LC Bill 176

Legislative Employee Benefits Committee

December 2, 2014

Proposed Bill - General

- New employees of political subdivisions would still be eligible to participate in the Hybrid Plan. Currently, political subdivisions represent approximately 50% of the active population of the Main System.
- Temporary State employees hired after December 31, 2015 would only be able to participate in the DC Plan.
- State Employees currently participating in the Hybrid Plan and those hired before January 1, 2016, may make an irrevocable election to transfer to the DC Plan during the last six months of 2016.
- Contribution rates for new State employees in the DC Plan would be the same contribution rate as statutorily required under the defined benefit plan applicable to the appropriate employee group.
- The vesting period for employees in the DC Plan would be changed to 100% vesting after one year of service.
- The bill draft would not affect current or future Supreme Court or district court judges, employees eligible to participate in the National Guard retirement plan or the law enforcement plan, employees of a political subdivision, or employees of the State Board of Higher Education and state institutions under the jurisdiction of the board that are participating in the TIAA-CREF retirement plan.

Proposed Bill - General

- The proposed bill does not provide for a funding mechanism to address the funding issues for the Hybrid Plan that would be created by the changes made by the bill. According to the report from prepared by Legislative Council staff:

  -The Government Finance Committee approved a separate bill draft to address any unfunded liabilities of the defined benefit plan resulting from the bill draft to close the defined benefit plan to new state employees. The separate bill draft establishes a School Construction Assistance Loan Fund and a Public Employee Retirement Stabilization Fund. The funds in the Public Employee Retirement Stabilization Fund would be available to offset any unfunded liability of the Main State Employee Defined Benefit Retirement Plan. The State Investment Board would be responsible for investing the Public Employee Retirement Stabilization Fund. The bill draft includes a contingency that would make the transfers into these funds from the Foundation Aid Stabilization Fund effective only upon approval of a constitutional amendment by the Legislative Assembly in 2015 and by the voters in June 2016 to allow for additional uses of the Foundation Aid Stabilization Fund. The bill draft provides for a transfer of $250 million into the School Construction Assistance Loan Fund and a transfer of $200 million into the Public Employee Retirement Stabilization Fund.

ACTUARIAL REVIEW

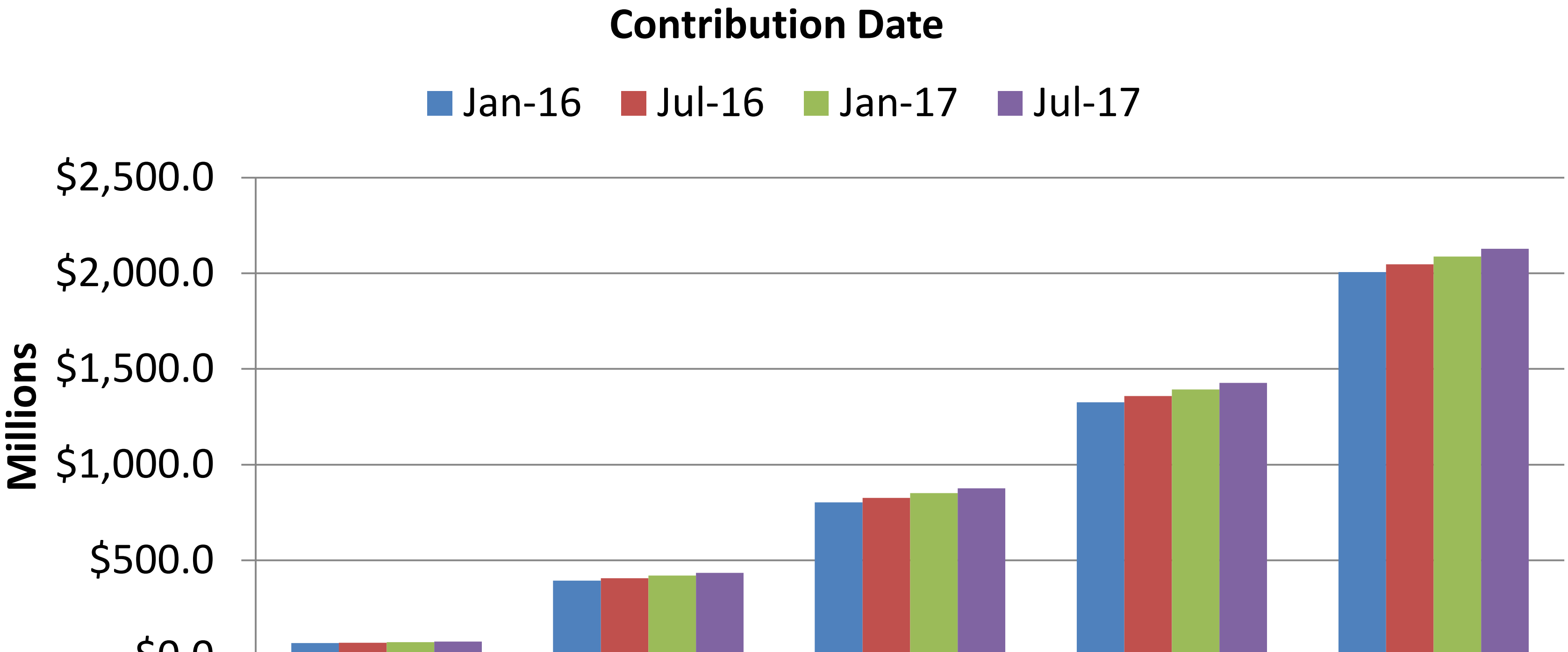
Actuarial Cost/Funding Methods

Pages 2-7 plus Exhibits

- One time contribution
  - Rate of return
- Contribution Increase
  - Rate of return
  - Time Period
- Investment Return (Callan Memo)
- GASB

Exhibit A: State Plan Closed to New Hires

Contribution Required

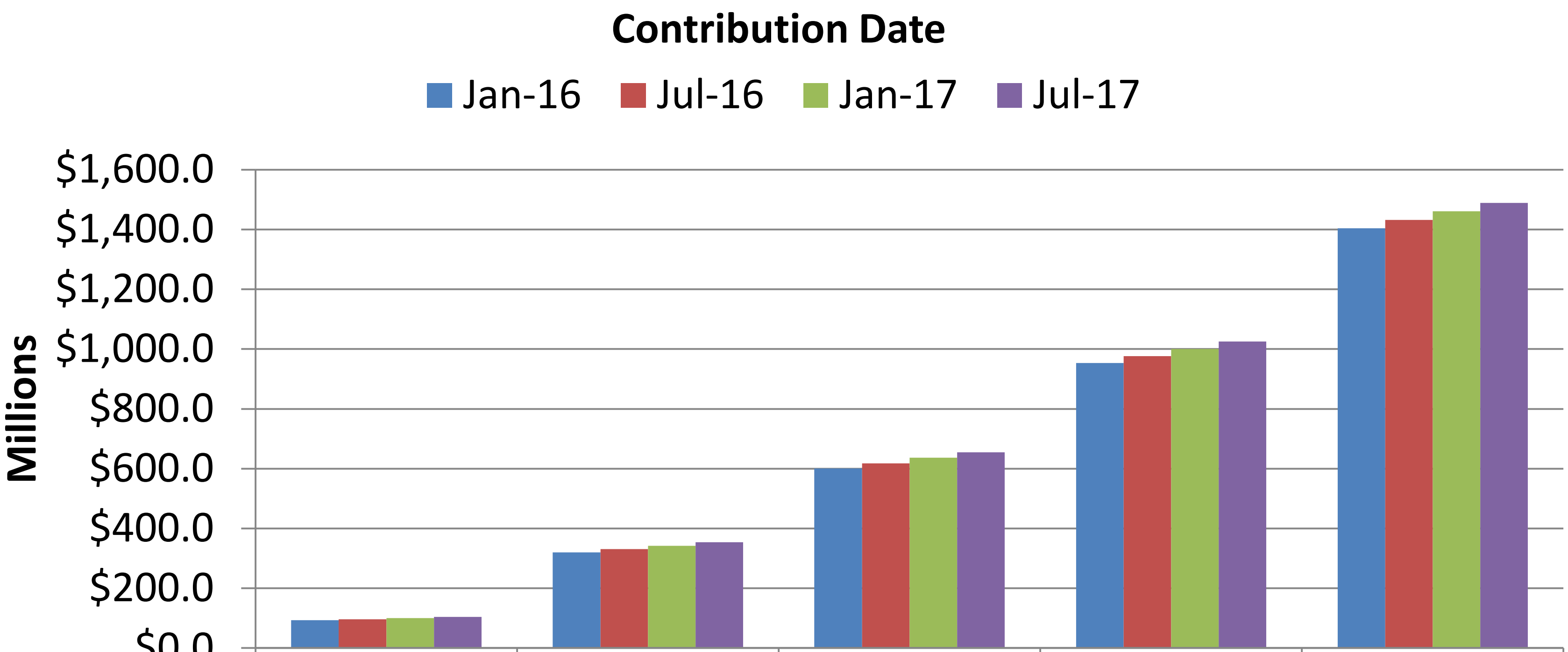


	8%	7%	6%	5%	4%
Jan-16	$67.4	$393.5	$803.1	$1,326.3	$2,006.7
Jul-16	$70.0	$406.8	$826.5	$1,358.7	$2,046.1
Jan-17	$72.8	$421.0	$851.3	$1,392.7	$2,087.0
Jul-17	$75.6	$435.3	$876.0	$1,426.6	$2,127.9

