide additional retirement income to members of that Plan.

The following table presents the percentage increase in member, employer and total contributions to the Defined Contribution Plan:

	Member Contribution Rate	Employer Contribution Rate	Total Contribution
Current Provisions	7.00%	7.12%	14.12%
Bill 119 Provisions	8.00%	8.12%	16.12%
Percentage Increase	14.3%	14.0%	14.2%

This implies that a newly hired member’s defined contribution account will be 14.2 percent higher when he/she retires under the proposed provisions of Bill 119.

The following table illustrates the fact that younger members with more working years until retirement will benefit more from the contribution rate increase than older members who are closer to retirement. This table shows the account balance at retirement at age 60 for (1) a new hire at age 30 as well as (2) an existing employee age 50 with a current defined contribution account balance of \$150,000:

Employee	Current Salary	Account Balance at Age 60 (14.12%)*	Account Balance at age 60 (16.12%)*	Percentage Increase	Dollar Increase
New Hire at Age 30	\$20,000	\$573,690.58	\$654,949.87	14.16%	\$81,259.29
Current Employee Age 50	\$50,000	\$451,139.17	\$469,170.40	4.00%	\$18,031.22

*\* Account balances in the previous table were calculated assuming that salary increases 5.5% per year and account balances earn 8.00% per year.*

- Competitiveness

The increase in member and employer contributions to the Main System will have no impact on retirement benefits for existing members in the Main System. It will, however, reduce the members' take-home pay. As such, this bill may diminish the total compensation package offered by participating employers in the Main System.

Although the increase in member contributions to the Defined Contribution Plan will decrease the employees' take home pay by 1.00 percent of pay, it will increase their Defined Contribution account by 2.00 percent of pay, thereby increasing the total compensation package offered by participating employers in the Defined Contribution Plan.

- Benefits Equity and Group Integrity

The bill may diminish the total compensation package offered by participating employers in the Main System, but may increase the total compensation package offered by participating employers in the Defined Contribution Plan.

- Purchasing Power

No impact.

- Preservation of Benefits

Increased funding to the Main System in the form of additional employer and member contributions will increase the funded status of the Main System at a faster rate than currently projected. By requiring additional funding, the Main System will reach 100 percent funding sooner and the members' promised benefits will be more secure than without the additional funding.

- Portability

The additional member contributions to the Defined Contribution plan would be fully portable as are the existing member contributions.

- Ancillary Benefits

No impact.

- Social Security:

No impact

### **Funding Policy Issues**

- Actuarial Impacts

As previously noted, the additional member and employer contributions required by the Bill will have a positive actuarial impact on the funded status of the Main System.

- Investment Impacts

- Cash Flow: The additional member and employer contributions required by the Bill would increase cash flow to both the Main System and the Defined Contribution Plan.
- Asset Allocation: The Board will need to decide how to invest the additional member and employer contributions required by the Bill -- in the same manner as the current Investment Policy provides, or in an alternate manner.

### **Administration Issues**

- Implementation Issues

This bill would have an impact on the members and participating employers, since their required contributions would increase.

In addition, pursuant to rules under Internal Revenue Code section 414(h), participating employers (including the State) would be required to take formal action to elect to “pick up” the increased member contribution amounts, in order for such contributions to be made on a pre-tax basis. (For this purpose, the employing unit must take formal action to provide that the contributions on behalf of a specific class of employees of the employing unit, although designated as employee contributions, will be paid by the employing unit in lieu of employee contributions. A person duly authorized to take such action with respect to the employing unit must take such action. The action must apply only prospectively and be evidenced by a contemporaneous written document, such as minutes of a meeting, a resolution, or an ordinance.)

- Administrative Costs

The only administrative costs are related to the increase in member and employer contributions and any “pick up” of the member contributions.

- Needed Authority

The bill appears to provide appropriate levels of administrative and governance authority to the PERS Board to implement the changes made by the bill.

- Integration

No impact.

- Employee Communications

Employee communications will be necessary to describe the impact of increased member contributions on employee pay.

- Miscellaneous and Drafting Issues

Since this bill will increase member contribution rates, participating employers (including the State) will need to determine whether they will reduce members' current or future salary, or pay for the increased member contributions from their own funds as a salary supplement (while also paying an increased employer contribution rate). Any participating employer that decides to reduce members' salary to pay for the increased level of member contributions must pay and report FICA taxes on the member contribution amounts made via salary reduction.

### **Projection Assumptions**

Following is a summary of the assumptions made for new hires used in the projections. The average new hire information is based on the average of members with at least one year and less than five years of service. The average assumed new hire salary is based on projecting the valuation salary from the 2015 valuation back to hire age using the assumed salary increase assumption and then projecting back to the 2015 valuation using the assumed wage inflation assumption of 4.5 percent per year. The projections assume that the number of active members remains the same in each future year as the number as of the most recent valuation of July 1, 2015.

	Current Members	Assumed New Hires
Average Age	46.5	38.4
Average Benefit Service	9.6	0.0
Average Salary	\$44,632	\$36,335
Normal Cost Rate (Benefits)	10.13%	10.19%

Although new hires in the Main System are subject to later retirement eligibility conditions (must meet the Rule of 90 instead of the Rule of 85), they are assumed to be hired at slightly older ages (on average) than the current members in NDPERS.

### **Disclosures and Additional Information**

The actuarial assumptions used in this analysis were the same assumptions used in the actuarial valuation as of July 1, 2015, including an assumed rate of investment return of 8.00 percent on the market value of assets in each future year. A summary of the actuarial assumptions can be found in Appendix I of this letter.

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A summary of the current benefit provisions can be found in Appendix II of this letter.

Future actuarial measurements may differ significantly from the current measurements presented in this cost analysis, due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; and changes in plan provisions, contribution amounts or applicable law.

If any of the provisions, underlying data or assumptions used in this analysis appear to be incorrect or unreasonable, please let us know as soon as possible so we can update the analysis.

The signing actuaries are independent of the plan sponsor.

Lance J. Weiss and Amy Williams are Members of the American Academy of Actuaries (MAAA) and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein.

Please let us know if you have any questions or would like to discuss the results of this analysis further.