Investment Return

Exhibit B: State Plan Closed to New Hires and 40% DB Participants Move to DC

Contribution Required

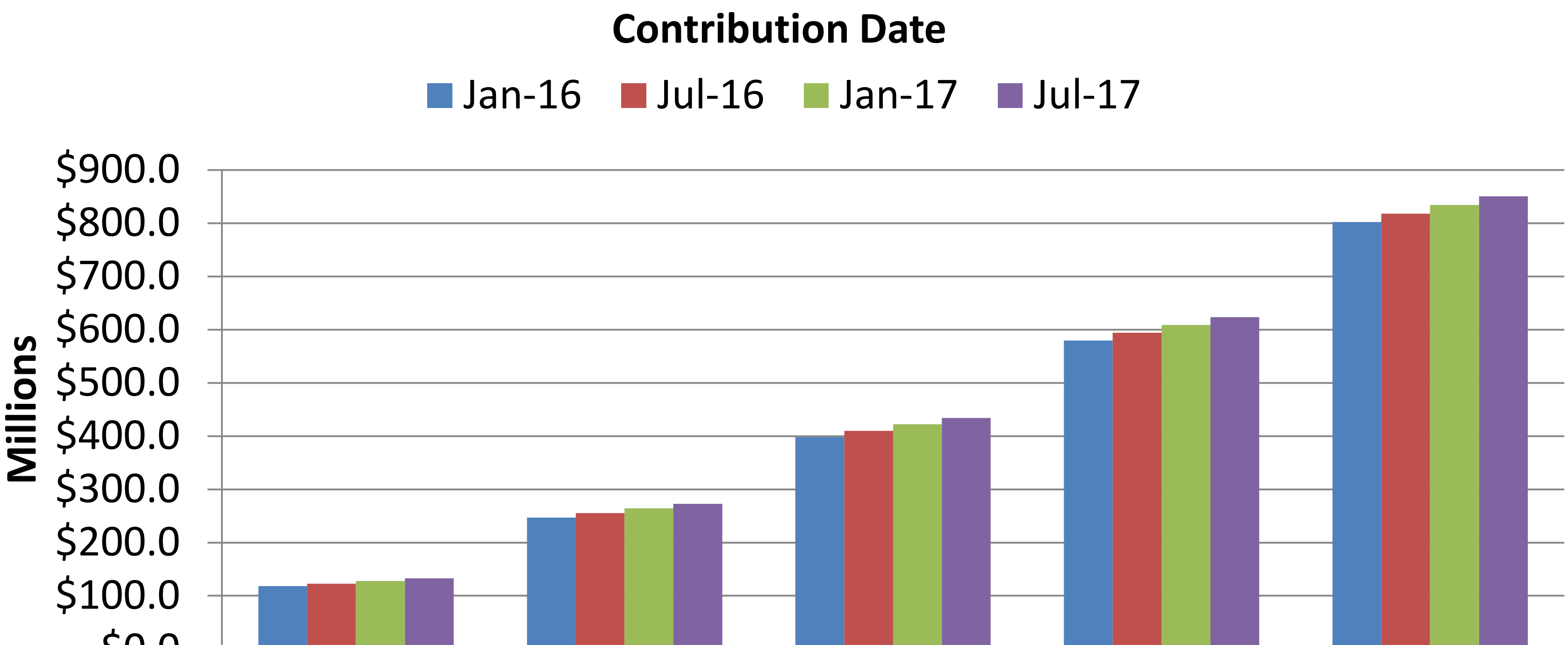


	8%	7%	6%	5%	4%
Jan-16	$92.9	$320.1	$600.6	$953.0	$1,404.3
Jul-16	$96.4	$330.9	$618.1	$976.3	$1,431.9
Jan-17	$100.3	$342.5	$636.6	$1,000.7	$1,460.5
Jul-17	$104.1	$354.1	$655.1	$1,025.1	$1,489.1

Investment Return

Exhibit C: State Plan Closed to New Hires and 80% DB Participants Move to DC

Contribution Required

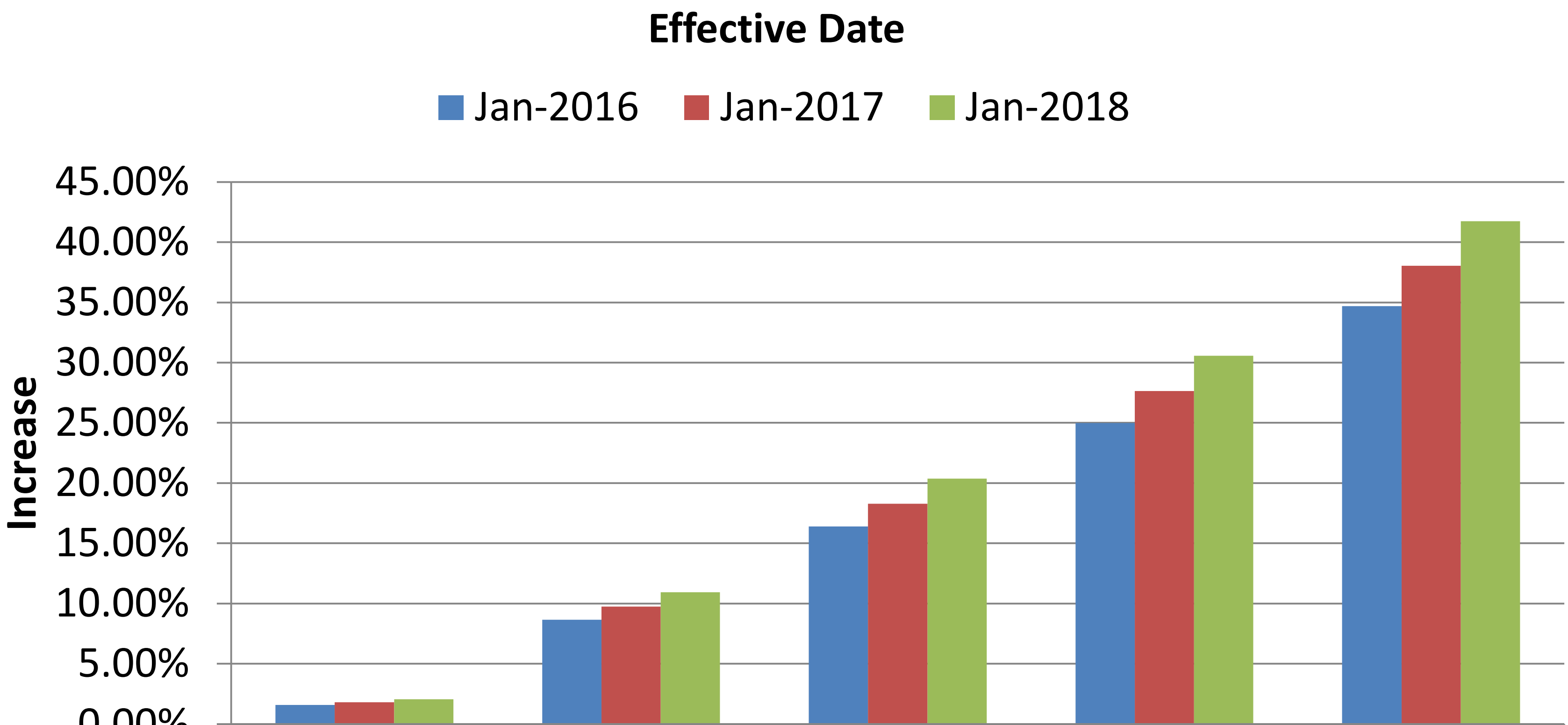


	8%	7%	6%	5%	4%
Jan-16	$118.3	$246.8	$398.1	$579.7	$802.0
Jul-16	$122.9	$255.2	$409.7	$593.9	$817.7
Jan-17	$127.8	$264.1	$422.0	$608.7	$834.1
Jul-17	$132.7	$272.9	$434.3	$623.5	$850.4

Investment Return

Exhibit A: State Plan Closed to New Hires

Contribution Rate Increase Required

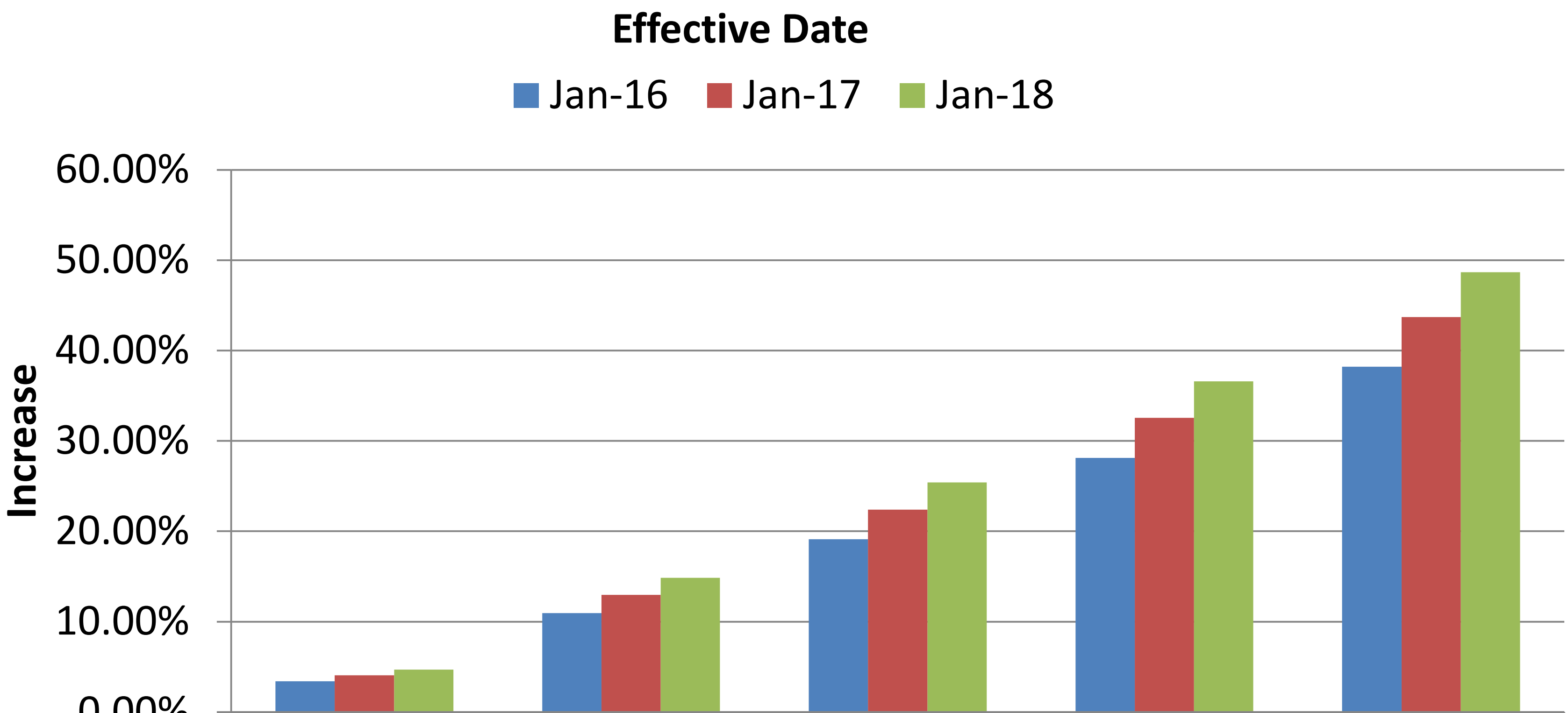


	8%	7%	6%	5%	4%
Jan-2016	1.59%	8.66%	16.39%	24.99%	34.69%
Jan-2017	1.81%	9.74%	18.29%	27.64%	38.05%
Jan-2018	2.05%	10.95%	20.38%	30.56%	41.73%

Investment Return

Exhibit B: State Plan Closed to New Hires and 40% DB Participants Move to DC

Contribution Rate Increase Required

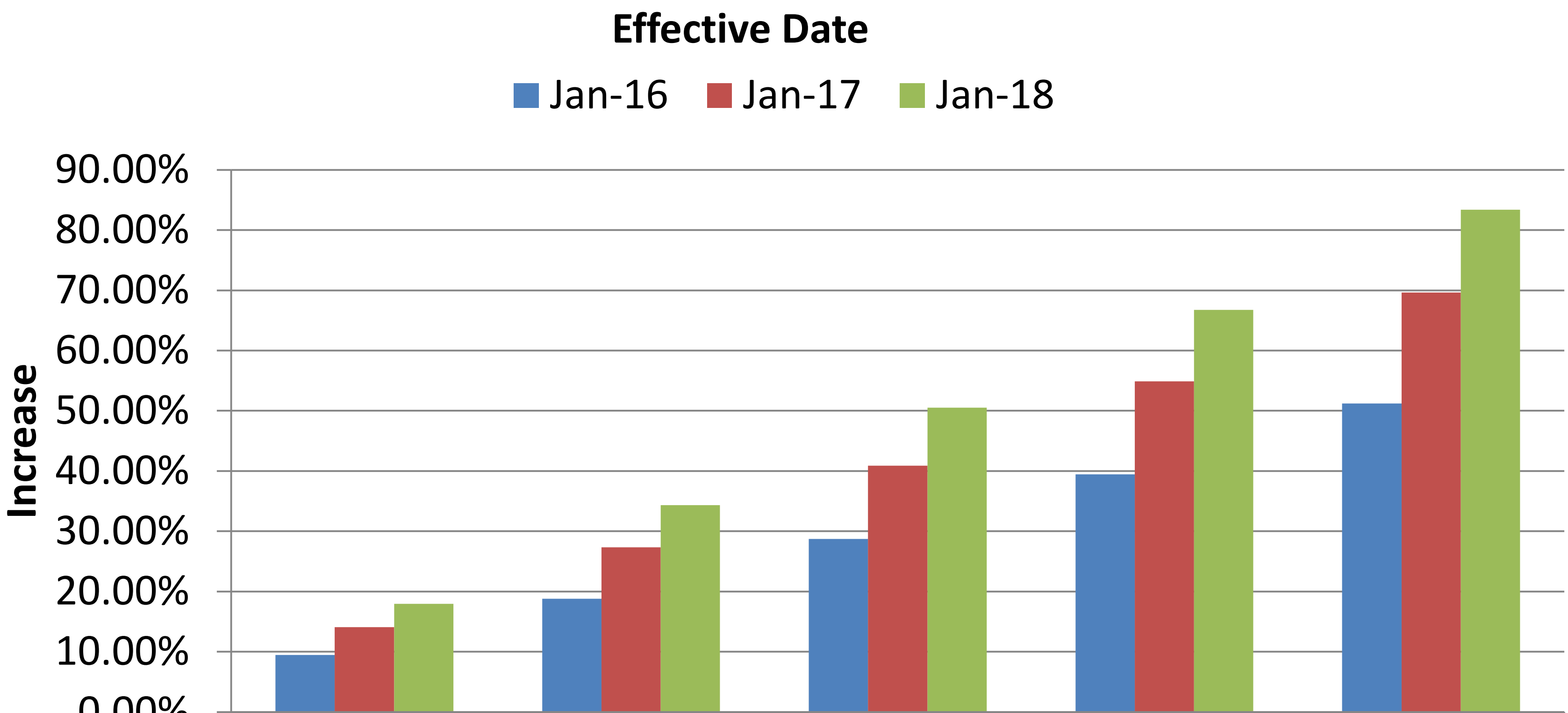


	8%	7%	6%	5%	4%
Jan-16	3.39%	10.93%	19.11%	28.12%	38.20%
Jan-17	4.06%	12.95%	22.38%	32.55%	43.71%
Jan-18	4.70%	14.84%	25.41%	36.59%	48.68%

Investment Return

Exhibit C: State Plan Closed to New Hires and 80% DB Participants Move to DC

Contribution Increase Required

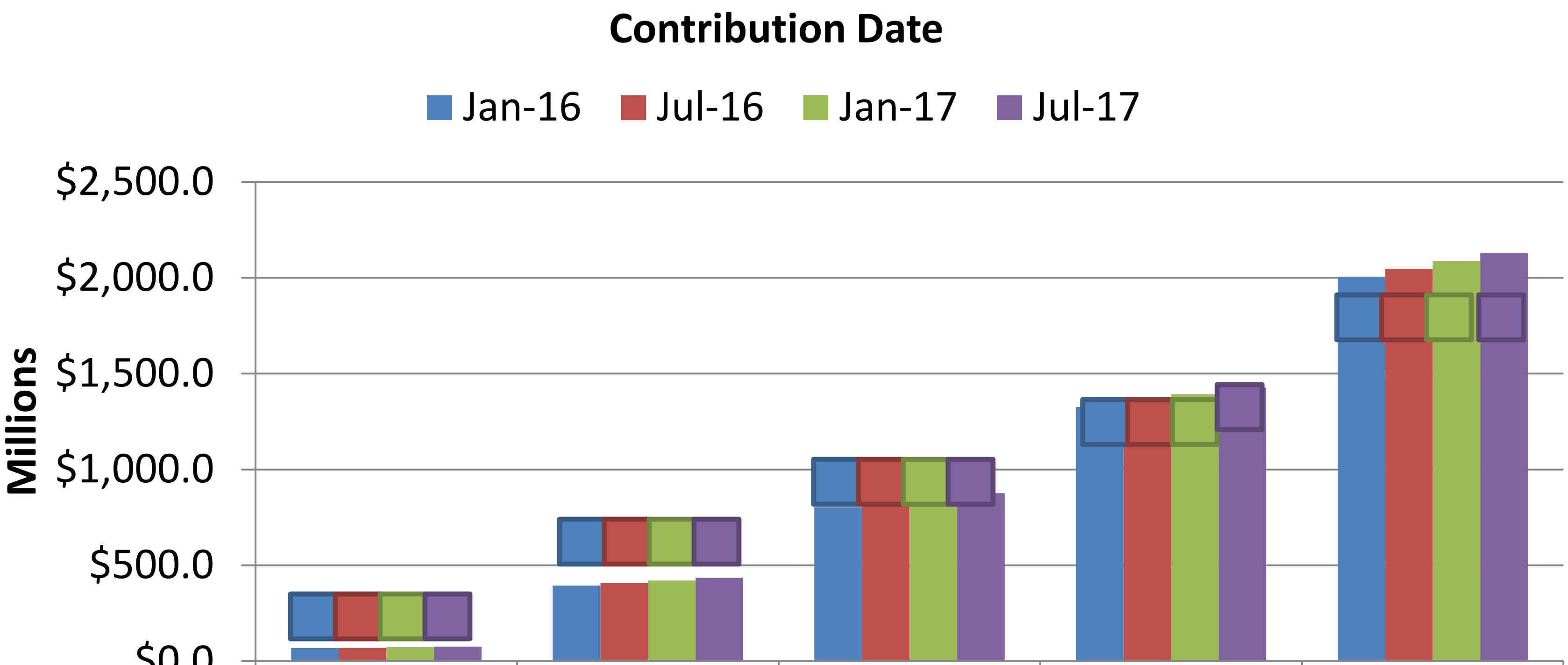


	8%	7%	6%	5%	4%
Jan-16	9.47%	18.79%	28.73%	39.45%	51.19%
Jan-17	14.07%	27.33%	40.87%	54.88%	69.61%
Jan-18	17.95%	34.32%	50.51%	66.77%	83.39%

Investment Return

Exhibit A: State Plan Closed to New Hires

Contribution Required (20-Year 100% Funded)