Sincerely,



Lance J. Weiss, EA, MAAA, FCA  
Senior Consultant and Team Leader



Amy Williams, ASA, MAAA  
Consultant

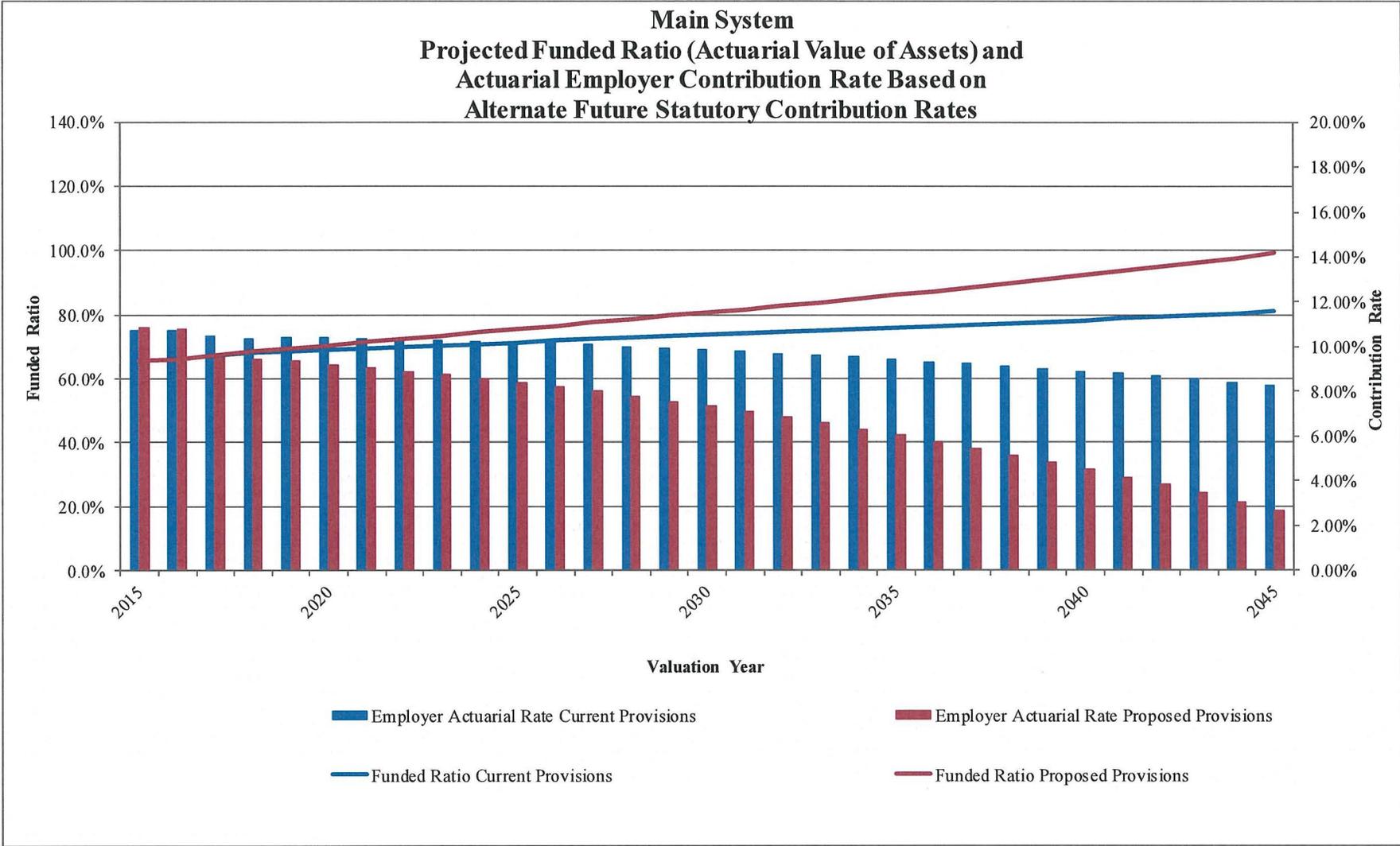
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cc: Mr. Bryan Reinhardt, NDPERS  
Ms. Sharon Schiermeister, NDPERS  
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				Actuarial Value of Assets Basis				Market Value of Assets Basis			
	Total Normal Cost*	Employee Rate	Net Employer Normal Cost	Unfunded Liability Rate	Total Employer Actuarial Rate	Employer Statutory Rate	Statutory Rate Deficiency	Unfunded Liability Rate	Total Employer Actuarial Rate	Employer Statutory Rate	Statutory Rate Deficiency
<b>Main System</b>											
2015 Valuation Results	12.55%	7.00%	5.55%	6.66%	12.21%	7.12%	5.09%	4.78%	10.33%	7.12%	3.21%
GRS 2015 Replication Results	10.38%	7.00%	3.38%	7.38%	10.76%	7.12%	3.64%	5.51%	8.89%	7.12%	1.77%
Illustrative 2015 Results with Change in Contribution Rates	10.43%	8.00%	2.43%	7.41%	9.83%	8.12%	1.71%	5.53%	7.96%	8.12%	-0.16%

*\*Includes assumed administrative expenses.*

*Unfunded liability rate is based on 20-year open level percentage of payroll amortization of the unfunded liability.*



North Dakota Public Employees Retirement System - Main System  
 Projection Results Based on the Actuarial Valuation as of July 1, 2015  
 Current Plan Provisions  
 (\$ in thousands)

Year	Results Based on Actuarial Value of Assets										Results Based on Market Value of Assets							
	Present Value Future Benefits	Actuarial Accrued Liability	Assets	Unfunded Accrued Liability	Funded Ratio	Projected Payroll	Employer Actuarial Rate (%)			Statutory Contribution Amount (\$)			Benefit Payments and Expenses	Employer Actuarial			Member Counts	
							Normal Cost	Amortization of UAL	Total	Employer (7.12%)	Employee (7.00%)	Total		Assets	Funded Ratio	Rate	Active	Ben Recip.
2015	\$ 4,107,875	\$ 3,084,416	\$ 2,027,476	\$ 1,056,940	65.7%	\$ 998,913	3.38%	7.38%	10.76%	\$ 65,980	\$ 73,123	\$ 139,102	\$ 133,818	\$ 2,296,089	74.4%	8.89%	22,381	9,979
2016	4,329,287	3,252,336	2,145,223	1,107,113	66.0%	1,051,701	3.37%	7.35%	10.72%	71,123	69,924	141,047	183,435	2,435,725	74.9%	8.79%	22,381	10,519
2017	4,594,449	3,464,404	2,335,411	1,128,993	67.4%	1,106,001	3.37%	7.12%	10.49%	74,881	73,619	148,500	159,545	2,619,105	75.6%	8.70%	22,381	11,066
2018	4,871,823	3,687,794	2,520,378	1,167,416	68.3%	1,162,346	3.37%	7.01%	10.38%	78,747	77,420	156,167	170,825	2,813,400	76.3%	8.62%	22,381	11,673
2019	5,161,665	3,921,970	2,683,961	1,238,009	68.4%	1,220,383	3.37%	7.08%	10.45%	82,759	81,364	164,123	183,716	3,018,111	77.0%	8.54%	22,381	12,311
2020	5,463,971	4,167,220	2,875,132	1,292,088	69.0%	1,280,730	3.37%	7.04%	10.41%	86,891	85,427	172,318	197,344	3,233,552	77.6%	8.46%	22,381	12,980
2021	5,780,667	4,423,242	3,075,292	1,347,950	69.5%	1,342,815	3.37%	7.01%	10.38%	91,188	89,651	180,839	212,343	3,459,496	78.2%	8.38%	22,381	13,687
2022	6,111,183	4,689,612	3,284,279	1,405,333	70.0%	1,406,876	3.37%	6.97%	10.34%	95,608	93,997	189,605	228,769	3,695,556	78.8%	8.30%	22,381	14,430
2023	6,455,939	4,966,652	3,502,496	1,464,156	70.5%	1,473,797	3.36%	6.93%	10.29%	100,170	98,481	198,651	245,877	3,942,122	79.4%	8.21%	22,381	15,191
2024	6,814,845	5,254,577	3,730,260	1,524,317	71.0%	1,543,446	3.36%	6.89%	10.25%	104,934	103,166	208,100	263,881	4,199,523	79.9%	8.13%	22,381	15,981
2025	7,188,798	5,553,456	3,967,726	1,585,730	71.4%	1,615,885	3.35%	6.85%	10.20%	109,893	108,041	217,935	282,934	4,467,935	80.5%	8.04%	22,381	16,780
2026	7,577,805	5,864,214	4,215,893	1,648,321	71.9%	1,691,792	3.35%	6.80%	10.15%	115,051	113,112	228,163	302,222	4,748,405	81.0%	7.95%	22,381	17,590
2027	7,982,698	6,187,268	4,475,255	1,712,013	72.3%	1,771,095	3.34%	6.75%	10.09%	120,456	118,425	238,881	322,383	5,041,499	81.5%	7.85%	22,381	18,398
2028	8,404,406	6,523,781	4,747,051	1,776,730	72.8%	1,854,219	3.33%	6.69%	10.02%	126,102	123,977	250,079	342,711	5,348,553	82.0%	7.75%	22,381	19,182
2029	8,843,799	6,875,238	5,032,809	1,842,429	73.2%	1,941,286	3.33%	6.62%	9.95%	132,020	129,795	261,816	363,056	5,671,225	82.5%	7.66%	22,381	19,952
2030	9,302,217	7,242,774	5,333,712	1,909,062	73.6%	2,032,616	3.32%	6.55%	9.87%	138,220	135,890	274,110	383,862	6,010,865	83.0%	7.55%	22,381	20,724
2031	9,781,389	7,627,413	5,650,850	1,976,562	74.1%	2,127,991	3.31%	6.48%	9.79%	144,722	142,283	287,005	405,367	6,368,729	83.5%	7.44%	22,381	21,494
2032	10,282,539	8,029,969	5,985,122	2,044,847	74.5%	2,227,261	3.30%	6.41%	9.71%	151,513	148,959	300,472	427,828	6,745,876	84.0%	7.32%	22,381	22,273
2033	10,806,478	8,451,312	6,337,530	2,113,782	75.0%	2,331,072	3.30%	6.33%	9.63%	158,581	155,908	314,489	451,216	7,143,456	84.5%	7.22%	22,381	23,054
2034	11,354,081	8,892,157	6,708,964	2,183,194	75.4%	2,439,225	3.29%	6.25%	9.54%	165,972	163,175	329,147	475,828	7,562,497	85.0%	7.09%	22,381	23,841
2035	11,926,712	9,352,965	7,100,079	2,252,887	75.9%	2,552,033	3.28%	6.16%	9.44%	173,673	170,746	344,419	501,954	8,003,781	85.6%	6.97%	22,381	24,646
2036	12,525,359	9,834,599	7,511,989	2,322,610	76.4%	2,669,899	3.27%	6.07%	9.34%	181,705	178,642	360,347	529,258	8,468,546	86.1%	6.84%	22,381	25,454
2037	13,151,269	10,338,104	7,946,015	2,392,089	76.9%	2,792,883	3.26%	5.98%	9.24%	190,097	186,893	376,990	557,681	8,958,250	86.7%	6.71%	22,381	26,225
2038	13,805,785	10,864,051	8,403,022	2,461,029	77.3%	2,920,818	3.25%	5.88%	9.13%	198,853	195,502	394,355	587,772	9,473,905	87.2%	6.57%	22,381	26,995
2039	14,489,643	11,413,992	8,884,868	2,529,125	77.8%	3,054,485	3.24%	5.78%	9.02%	207,962	204,457	412,419	618,614	10,017,534	87.8%	6.43%	22,381	27,740
2040	15,204,049	11,988,520	9,392,489	2,596,031	78.3%	3,193,883	3.24%	5.67%	8.91%	217,479	213,814	431,293	651,344	10,590,253	88.3%	6.30%	22,381	28,508
2041	15,950,225	12,589,060	9,927,685	2,661,375	78.9%	3,339,416	3.23%	5.56%	8.79%	227,404	223,572	450,976	685,212	11,194,049	88.9%	6.15%	22,381	29,234
2042	16,730,186	13,216,921	10,492,171	2,724,750	79.4%	3,491,459	3.22%	5.45%	8.67%	237,766	233,759	471,526	720,487	11,830,845	89.5%	5.99%	22,381	29,964
2043	17,545,437	13,873,719	11,088,006	2,785,712	79.9%	3,650,424	3.22%	5.33%	8.55%	248,592	244,402	492,994	757,013	12,502,936	90.1%	5.84%	22,381	30,647
2044	18,398,534	14,561,381	11,717,597	2,843,784	80.5%	3,816,591	3.21%	5.20%	8.41%	259,910	255,530	515,440	794,664	13,212,992	90.7%	5.68%	22,381	31,304
2045	19,291,492	15,281,336	12,382,901	2,898,435	81.0%	3,990,138	3.21%	5.07%	8.28%	271,741	267,161	538,903	834,094	13,963,259	91.4%	5.52%	22,381	31,949