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Investment Return

Exhibit B: State Plan Closed to New Hires and 40% DB Participants Move to DC

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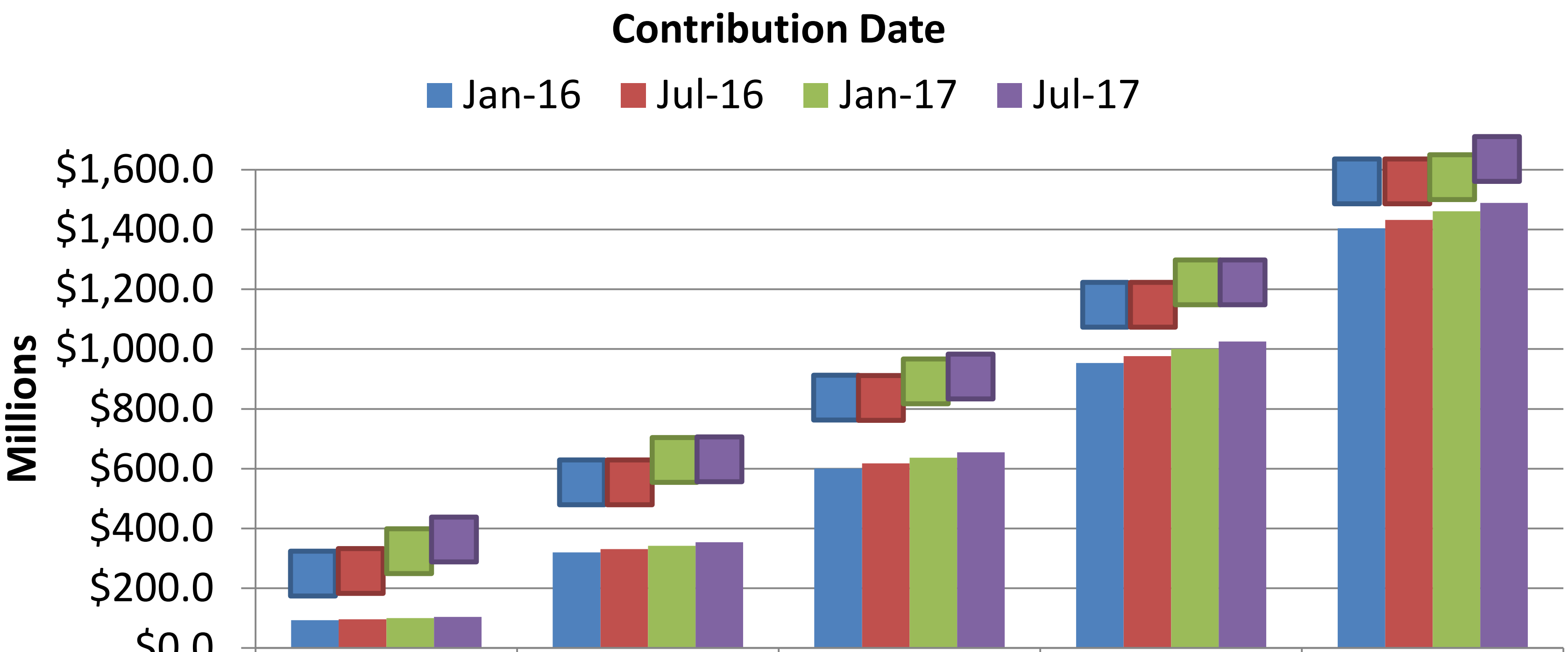

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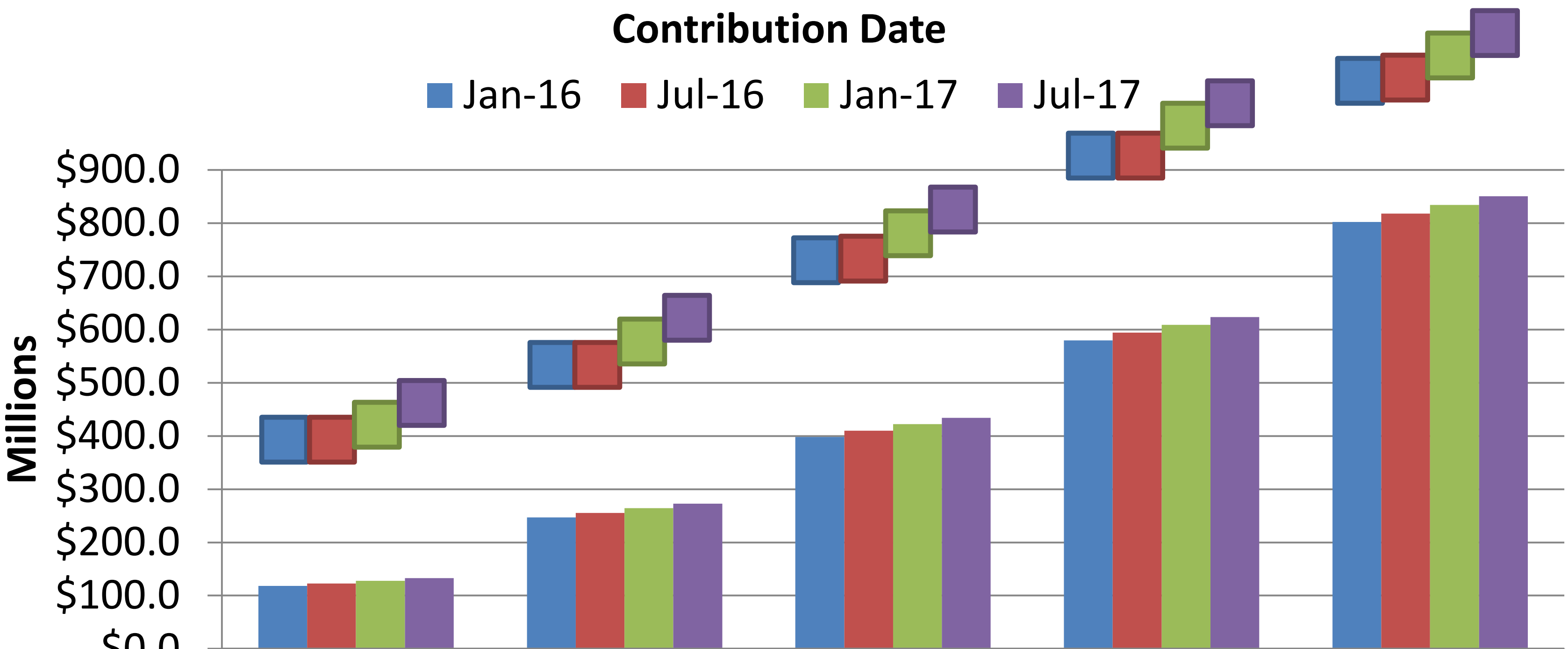
Investment Return

Exhibit C: State Plan Closed to New Hires and 80% DB Participants Move to DC

Contribution Required (20-Year 100% Funded)



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Jan-17	$127.8	$264.1	$422.0	$608.7	$834.1
Jul-17	$132.7	$272.9	$434.3	$623.5	$850.4

Investment Return

Estimated Total* Contribution Requirements to Achieve 100% Funding (MVA) in 20 Years

	Current Plan	
	Amount (000's)	Percentage of Payroll
1. Main System (State Only) Current System with costs shared by Political Subdivisions	$193,400	16.74%
2. Closed Plan (State Only) With no DB to DC transfers	$330,800	22.56%
3. Closed Plan (State Only) With 40% of DB participants transferring to DC	$376,400	28.86%
4. Closed Plan (State Only) With 80% of DB participants transferring to DC	$422,100	49.69%

* *Employer plus member contributions as of January 1, 2016*

Page 6

Return Assumption – closed plans

Risk vs return – limited inv. time

Job Service Retirement Plan

Closed PERS state plan

Estimated 6/30/2014 liability and funded status

Estimated Funded Status of the Plan

Discount Rate	8.0%	7.0%	6.0%	5.0%	4.0%	3.0%
Market Value of Assets	$97.7MM	$97.7MM	$97.7MM	$97.7MM	$97.7MM	$97.7MM
Liabilities	$65.5MM	$69.5MM	$73.8MM	$78.4MM	$83.2MM	$88.4MM
Funded Status	149.2%	140.5%	132.4%	124.6%	117.4%	110.6%
Surplus/(Deficit)	$32.2MM	$28.2MM	$23.9MM	$19.3MM	$14.5MM	$9.3MM

Looking at dropping to between 6% & 3%. Can do it while still maintaining 100% funded status.

Callan

Callan Associates Inc.
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Suite 800
San Francisco, CA 94111

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www.callan.com

Memorandum

To: Sparb Collins, Executive Director, NDPERS
From: Paul Erlendson and Jay Kloepfer
CC: David Hunter, Executive Director and Chief Investment Officer, NDRIO
Date: November 14, 2014
Subject: NDPERS Long Term Return Assumption

Background
The North Dakota legislature has proposed legislation that would close the NDPERS pension plan ("Plan") to new participants, effective January 1, 2016. Existing participants would continue to accrue benefits over the course of their working lifetime, and then receive benefits in retirement.

The Plan actuary (Segal) was asked to calculate the amount of money needed to be added to the Plan on January 1, 2015 to enable the Plan to become fully funded by the time the last participant has been paid out. The actuary calculated a required contribution of $162.8 million and generated a cash flow projection extending out to 2098, the date of the projected last payment to plan members.

Embedded in the projection is an expected return of 8% each year out to 2094. NDPERS requested Callan Associates to evaluate the reasonableness of an 8% return assumption over an 80-year time horizon.

Observations and comments
The expected return for the Plan depends on its asset allocation and the returns for each component of the capital markets. The 8% return assumed for the NDPERS Plan assumes the current asset allocation remains constant through time, with a majority of the assets invested in growth. Over a long historical period (back to 1926), annualized returns for US stocks have averaged 10.5% while bonds averaged 6%.

Looking forward, shorter term (5-10 year) forecasts provided by investment consultants including Callan are much lower than the historical averages. Specifically, consensus forecast approximate 7.5% for stocks and 3% for bonds. However, we do assume that long-term future returns will revert to long-term historical averages. The point is that an 8% return over the very long term is a reasonable expectation, but *only if the Plan retains a substantial exposure to growth assets* to achieve this goal.

North Dakota PERS and TFFR

GASB ACCOUNTING HIGHLIGHTS

For the Fiscal Year Ending June 30, 2014

October 29, 2014

Presented by:

Brad Ramirez, FSA, MAAA, EA, FCA
Matt Strom, FSA, MAAA, EA

Valuation Results - GASB 67 ($ in millions) (PERS)

- Liability to be reported under new accounting standards
- Not for funding purposes
- Blended discount rate based on projected benefits and assets (8% for 2013/2014 fiscal year)

	Total Pension Liability	Plan Fiduciary Net Position	Net Pension Liability
Main	$2,846.6	$2,211.9	$634.7
Judges	39.0	42.7	(3.7)
National Guard	2.9	3.1	(0.2)
Law Enforcement with Prior Service	27.9	21.7	6.2
Law Enforcement without Prior Service	2.2	2.2	(0.0)
Total PERS	$2,918.6	$2,281.6	$636.8
Highway Patrol	$75.4	$65.7	$9.8
Retire Health	130.0	92.0	37.9
Job Service	65.0	97.7	(32.7)

TECHNICAL REVIEW

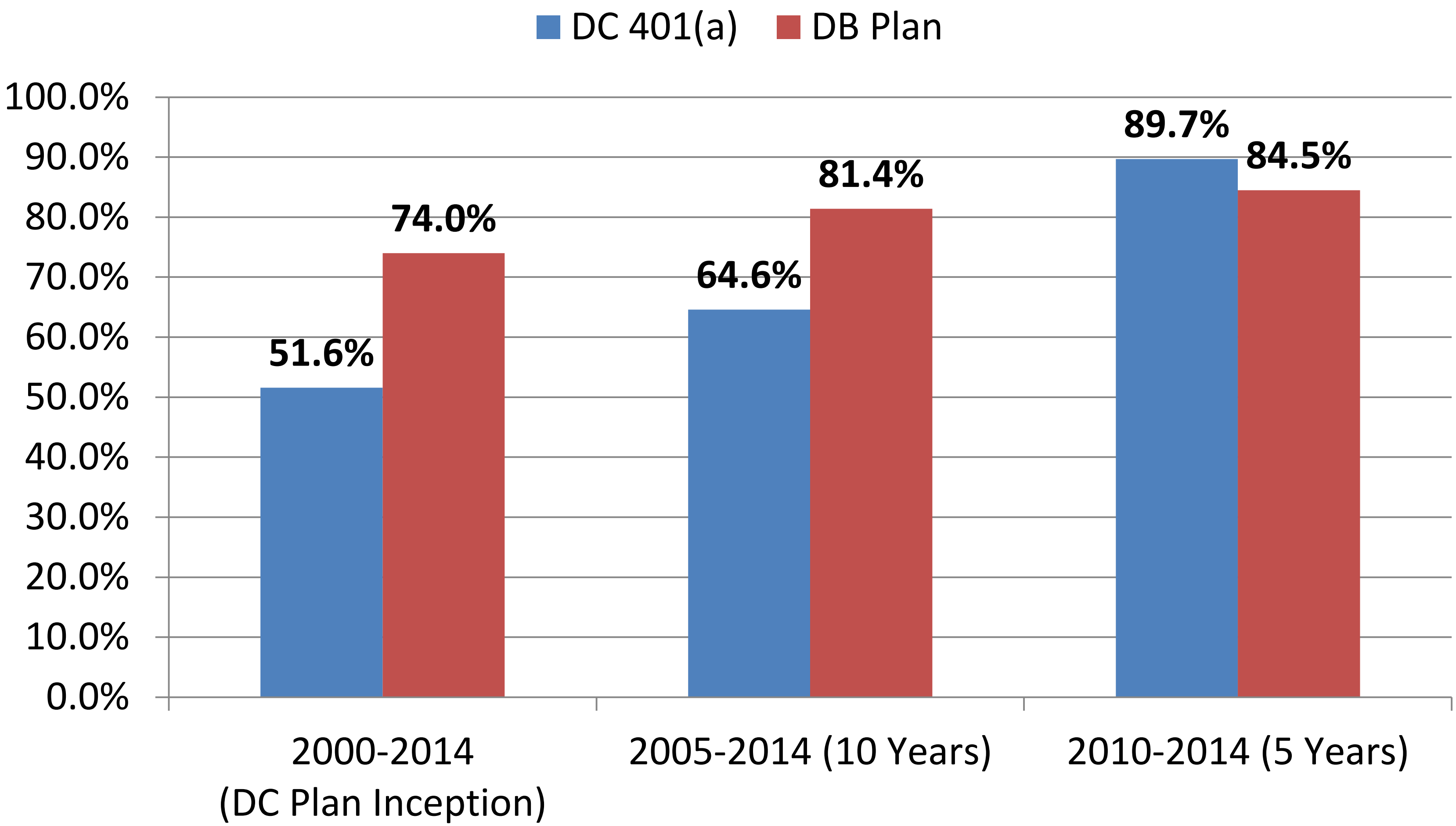
Technical review
Major areas of consideration

1. Benefits Policy Issues - Page 7 to 14
2. Funding Policy Issues – Page 14 to 15
3. Administrative Issues – Page 15 to 20

1. Technical Issues – Benefits Policy

- Proposed Funding Method *(page 7)*
- Adequacy of retirement benefits *(page 9)*
- Benefits Equity and Group Integrity of the trust (page 11)
- Competitiveness and Retention Integrity of the trust *(page 11)*

NDPERS Retirement Plan
Members Still Active



1. Technical Issues – Benefits Policy

- Purchasing Power Integrity of the trust *(page 12)*
- Preservation of Benefits *(page 12)*
- Portability Integrity of the trust *(page 12)*
- Ancillary Benefits *(page 12)*

2. Technical Issues – Funding Policy Issues

- Actuarial Impacts *(page 14)*
- Investment Impacts *(page 14 -15)*
  - Investment cost
  - Cash Flow
  - Asset allocation

3. Technical Issues – Adm. Issues

- Implementation Issues – Legislative *(page 15 to 18)*
- Administrative Costs *(page 18)*
- Needed Authority *(page 19)*
- Integration *(page 19)*
- Employee Communication *(page 19)*
  - Disclosure
  - Education
- Miscellaneous (page 20)
  - Fiduciary issues
  - Possible legal issues
  - Long term costs

SEGAL

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T 303.714.9952 F 303.714.9990 www.segalco.com

Brad Ramirez, FSA, MAAA, FCA, EA
Consulting Actuary
bramirez@segalco.com

July 17, 2013

Mr. Sparb Collins
Executive Director
North Dakota Public Employees Retirement System
400 East Broadway, Suite 505
Bismarck, ND 58502

Re: North Dakota Public Employees Retirement System
Updated Analysis of Defined Contribution Plan

Dear Sparb:

At your request, we have updated our analysis of the NDPERS Defined Contribution Plan to reflect participation in the plan as of June 30, 2013.

Background

The North Dakota Public Employees Retirement System Defined Contribution Plan (DC Plan) currently requires participants to contribute 6% of compensation to an individual account in the participant's name. Employers contribute an additional 6.12% of compensation on each participant's behalf resulting in a total contribution rate of 12.12% of compensation. Based on the current statute (Chapter 54-52.6), each contribution rate is scheduled to increase by 1% to a total of 14.12% of compensation starting January 1, 2014. DC Plan benefits grow with investment earnings and are distributed upon termination.

The objective of the DC plan is to provide a benefit comparable to those provided under the North Dakota Public Employees Retirement System Defined Benefit Plan (DB Plan). In December 2011, Segal provided an analysis to evaluate whether or not the DC Plan is meeting that goal by comparing hypothetical benefit amounts under both plans. The purpose of this letter is to update that analysis using demographic data as of June 30, 2012 (projected to June 30, 2013) with actual June 30, 2013 DC Plan account balances.

Methodology/Assumptions

The June 30, 2012 demographic data included 225 active participants. Two participants terminated and four new members entered, resulting in 227 active participants. We were provided with the June 30, 2013 account balances for those 227 participants.

We projected each participant's DC balance to their assumed retirement age. This amount was annuitized and compared to the DB benefit that the participant would have received had they been a member of that program. This yielded a DC/DB percentage for each participant. For illustrative purposes, we then varied the employer and employee contribution rates to the DC Plan as detailed in the assumptions below.

The assumptions used for this analysis are as follows.

- The June 30, 2012 demographic data was projected to June 30, 2013.
- Employer contributions are 6.12% of annual pay through December 31, 2013 and 7.12% of compensation as of January 1, 2014 and later.
- Employee contributions are 6.00% of annual pay through December 31, 2013 and 7.00% of compensation as of January 1, 2014 and later.
- For illustrative purposes, we also ran scenarios that assume total contributions of either 16.12% or 20.00% of compensation as of July 1, 2015 and later. No increase in DB Plan benefits is anticipated as a result of the contribution increases.
- Retirement is assumed to occur at the earlier of age 65 or eligibility for the Rule of 85.
- The assumed rate of return on DC Plan accounts is 8.00% per year.*
- The annuity conversion of DC account balances is based on 5% interest and the 1994 Group Annuity Mortality table.**

  * *The 8% return assumption was recommended by PERS. Please keep in mind that studies indicate that individually managed DC accounts typically earn up to 1% per year less than DB Plans.*

  ** *The 5% interest rate and the 1994 GAM mortality table are for illustrative purposes only and are likely to yield higher monthly annuity payments than currently available from an insurance company.*

Results

- Exhibit I: Shows the age and service of the 227 active members included in this analysis.
- Exhibit II: Shows a distribution of the 227 active members by age and account balance.
- Exhibit III: Shows the comparison of the DC and DB benefits by age under the current 12.12% total contribution rate that increases to 14.12% starting January 1, 2014.
- Exhibit IV: Shows the comparison of the DC and DB benefits by age under current contribution rates plus future increases to 16.12% or 20.00% starting July 1, 2015.