North Dakota Public Employees Retirement System - Main System  
 Projection Results Based on the Actuarial Valuation as of July 1, 2015  
 Proposed Plan Provisions - 1.00 percent of pay increase to the employee contribution rate and the statutory employer contribution rate  
 (\$ in thousands)

Year	Results Based on Actuarial Value of Assets										Results Based on Market Value of Assets									
	Present Value		Actuarial		Unfunded		Projected		Employer Actuarial Rate (%)			Statutory Contribution Amount (\$)			Benefit		Employer		Member Counts	
	Future Benefits	Accrued Liability	Assets	Accrued Liability	Funded Ratio	Payroll	Normal Cost	Amortization of UAL	Total	Employer (8.12%)	Employee (8.00%)	Total	Payments and Expenses	Assets	Funded Ratio	Rate	Active	Ben Recip.		
2015	\$ 4,117,865	\$ 3,087,867	\$ 2,027,476	\$ 1,060,390	65.7%	\$ 998,913	3.44%	7.41%	10.85%	\$ 65,980	\$ 73,123	\$ 139,102	\$ 133,818	\$ 2,296,089	74.4%	8.97%	22,381	9,979		
2016	4,342,002	3,256,650	2,145,223	1,111,427	65.9%	1,051,701	3.44%	7.38%	10.82%	71,123	69,924	141,047	183,435	2,435,725	74.8%	8.89%	22,381	10,519		
2017	4,610,076	3,469,760	2,335,411	1,134,349	67.3%	1,106,001	2.51%	7.16%	9.67%	74,881	73,619	148,500	159,545	2,619,105	75.5%	7.88%	22,381	11,066		
2018	4,890,522	3,694,295	2,536,182	1,158,113	68.7%	1,162,346	2.46%	6.95%	9.41%	84,277	87,720	171,997	171,020	2,829,590	76.6%	7.65%	22,381	11,673		
2019	5,183,720	3,929,829	2,723,665	1,206,164	69.3%	1,220,383	2.47%	6.90%	9.37%	94,382	92,988	187,370	183,957	3,059,504	77.9%	7.45%	22,381	12,311		
2020	5,489,682	4,176,660	2,940,941	1,235,719	70.4%	1,280,730	2.47%	6.73%	9.20%	99,095	97,631	196,726	197,636	3,303,317	79.1%	7.23%	22,381	12,980		
2021	5,810,402	4,434,508	3,169,872	1,264,635	71.5%	1,342,815	2.48%	6.57%	9.05%	103,995	102,458	206,454	212,694	3,561,098	80.3%	7.02%	22,381	13,687		
2022	6,145,330	4,702,968	3,410,795	1,292,173	72.5%	1,406,876	2.48%	6.41%	8.89%	109,037	107,425	216,462	229,183	3,832,765	81.5%	6.80%	22,381	14,430		
2023	6,494,908	4,982,385	3,664,570	1,317,814	73.6%	1,473,797	2.49%	6.24%	8.73%	114,238	112,550	226,788	246,362	4,119,045	82.7%	6.58%	22,381	15,191		
2024	6,859,066	5,273,008	3,931,896	1,341,112	74.6%	1,543,446	2.49%	6.06%	8.55%	119,672	117,904	237,576	264,443	4,420,648	83.8%	6.34%	22,381	15,981		
2025	7,238,746	5,574,935	4,213,287	1,361,648	75.6%	1,615,885	2.49%	5.88%	8.37%	125,328	123,476	248,804	283,584	4,738,155	85.0%	6.10%	22,381	16,780		
2026	7,633,966	5,889,122	4,510,139	1,378,983	76.6%	1,691,792	2.49%	5.69%	8.18%	131,210	129,271	260,481	302,964	5,073,057	86.1%	5.86%	22,381	17,590		
2027	8,045,590	6,216,013	4,823,377	1,392,636	77.6%	1,771,095	2.50%	5.49%	7.99%	137,373	135,343	272,717	323,232	5,426,405	87.3%	5.61%	22,381	18,398		
2028	8,474,582	6,556,810	5,154,713	1,402,098	78.6%	1,854,219	2.50%	5.28%	7.78%	143,813	141,688	285,501	343,675	5,800,060	88.5%	5.35%	22,381	19,182		
2029	8,921,833	6,913,035	5,506,185	1,406,850	79.6%	1,941,286	2.49%	5.06%	7.55%	150,563	148,338	298,900	364,144	6,196,261	89.6%	5.07%	22,381	19,952		
2030	9,388,721	7,285,855	5,879,530	1,406,325	80.7%	2,032,616	2.49%	4.83%	7.32%	157,632	155,303	312,935	385,093	6,616,973	90.8%	4.79%	22,381	20,724		
2031	9,877,019	7,676,329	6,276,428	1,399,901	81.8%	2,127,991	2.49%	4.59%	7.08%	165,048	162,609	327,658	406,768	7,064,117	92.0%	4.50%	22,381	21,494		
2032	10,387,986	8,085,290	6,698,408	1,386,882	82.8%	2,227,261	2.49%	4.35%	6.84%	172,793	170,239	343,032	429,427	7,539,462	93.2%	4.20%	22,381	22,273		
2033	10,922,467	8,513,650	7,147,160	1,366,489	83.9%	2,331,072	2.49%	4.09%	6.58%	180,854	178,181	359,035	453,036	8,044,929	94.5%	3.89%	22,381	23,054		
2034	11,481,373	8,962,162	7,624,320	1,337,842	85.1%	2,439,225	2.48%	3.83%	6.31%	189,283	186,486	375,769	477,901	8,582,385	95.8%	3.57%	22,381	23,841		
2035	12,066,116	9,431,309	8,131,337	1,299,972	86.2%	2,552,033	2.48%	3.56%	6.04%	198,065	195,138	393,203	504,317	9,153,504	97.1%	3.24%	22,381	24,646		
2036	12,677,717	9,921,995	8,670,191	1,251,804	87.4%	2,669,899	2.47%	3.27%	5.74%	207,225	204,163	411,388	531,947	9,760,495	98.4%	2.89%	22,381	25,454		
2037	13,317,463	10,435,303	9,243,148	1,192,155	88.6%	2,792,883	2.47%	2.98%	5.45%	216,796	213,592	430,388	560,731	10,405,878	99.7%	2.54%	22,381	26,225		
2038	13,986,751	10,971,840	9,852,090	1,119,749	89.8%	2,920,818	2.47%	2.68%	5.15%	226,782	223,431	450,213	591,222	11,091,807	101.1%	2.18%	22,381	26,995		
2039	14,686,352	11,533,220	10,499,987	1,033,233	91.0%	3,054,485	2.46%	2.36%	4.82%	237,170	233,665	470,836	622,486	11,821,552	102.5%	1.80%	22,381	27,740		
2040	15,417,499	12,120,046	11,188,942	931,105	92.3%	3,193,883	2.46%	2.03%	4.49%	248,024	244,359	492,383	655,709	12,597,543	103.9%	1.42%	22,381	28,508		
2041	16,181,450	12,733,787	11,922,041	811,745	93.6%	3,339,416	2.45%	1.70%	4.15%	259,343	255,511	514,854	690,115	13,423,209	105.4%	1.01%	22,381	29,234		
2042	16,980,265	13,375,781	12,702,384	673,397	95.0%	3,491,459	2.45%	1.35%	3.80%	271,161	267,153	538,314	725,987	14,302,031	106.9%	0.60%	22,381	29,964		
2043	17,815,486	14,047,688	13,533,538	514,150	96.3%	3,650,424	2.45%	0.98%	3.43%	283,507	279,317	562,823	763,164	15,237,992	108.5%	0.17%	22,381	30,647		
2044	18,689,727	14,751,477	14,419,541	331,935	97.7%	3,816,591	2.44%	0.61%	3.05%	296,414	292,034	588,448	801,523	16,235,598	110.1%	-0.27%	22,381	31,304		
2045	19,605,041	15,488,601	15,364,098	124,503	99.2%	3,990,138	2.44%	0.22%	2.66%	309,907	305,327	615,234	841,737	17,299,057	111.7%	-0.73%	22,381	31,949		