- Exhibit V: Shows the comparison of the DC and DB benefits by service under the current 12.12% total contribution rate that increases to 14.12% starting January 1, 2014.

- Exhibit VI: Shows the comparison of the DC and DB benefits by service under current contribution rates plus future increases to 16.12% or 20.00% starting July 1, 2015.

The projection results are summarized below:

	Future Contribution Rate		
Ratio of Projected DC to DB Benefits	Current Plan 14.12% effective January 1, 2014	Increase to 16.12% effective July 1, 2015	Increase to 20.00% effective July 1, 2015
Less than 50%	49	41	32
50% - 75%	149	131	106
75% - 100%	27	52	69
100% and Over	2	3	20
Total	227	227	227

Compared to the results calculated in December of 2011, the ratio of projected DC to DB benefits for most participants has increased. This is largely due to investment returns exceeding the assumed 8% in 2012 and the first half of 2013.

Outliers

The exhibits show two outliers with high DC/DB ratios and one outlier with a very low DC/DB ratio. The account balances for the outliers are significantly different from the account balances for others with the same age/service characteristics, which may be due to transfers and rollovers from other plans.

Conclusions

The DB Plan and the DC Plan are fundamentally different, and as a result, it is difficult to compare the value of one type of benefit to the other. For example, the DC Plan is more portable than the DB Plan, and it is difficult to quantify the value of that feature. Similarly, the DB Plan provides disability and death benefits that provide a valuable benefit that can be difficult for the average participant to measure.

Overall, this analysis shows that the majority of the current DC Plan members are projected to receive significantly less retirement income under the DC Plan than projected under the DB Plan. In particular, the ratio of DC Plan to DB Plan benefits declines somewhat as age increases, and declines dramatically as length of service increases. The DC Plan benefits are projected to be higher with an increase in the contribution rate but are still less than 100% of the DB Plan benefits for most participants. Under existing contribution levels, the only way that DC Plan benefits would consistently reach the level of DB Plan benefits would be to earn long-term investment returns above the assumed 8%.

Projections, by their nature, are not a guarantee of future results. The modeling projections are intended to serve as illustrations of future financial outcomes that are based on the information available to us at the time the modeling is undertaken and completed, and the agreed-upon assumptions and methodologies described herein. Emerging results may differ significantly if the actual experience proves to be different from these assumptions or if alternative methodologies are used. Actual experience may differ due to such variables as demographic experience, the economy, stock market performance and the regulatory environment.

These calculations were completed under the supervision of Tammy Dixon, FSA, MAAA, Enrolled Actuary and Laura Mitchell, MAAA, Enrolled Actuary. All results are based on the assumptions in the July 1, 2012 North Dakota PERS actuarial report unless otherwise noted.

The undersigned is a member of the American Academy of Actuaries and meets the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein.

Sincerely,

Brad Ramirez

Enclosures

cc: Tammy Dixon
Laura Mitchell

5260406V1/01640.001

Exhibit I

Census of DC Plan Members
by Attained Age and Years of Service projected to June 30, 2013

		Years of Service								
Attained Age	Totals	Under 5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44
Totals	227	20	40	68	59	18	10	9	1	2
20-29	2	1	1	-	-	-	-	-	-	-
30-34	8	2	5	1	-	-	-	-	-	-
35-39	23	2	8	10	3	-	-	-	-	-
40-44	54	6	7	17	22	2	-	-	-	-
45-49	42	5	3	15	8	8	3	-	-	-
50-54	43	2	8	10	14	5	2	2	-	-
55-59	33	2	2	10	10	1	4	3	1	-
60-64	16	-	2	5	2	2	1	3	-	1
65 & Over	6	-	4	-	-	-	-	1	-	1

Exhibit II

Census of DC Plan Members in Active Service projected to June 30, 2013 by Attained Age and Account Balance on June 30, 2013

		Account Balance							
	Totals	Less than $20,000	$20,000- $39,999	$40,000- $59,999	$60,000- $79,999	$80,000- $99,999	$100,000- $149,999	$150,000- $199,999	$200,000- & Over
Totals	227	12	26	40	32	38	46	16	17
20-29	2	1	1	-	-	-	-	-	-
30-34	8	-	6	1	-	-	1	-	-
35-39	23	1	6	12	3	1	-	-	-
40-44	54	4	7	10	7	17	7	2	-
45-49	42	2	3	6	7	4	14	4	2
50-54	43	2	2	6	6	11	9	6	1
55-59	33	-	1	2	6	5	9	4	6
60-64	16	1	-	2	3	-	4	-	6
65 & Over	6	1	-	1	-	-	2	-	2

Exhibit III
Ratio of Projected DC Account (Converted to an Annuity) to DB Benefit
by Attained Age projected to June 30, 2013
With Current Statutory Contribution Rates (12.12% increasing to 14.12% as of January 1, 2014)

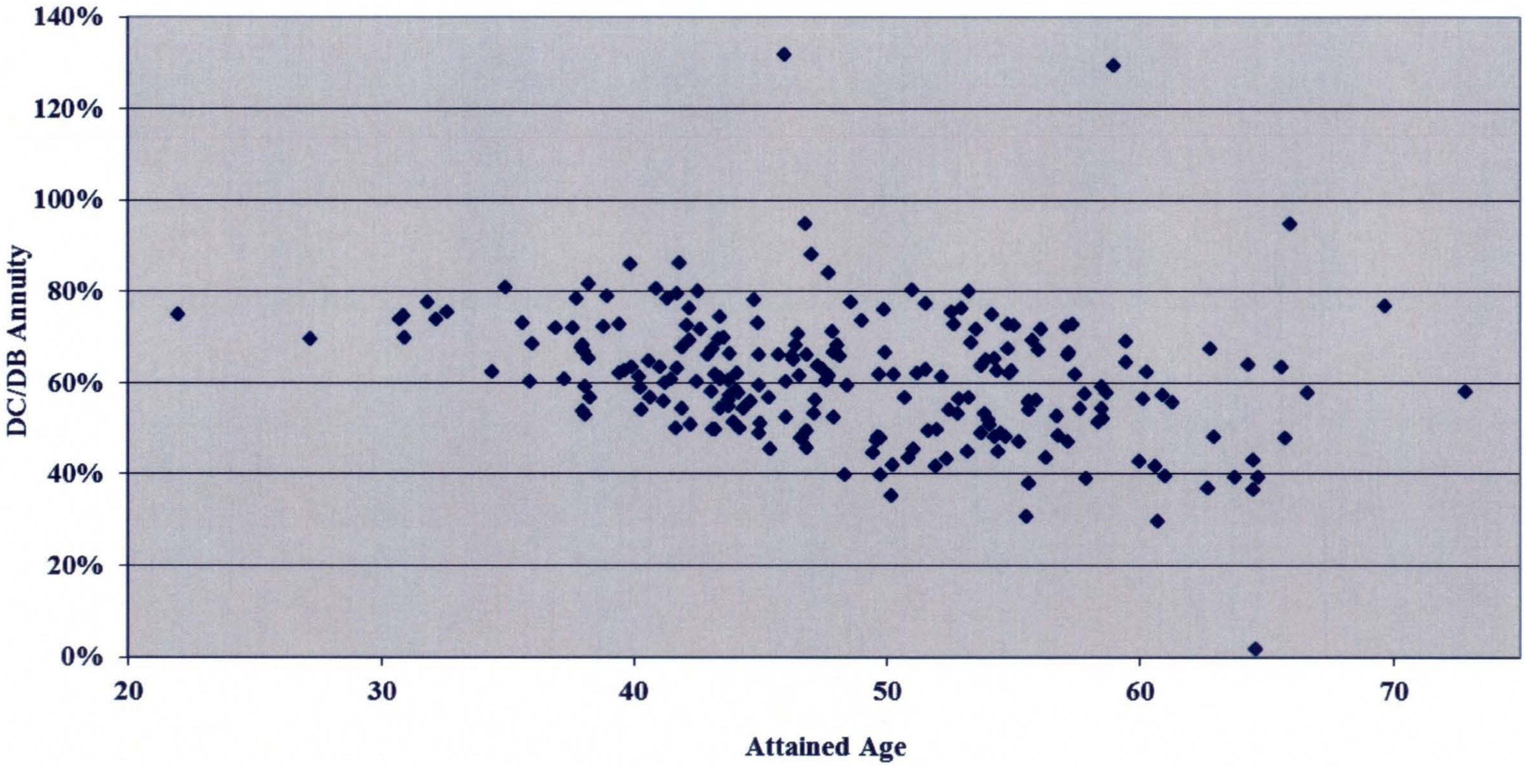

Exhibit IV
Ratio of Projected DC Account (Converted to an Annuity) to DB Benefit by Attained Age projected to June 30, 2013

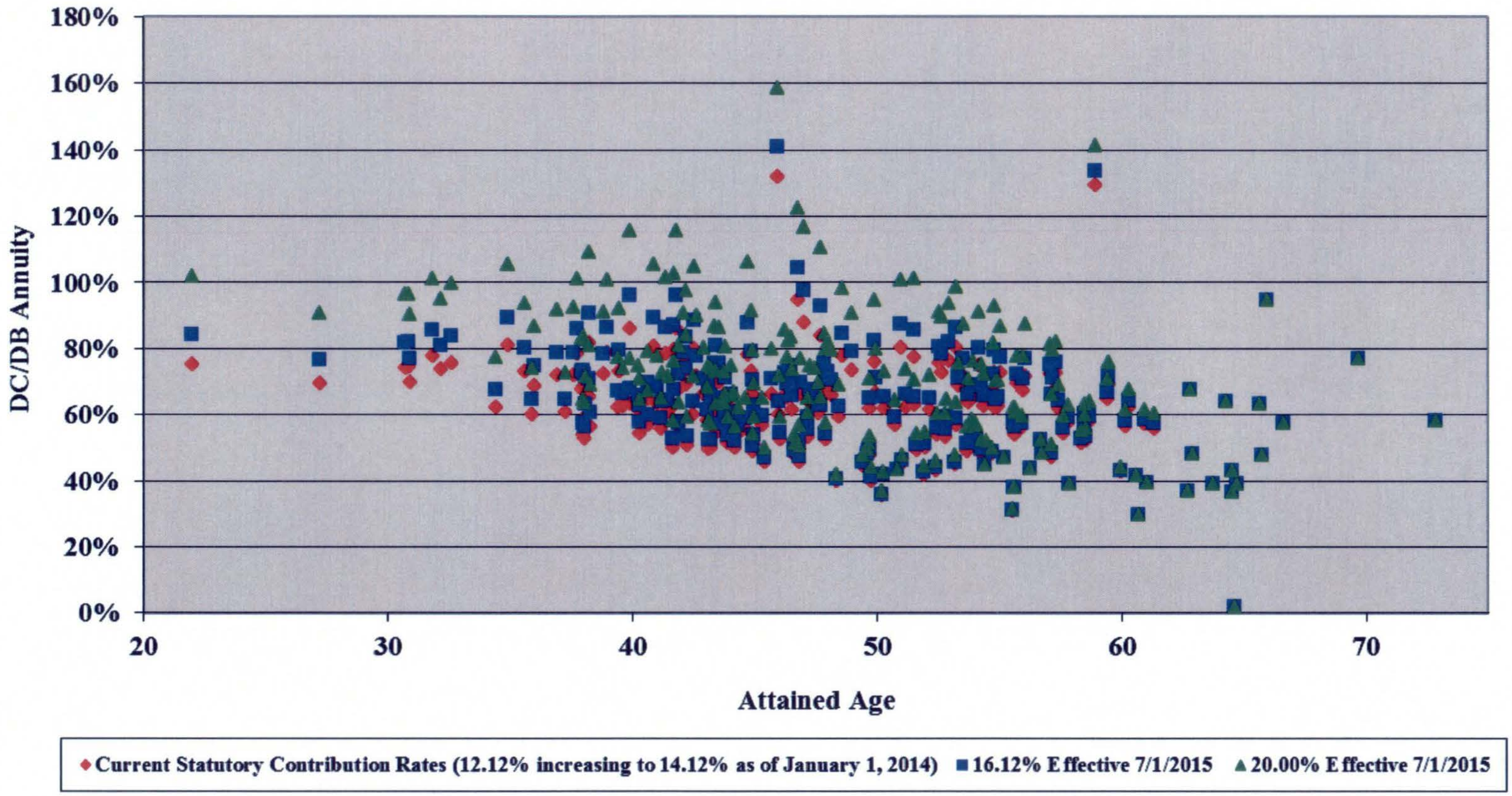

Exhibit V
Ratio of Projected DC Account (Converted to an Annuity) to DB Benefit by Years of Service projected to June 30, 2013 With Current Statutory Contribution Rates (12.12% increasing to 14.12% as of January 1, 2014)

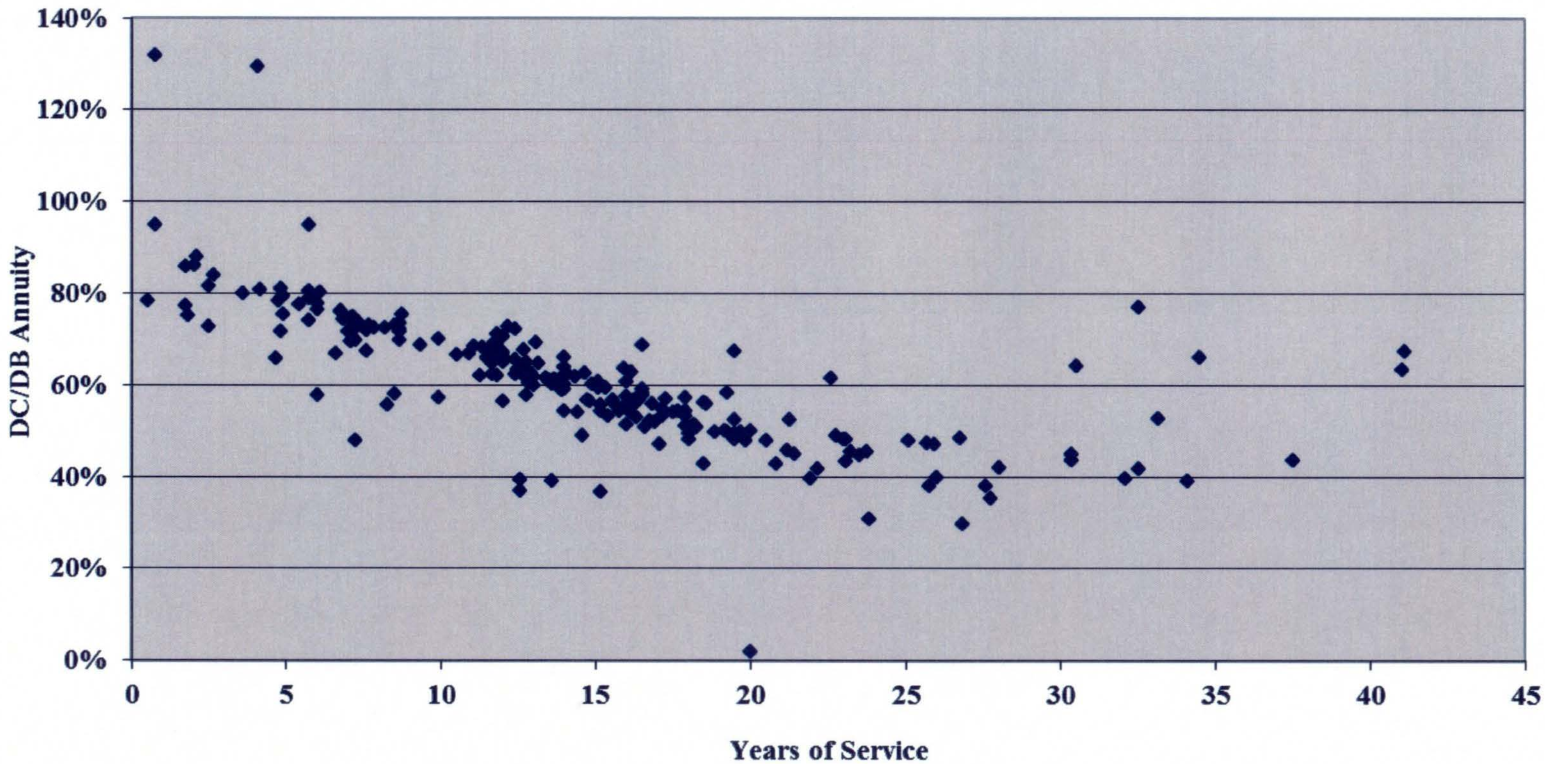

Exhibit VI
Ratio of Projected DC Account (Converted to an Annuity) to DB Benefit
by Years of Service projected to June 30, 2013