## ACTUARIAL ASSUMPTIONS

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*Normal cost and the allocation of benefit values* between service rendered before and after the valuation date were determined using the *Individual Entry Age Normal actuarial cost method* having the following characteristics:

- The normal cost for each individual active member, payable from the date of employment to the date of retirement, is sufficient to accumulate the value of the member's benefit at the time of retirement; and
- Each annual normal cost is a constant percentage of the member's year by year projected covered pay.

*Financing of Unfunded Actuarial Accrued Liabilities.* The unfunded actuarial accrued liability is amortized using 20-year open level-percentage of pay amortization of the unfunded liability as of the valuation date.

*Actuarial Value of Pension Plan Assets.* The asset value is the actuarial value of assets which is calculated by recognizing 100 percent of the current year's interest and dividends and 20 percent of the current year and previous four years' total appreciation/(depreciation). The total appreciation/(depreciation) for a given year is fully recognized after a five-year period.

### *Valuation Assumptions*

The contribution and benefit values of the System are calculated by applying actuarial assumptions to the benefit provisions and census information furnished, using the actuarial cost method described above.

The principal areas of financial risk which require assumptions about future experiences are:

- Long-term rates of investment return to be generated by the assets of the Plan;
- Patterns of pay increases to members;
- Rates of mortality among members, retirees and beneficiaries;
- Rates of withdrawal of active members;
- Rates of disability among members; and
- The age patterns of actual retirement.

In a valuation, the monetary effect of each assumption is calculated for as long as a present covered person survives; a period of time which can be as long as a century.

Actual experience of the Plan will not coincide exactly with assumed experience. Each valuation provides a complete recalculation of assumed future experience and takes into account all past differences between assumed and actual experience. The result is a continual series of adjustments (usually small) to the computed contribution rate.

From time-to-time it becomes appropriate to modify one or more of the assumptions, to reflect experience trends (but not random year-to-year fluctuations). Thus, an experience review of the North Dakota Public Employees Retirement System for the period July 1, 2009, to July 1, 2014, was performed to compare the demographic and economic experience against the actuarial assumptions used in the valuations. The actuarial assumptions described in this section were adopted by the Board for use beginning with the July 1, 2015, valuation. Additional information

## ACTUARIAL ASSUMPTIONS

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regarding the rationale for the assumptions may be found in the 2015 experience review report. **The experience review was performed by the prior actuary.** All actuarial assumptions are expectations of future experience, not current market measures.

### **Current Valuation Assumptions and Methods**

**The assumed rate of investment return** used was 8.00%, net of expenses, annually.

**The assumed rate of price inflation** is 3.50 percent.

No Cost of Living Adjustments (COLA) are provided to benefits recipients. Therefore, there is no assumption for this valuation.

**The rates of annual salary increase** used for individual members are in accordance with the following table. This assumption is used to project a member's current salary to the salaries upon which benefit amounts will be based.

<b>Service At Beginning of Year</b>	<b>State Employee</b>	<b>Non-State Employee</b>	<b>Law Enforcement</b>	<b>Judges</b>
1	12.00%	15.00%	20.00%	
2	9.50%	10.00%	20.00%	
3	7.25%	8.00%	20.00%	
4			10.00%	
5			10.00%	
<b>Age</b>				
Under 30	6.75%	9.55%	6.75%	4.00%
30-39	6.00%	9.50%	6.00%	4.00%
40-49	5.75%	9.00%	5.75%	4.00%
50-59	5.25%	8.50%	5.25%	4.00%
60+	4.50%	8.25%	4.50%	4.00%

**The assumed rate of total payroll growth** used in amortizing the unfunded liability as a level percentage of pay is:

Main System and Law Enforcement: 4.50 percent

Judges: 4.00 percent

**The assumed increase in the Social Security Taxable Wage Base** is 3.25 percent.

## ACTUARIAL ASSUMPTIONS

The mortality assumptions are as follows:

	<b>Male Setback</b>	<b>Female Setback</b>
RP-2000 Combined Healthy Mortality Table (healthy mortality)	2 years	3 years
RP-2000 Disabled Retiree Mortality Table (disabled post retirement)*	1 year	0 years

\*Rates multiplied by 125 percent.

To provide a margin for future mortality improvements, generational mortality improvements from the year 2014 using the Social Security Administration (SSA) 2014 Intermediate Cost scale were assumed.

Following is a table with the life expectancies by age as of the valuation date.

Age	<u>Healthy Mortality</u>		<u>Disabled Mortality</u>	
	Post-Retirement			
	Future Life		Future Life	
	<u>Expectancy (years) in 2015</u>		<u>Expectancy (years) in 2015</u>	
	Men	Women	Men	Women
20	67.55	71.96	32.00	49.54
25	62.15	66.55	30.13	45.71
30	56.76	61.13	28.14	41.80
35	51.39	55.72	26.03	37.81
40	46.08	50.35	23.67	33.67
45	40.81	45.01	20.99	29.37
50	35.60	39.74	18.12	25.13
55	30.48	34.54	15.64	21.39
60	25.54	29.47	13.47	18.11
65	20.89	24.62	11.45	15.12
70	16.65	20.14	9.49	12.35
75	12.83	16.03	7.64	9.85
80	9.52	12.38	6.04	7.71
85	6.79	9.21	4.74	5.90
90	4.72	6.63	3.58	4.44
95	3.36	4.84	2.52	3.36
100	2.56	3.82	1.90	2.73
105	2.13	3.11	1.59	2.13

## ACTUARIAL ASSUMPTIONS

**Rates of separation from active membership** are represented by the following table (rates do not apply to members eligible to retire and do not include separation on account of death or disability). This assumption measures the probabilities of members terminating employment.

Service Beginning of Year	Service and Age-Based Rates For First Five Years of Service					
	Main System			Law Enforcement		
	Age					
	Under 30	30-39	40+	Under 30	30-39	40+
0	22.00%	16.00%	12.00%	25.00%	20.00%	17.00%
1	18.00%	14.00%	10.00%	23.00%	17.00%	15.00%
2	16.00%	12.00%	10.00%	20.00%	15.00%	12.00%
3	14.00%	12.00%	8.00%	17.00%	13.00%	10.00%
4	14.00%	11.00%	7.00%	15.00%	11.00%	7.00%

Age	Age-Based Rates Only After First Five Years of Service	
	Main System	Law Enforcement
20-24	8.80%	8.80%
25-29	8.80%	8.80%
30-34	5.50%	5.50%
35-39	4.70%	4.70%
40-44	3.90%	3.90%
45-49	3.70%	3.70%
50-54	3.40%	3.40%
55-59	0.10%	0.10%
60+	0.20%	0.20%

No pre-retirement termination is assumed for Judges.

*Vested participants that terminate are assumed to elect the option with the greater present value:*

- 1) *A refund of their accumulated contributions with interest or*
- 2) *A deferred benefit.*

Withdrawal rates end upon eligibility for early retirement.

Early retirement eligibility is as follows:

Main System: Earlier of (i) age 55 and 3 years of service, and (ii) eligibility for Rule of 85.

Law Enforcement: Age 50 and 3 years of service.

Account Balance Due to Vested Employer Contribution (PEP): Participation Under Chapter 54-52.2: If not elected: None. If elected: 100% of active members of the Main System and Law Enforcement. Contribution: Maximum allowed, based on service at the beginning of the Plan year.

## ACTUARIAL ASSUMPTIONS

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**Rates of disability:**

Before age 65: Males: 20% of OASDI disability incidence rates.  
 Females: 10% of OASDI disability incidence rates.  
 Age 65 and later: 0.25% per year.

Rates of disability were as follows:

Age	All Plans	
	Male	Female
20	0.0120%	0.0060%
25	0.0171%	0.0085%
30	0.0220%	0.0110%
35	0.0295%	0.0147%
40	0.0440%	0.0220%
45	0.0719%	0.0360%
50	0.1212%	0.0606%
55	0.2018%	0.1009%
60	0.3254%	0.1627%
65	0.2500%	0.2500%

**Social Security Disability (for Judges' disability benefit offset):**

Eligibility: 50%  
 Consumer Price Index Increases: 3.5% per annum  
 Wage Base Increases: 5.0% per annum

**Workers' Compensation (for Judges' disability benefit offset):**

None assumed.

## ACTUARIAL ASSUMPTIONS

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Rates of retirement for members eligible to retire during the next year were as follows:

Age	Main System		Law Enforcement	Judges
	Reduced	Unreduced	Unreduced	Unreduced
50		30.00%	25.00%	
51		10.00%	25.00%	
52		10.00%	25.00%	
53		10.00%	25.00%	
54		10.00%	25.00%	
55	1.00%	10.00%	10.00%	10.00%
56	1.00%	8.00%	10.00%	10.00%
57	1.00%	8.00%	10.00%	10.00%
58	1.00%	8.00%	10.00%	10.00%
59	1.00%	8.00%	10.00%	10.00%
60	2.00%	8.00%	10.00%	10.00%
61	5.00%	15.00%	10.00%	10.00%
62	10.00%	30.00%	50.00%	10.00%
63	10.00%	30.00%	50.00%	10.00%
64	10.00%	20.00%	50.00%	10.00%
65		30.00%	50.00%	20.00%
66		20.00%	20.00%	20.00%
67		15.00%	20.00%	20.00%
68		15.00%	20.00%	20.00%
69		15.00%	20.00%	20.00%
70		15.00%	20.00%	20.00%
71		15.00%	20.00%	20.00%
72		15.00%	20.00%	20.00%
73		15.00%	20.00%	20.00%
74		15.00%	20.00%	20.00%
75+		100.00%	100.00%	100.00%

## ACTUARIAL ASSUMPTIONS

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**Assumed Service****Credit:**

All active members (full time and part time) are assumed to earn one full year of service for each assumed future year of service.

**Marital Status:**

It is assumed that 75 percent of participants in the Main System and Law Enforcement and 100 percent of Judges have an eligible spouse at the time of retirement or pre-retirement death. The male spouse is assumed to be three years older than the female spouse.

<b>Form of Payment Election Assumption:</b>	<b>Form of Payment</b>	<b>Main System and Law Enforcement</b>	<b>Judges</b>
	Life Annuity	50%	0%
	50% Joint and Survivor	45%	100%
	Refund of Member Contributions	5%	0%

**Benefit Service:**

Exact fractional years of service are used to determine the amount of benefit payable.

**Decrement Timing:**

All decrements are assumed to occur at the middle of the year.

**Decrement****Operation:**

Turnover decrements do not operate after the member reaches retirement eligibility (early or normal).

**Eligibility Testing:**

Eligibility for benefits is determined based upon the age nearest birthday and service on the date the decrement is assumed to occur.

**Pay Increase Timing:**

End of (fiscal) year.

**Expenses:**

Assumed administrative expenses were added to the Normal Cost and are based on the prior year's expenses, adjusted for inflation. The assumed amount added to the Normal Cost is:

<b>Expenses</b>	<b>Main System</b>	<b>Judges</b>	<b>Law Enforcement</b>		<b>Total</b>
			<b>With Prior</b>	<b>Without Prior</b>	
Assumed FY 2015	\$ 1,100,000	\$ 7,500	\$ 5,500	\$ 7,500	\$ 1,120,500
Actual FY 2015	2,318,204	11,168	28,834	7,151	2,365,357
Assumed FY 2016	2,399,341	11,559	29,843	7,402	2,448,145

## BENEFIT PROVISIONS

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This section summarizes the major benefit provisions of the North Dakota Public Employees Retirement System as included in the valuation. It is not intended to be, nor should it be, interpreted as a complete statement of all plan provisions.

### 1. Normal Service Retirement:

➤ Eligibility:

*Main System and Judges:*

Attainment of age 65, or at any age with age plus service equal to at least 85 (Rule of 85).

For members enrolled after December 31, 2015, into the Main System, attainment of age 65, or at age 60 with age plus service equal to at least 90 (Rule of 90).

*Law Enforcement:*

Attainment of age 55 and three consecutive years of service, or if not former National Guard, at any age with age plus service equal to at least 85 (Rule of 85). Former National Guard is eligible for Rule of 85 on August 1, 2015.

➤ Benefit:

*Main System and Law Enforcement:*

2.00% of final average salary multiplied by service.

*Judges:*

3.50% of final average salary for each of the first ten years of service, 2.80% for each of the next ten years of service and 1.25% for service in excess of twenty years.

### 2. Early Retirement:

➤ Eligibility:

*Main System:*

Attainment of age 55 with three years of service.

*Judges:*

Attainment of age 55 with five years of service.

## BENEFIT PROVISIONS

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*Law Enforcement:*

Attainment of age 50 with three years of service.

➤ **Benefit:**

Main System:

The Normal Service Retirement Benefit as determined above. A benefit that begins before age 65 (or Rule of 85, if earlier) is reduced by one-half of one percent for each month before the earlier of age 65 or the age at which the Rule of 85 is met.

For members enrolled after December 31, 2015, into the Main System, a benefit that begins before age 65 (or Rule of 90, if earlier) is reduced by 2/3% of one percent for each month before the earlier of age 65 or the age at which the Rule of 90 is met.

*Judges:*

The Normal Service Retirement Benefit as determined above. A benefit that begins before age 65 (or Rule of 85, if earlier) is reduced by one-half of one percent for each month before age 65 or the age at which the Rule of 85 is met.

*Law Enforcement:*

The Normal Service Retirement Benefit as determined above. A benefit that begins before age 55 (or Rule of 85, if earlier) is reduced by one-half of one percent for each month before age 55 or the age at which the Rule of 85 is met.

**3. Disability Benefit:**

➤ **Eligibility:**

Six months of service and inability to engage in any substantial gainful activity.

➤ **Benefit:**

*Main System and Law Enforcement:*

25% of the member's final average salary at disability minus workers' compensation benefits, with a minimum of \$100 per month.

*Judges:*

70% of the member's final average salary at disability minus Social Security and Workers' Compensation benefits paid.

## BENEFIT PROVISIONS

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### 4. Deferred Vested Retirement:

➤ Eligibility:

*Main System and Law Enforcement:*

Three years of service.

*Judges:*

Five years of service.

➤ Benefit:

*Main System and Judges:*

The Normal Service Retirement Benefit payable at age 65 or the Rule of 85, if earlier. Reduced early retirement benefits can be elected upon attainment of age 55.

*Law Enforcement:*

The Normal Service Retirement Benefit payable at age 55 or the Rule of 85, if earlier. Reduced early retirement benefit can be selected upon attainment of age 50.

### 5. Pre-Retirement Death Benefits:

(a) Vested participants with a surviving spouse

➤ Eligibility:

*Main System and Law Enforcement:*

Three years of service.

*Judges:*

Five years of service.

➤ Benefit:

*Main System and Law Enforcement:*

One of the following options:

- Lump sum payment of member's accumulated contributions with interest.

## BENEFIT PROVISIONS

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- 50% of the member's accrued benefit (not reduced on account of age) payable for the surviving spouse's lifetime.
- Continuation portion of 100% joint and survivor annuity (only if participant was eligible for normal retirement).
- A partial lump sum payment in addition to the one of the annuity options above.

*Judges:*

One of the following options:

- Lump sum payment of member's accumulated contributions with interest.
- 100% of the member's accrued benefit (not reduced on account of age) payable for the spouse's lifetime.

(b) Non-vested members or vested members without a surviving spouse

➤ Eligibility:

*Main System, Judges and Law Enforcement:*

Non-vested or no surviving spouse.

➤ Benefit:

*Main System, Judges and Law Enforcement:*

Lump sum payment of member's accumulated contributions with interest.

**6. Refund of Member Contributions:**

Paid to terminated non-vested members and terminated vested members who choose a refund of employee contributions in lieu of a monthly retirement benefit.

## BENEFIT PROVISIONS

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### 7. Accumulated Member Contributions:

Member contributions accumulate with interest at the following rates:

<u>Time Period</u>	<u>Per Annum Interest Rate</u>
Through June 30, 1981	5.0%
July 1, 1981, to June 30, 1986	6.0%
After June 30, 1986	0.5% less than the actuarial interest rate assumption

### 8. Standard and Optional Forms of Payment:

Standard form of payment:

*Main System and Law Enforcement:*

Monthly benefit for life with a refund to beneficiary at death of the remaining balance (if any) of accumulated member contributions.

*Judges:*

Monthly benefit for life, with 50% payable to an eligible survivor.

Optional forms of payment:

- Life annuity (for Judges).
  - 50% joint and survivor annuity with pop-up (for Main System and Law Enforcement).
  - 100% joint and survivor annuity with pop-up.
  - Twenty-year certain and life annuity.
  - Ten-year certain and life annuity.
  - Social Security level income annuity.
  - A partial lump sum payment in addition to one of the annuity options above.
  - An actuarially equivalent graduated benefit option with either a one percent or two percent increase to be applied the first day of January of each year. Not available for disability or early retirements or in combination with a partial lump sum option, a deferred normal retirement option, or a Social Security level income annuity.

## BENEFIT PROVISIONS

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### 9. Final Average Salary:

Average of the highest salary received by the member for any 36 months employed during the last 180 months of employment.

### 10. Contributions:

Contribution rates specified in the Century Code (except employer rate for Law Enforcement); differ between permanent full-time employees and part-time temporary employees. Rates are as follow:

	<u>Rates Set by Statute</u>		<u>Rates Determined by the Board of Retirement</u>
	<u>Member</u>	<u>Employer</u>	<u>Employer</u>
Main System Full-Time Employees	7.00%	7.12%	
Main System Part-Time Employees	14.12%	0.00%	
Judges	8.00%	17.52%	
Law Enforcement with prior Main System service	5.50%		9.81%
➤ BCI Employees	6.00%		10.31%
➤ National Guard members <sup>1</sup>	4.50%		7.00%
Law Enforcement without prior Main System service	5.50%		7.93%

<sup>1</sup> *Effective August 1, 2015, the member contribution rate for former National Guard members increased to 6% and the employer contribution rate increased to 9.81%. Effective January 1, 2016, the contribution rate for National Guard members of the State Law Enforcement plan will be reduced by 0.5% to 5.50%.*

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**BENEFIT PROVISIONS**

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Effective January 1, 2000:

A member's account balance includes vested employer contributions equal to the member's contributions to the deferred compensation Plan under chapter 54-52.2. The vested employer contribution may not exceed:

1. For months one through 12 of service credit, \$25 or 1% of the member's monthly salary, whichever is greater.
2. For months 13 through 24 of service credit, \$25 or 2% of the member's monthly salary, whichever is greater.
3. For months 25 through 36 of service credit, \$25 or 3% of the member's monthly salary, whichever is greater.
4. For service exceeding 36 months, \$25 or 4% of the member's monthly salary, whichever is greater.

Vested employer contributions are credited monthly to the member's account balance.

**11. Rollovers:**

The fund may accept rollovers from other qualified plans under rules adopted by the Board for the purchase of additional service credit.

# Bill 119

- Increases employer and employee contributions under the PERS defined benefit and defined contribution plans [17.0119.01000]

## Three Goals

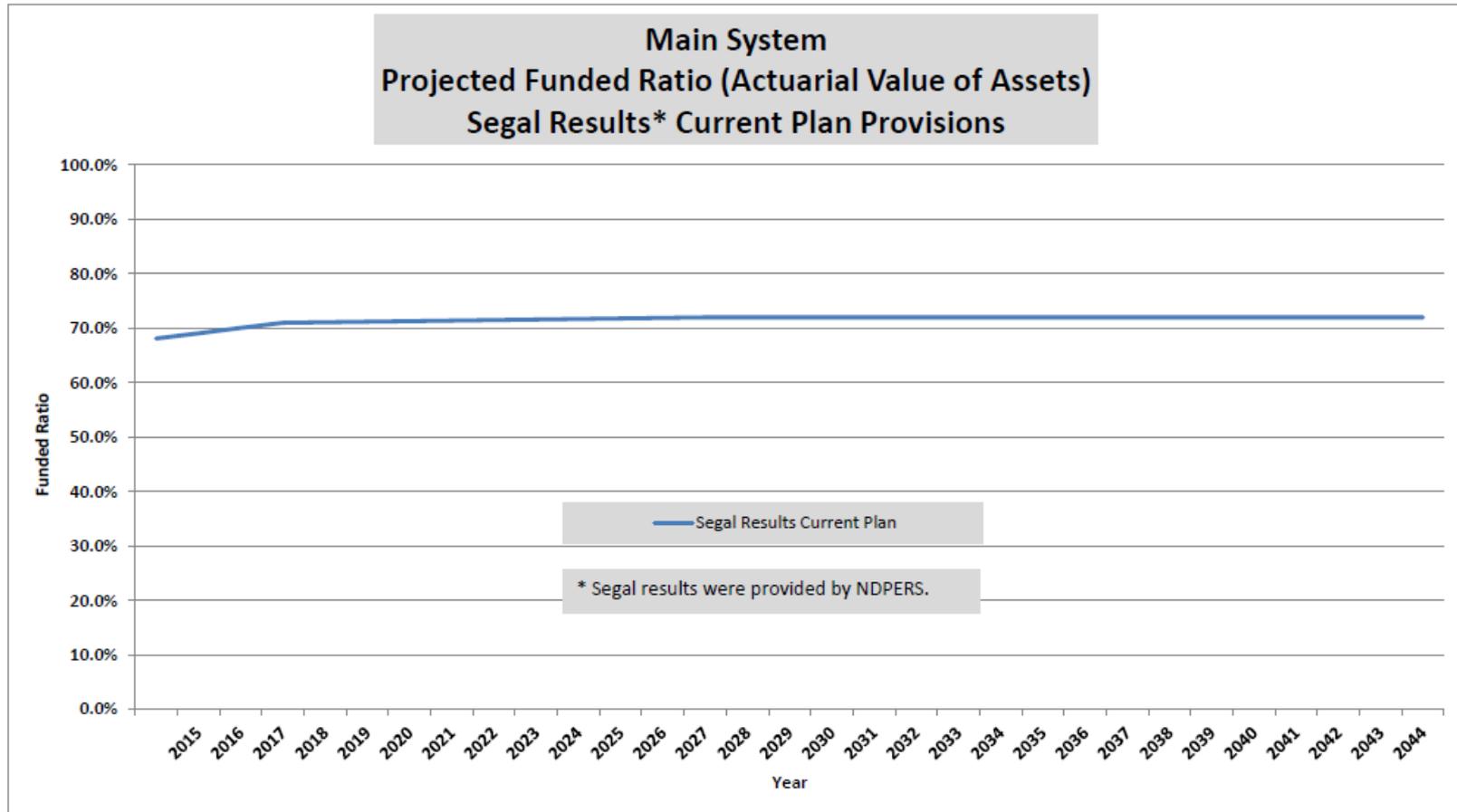
Stop the downward trend of the plan

Stabilize the plan

Put the plan on a path back to 100%

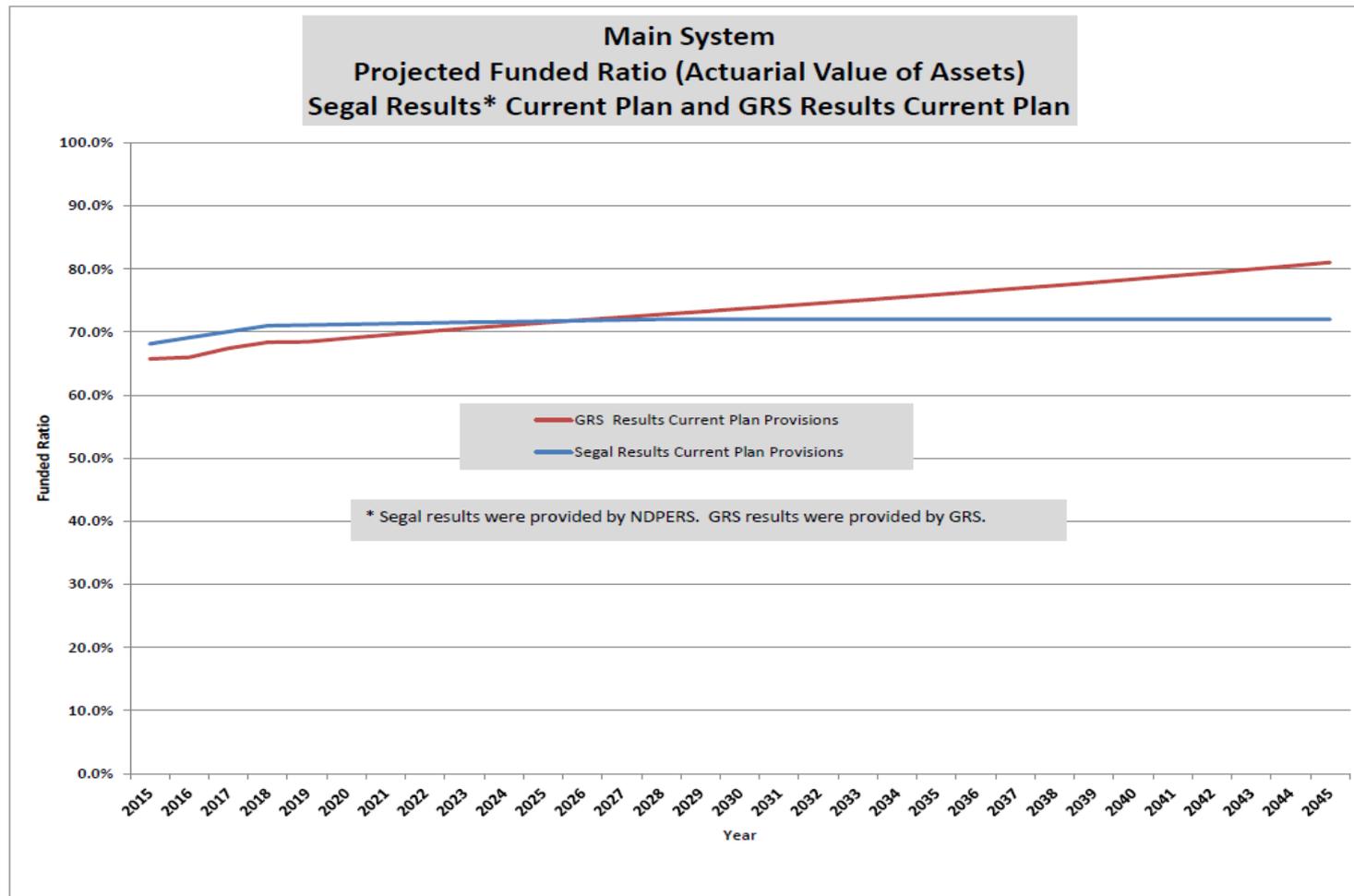
# Progress to Date

## Segal Projections



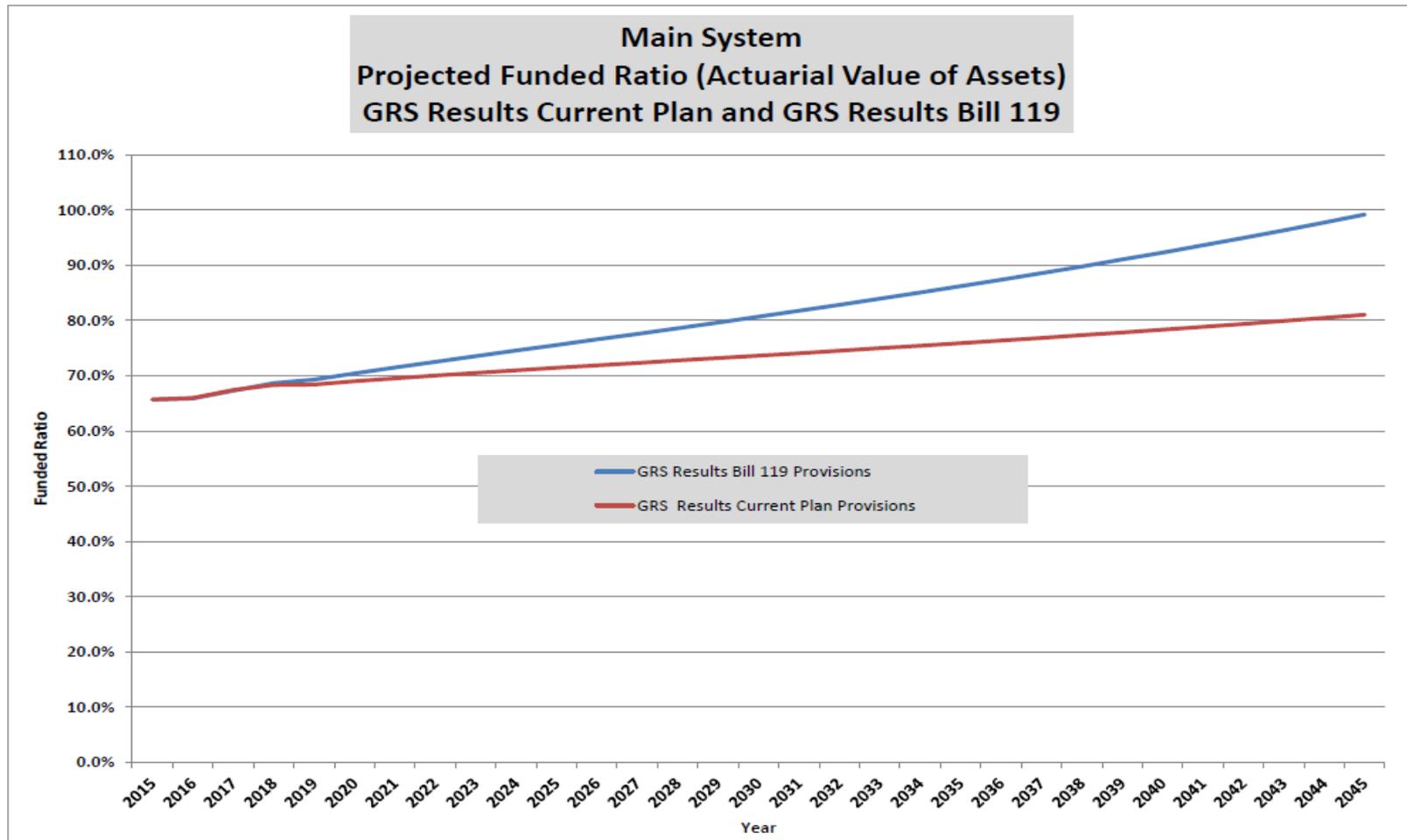
# Progress to Date

## GRS Projections

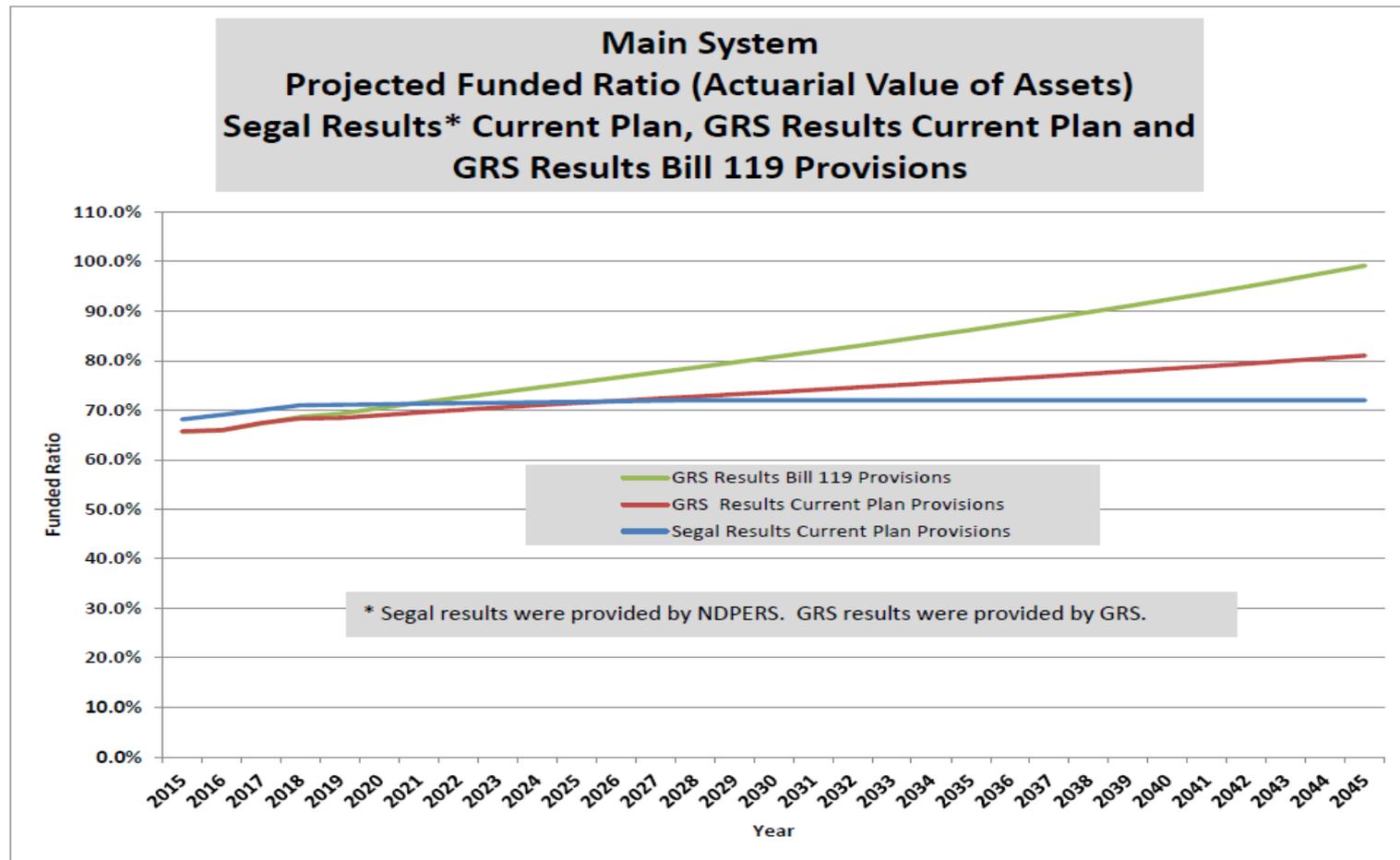


# Effect of Proposed Bill

## Segal Projections



# Summary



## 4<sup>th</sup> year of recovery plan

**Cost of 1%  
retirement  
contribution  
increase  
effective  
1/1/2018**

Main System	\$ 8,132,513
Defined Contribution	\$ 134,571
Subtotal	\$ 8,267,084
General Fund	\$ 4,960,250
Other Funds	\$ 3,306,834
Political Subdivisions	
County	\$ 2,889,252
City	\$ 1,472,073
Schools	\$ 2,781,379
Others	\$ 425,708
Subtotal	\$ 7,568,412
Total	\$15,835,496