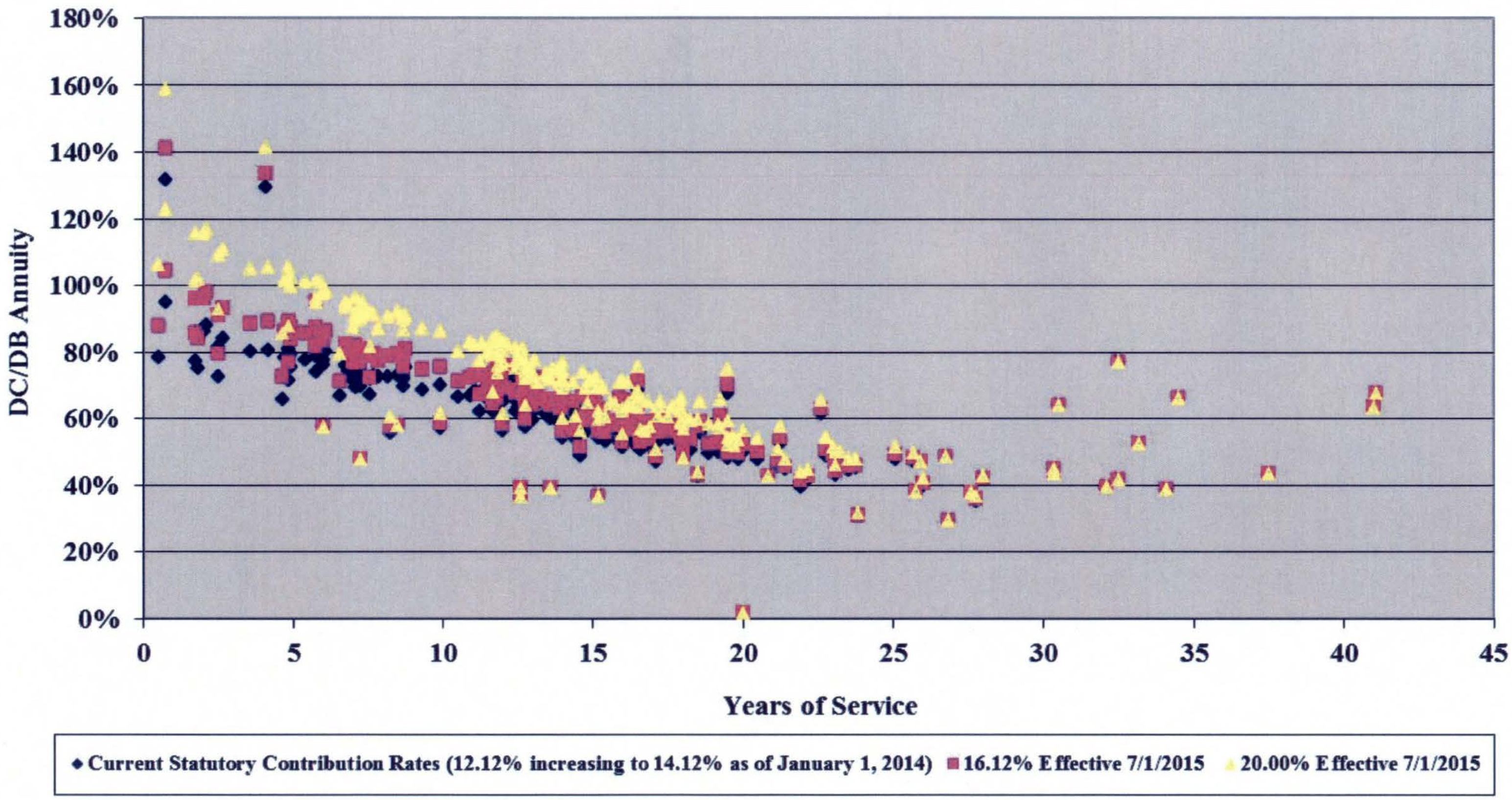

Exhibit A: State Plan Closed to New Hires 01/01/2016 (Projections for Main System) in $Millions

Main Systems	Investments Earn 8%	Investments Earn 7%	Investments Earn 6%	Investments Earn 5%	Investments Earn 4%
Insolvency Projected by	06/30/2055	06/30/2044	06/30/2039	06/30/2036	06/30/2034
One-time Contribution (in millions) needed to pay all benefits due					
Contribution made on 01/01/2016	$67.4	$393.5	$803.1	$1,326.3	$2,006.7
Contribution made on 07/01/2016	$70.0	$406.8	$826.5	$1,358.7	$2,046.1
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Contribution Increase needed to pay all benefits due					
Increase effective 01/01/2016	1.59%	8.66%	16.39%	24.99%	34.69%
Increase effective 01/01/2017	1.81%	9.74%	18.29%	27.64%	38.05%
Increase effective 01/01/2018	2.05%	10.95%	20.38%	30.56%	41.73%

Exhibit A (Continued): State Plan Closed to New Hires 01/01/2016 (Projections for Main System) in $Millions

Main Systems	Investments Earn 8%	Investments Earn 7%	Investments Earn 6%	Investments Earn 5%	Investments Earn 4%
100% Funding (MV/AAL) Projected by	N/A	N/A	N/A	N/A	N/A
Additional Contributions needed to achieve 100% Funding in **20 years**					
01/01/2016	8.44%	15.21%	22.27%	29.64%	37.34%
	$330.8	$631.6	$981.5	$1,390.1	$1,869.2
01/01/2017	9.68%	17.32%	25.17%	33.25%	41.60%
	$357.2	$675.8	$1,040.3	$1,459.6	$1,944.0
01/01/2018	11.11%	19.74%	28.47%	37.35%	46.40%
	$385.8	$723.1	$1,102.7	$1,532.5	$2,021.8
Additional Contributions needed to achieve 100% Funding in **30 years**					
01/01/2016	7.83%	15.80%	24.45%	33.89%	44.23%
	$328.6	$709.7	$1,179.8	$1,764.7	$2,498.2
01/01/2017	8.90%	17.81%	27.32%	37.56%	48.64%
	$354.9	$759.4	$1,250.6	$1,853.0	$2,598.2
01/01/2018	10.10%	20.05%	30.52%	41.63%	53.49%
	$383.3	$812.5	$1,325.6	$1,945.6	$2,702.1
Additional Contributions needed to achieve 100% Funding in **40 years**					
01/01/2016	7.81%	16.83%	27.10%	38.94%	52.79%
	$330.8	$764.6	$1,326.5	$2,065.0	$3,049.6
01/01/2017	8.86%	18.94%	30.23%	43.08%	57.92%
	$357.3	$818.1	$1,406.0	$2,168.3	$3,171.6
01/01/2018	10.05%	21.29%	33.70%	47.64%	63.54%
	$385.9	$875.4	$1,490.4	$2,276.7	$3,298.4

Exhibit B: State Plan Closed to New Hires 01/01/2016 and 40% of Current DB Participants Move to DC Plan on 1/1/2017

	Investments Earn 8%	Investments Earn 7%	Investments Earn 6%	Investments Earn 5%	Investments Earn 4%	Investments Earn 3%
Insolvency Projected by	06/30/2049	06/30/2041	06/30/2037	06/30/2034	06/30/2033	06/30/2031
One-time Contribution (in millions) needed to pay all benefits due						
Contribution made on 01/01/2016	$92.9	$320.1	$600.6	$953.0	$1,404.3	$1,993.9
Contribution made on 07/01/2016	$96.4	$330.9	$618.1	$976.3	$1,431.9	$2,023.3
Contribution made on 01/01/2017	$100.3	$342.5	$636.6	$1,000.7	$1,460.5	$2,053.7
Contribution made on 07/01/2017	$104.1	$354.1	$655.1	$1,025.1	$1,489.1	$2,084.0
Contribution Increase needed to pay all benefits due						
Increase effective 01/01/2016	3.39%	10.93%	19.11%	28.12%	38.20%	49.69%
Increase effective 01/01/2017	4.06%	12.95%	22.38%	32.55%	43.71%	56.20%
Increase effective 01/01/2018	4.70%	14.84%	25.41%	36.59%	48.68%	62.01%

For these projections, we assumed assets, contributions and benefit payments would decline by 40%. This implies that a level proportion of current actives at all ages will transfer to the DC Plan. In fact, the transfers may come from younger participants who prefer DC Plans and participants near retirement who view this transfer as a lump-sum option. The actual participant elections will impact the projected results, and it is likely the results will be worse than shown in these projections as a result of anti-selection.

Exhibit B (Continued): State Plan Closed to New Hires 01/01/2016 and 40% of Current DB Participants Move to DC Plan on 1/1/2017

	Investments Earn 8%	Investments Earn 7%	Investments Earn 6%	Investments Earn 5%	Investments Earn 4%	Investments Earn 3%
100% Funding (MV/AAL) Projected by	N/A	N/A	N/A	N/A	N/A	N/A
Additional Contributions needed to achieve 100% Funding in **20 years**						
01/01/2016	14.74%	22.68%	30.97%	39.65%	48.75%	58.30%
	$376.4	$610.8	$881.8	$1,196.6	$1,563.9	$1,994.6
01/01/2017	17.94%	27.33%	36.93%	46.80%	56.97%	67.48%
	$406.5	$653.6	$934.7	$1,256.4	$1,626.5	$2,054.4
01/01/2018	21.06%	31.81%	42.63%	53.58%	64.70%	76.03%
	$439.1	$699.3	$990.8	$1,319.2	$1,691.5	$2,116.1
Additional Contributions needed to achieve 100% Funding in **30 years**						
01/01/2016	13.81%	23.27%	33.60%	44.96%	57.53%	71.49%
	$375.6	$673.9	$1,040.9	$1,496.5	$2,067.2	$2,788.4
01/01/2017	16.59%	27.63%	39.45%	52.19%	66.04%	81.18%
	$405.6	$721.1	$1,103.3	$1,571.3	$2,149.9	$2,872.0
01/01/2018	19.23%	31.73%	44.88%	58.83%	73.76%	89.87%
	$438.0	$771.6	$1,169.5	$1,649.8	$2,235.9	$2,958.2
Additional Contributions needed to achieve 100% Funding in **40 years**						
01/01/2016	13.74%	24.70%	37.37%	52.25%	69.98%	91.35%
	$376.9	$723.1	$1,173.4	$1,769.1	$2,569.0	$3,658.7
01/01/2017	16.48%	29.27%	43.77%	60.50%	80.09%	Over 100%
	$407.1	$773.7	$1,243.9	$1,857.5	$2,671.8	$3,768.5
01/01/2018	19.08%	33.55%	49.69%	68.02%	89.21%	Over 100%
	$439.6	$827.9	$1,318.5	$1,950.4	$2,778.6	$3,881.6

For these projections, we assumed assets, contributions and benefit payments would decline by 40%. This implies that a level proportion of current actives at all ages will transfer to the DC Plan. In fact, the transfers may come from younger participants who prefer DC Plans and participants near retirement who view this transfer as a lump-sum option. The actual participant elections will impact the projected results, and it is likely the results will be worse than shown in these projections as a result of anti-selection.

Exhibit C: State Plan Closed to New Hires 01/01/2016 and 80% of Current DB Participants Move to DC Plan

	Investments Earn 8%	Investments Earn 7%	Investments Earn 6%	Investments Earn 5%	Investments Earn 4%	Investments Earn 3%
Insolvency Projected by	06/30/2038	06/30/2034	06/30/2031	06/30/2029	06/30/2028	06/30/2027
One-time Contribution (in millions) needed to pay all benefits due						
Contribution made on 01/01/2016	$118.3	$246.8	$398.1	$579.7	$802.0	$1,080.0
Contribution made on 07/01/2016	$122.9	$255.2	$409.7	$593.9	$817.7	$1,096.0
Contribution made on 01/01/2017	$127.8	$264.1	$422.0	$608.7	$834.1	$1,112.4
Contribution made on 07/01/2017	$132.7	$272.9	$434.3	$623.5	$850.4	$1,128.8
Contribution Increase needed to pay all benefits due						
Increase effective 01/01/2016	9.47%	18.79%	28.73%	39.45%	51.19%	64.26%
Increase effective 01/01/2017	14.07%	27.33%	40.87%	54.88%	69.61%	85.40%
Increase effective 01/01/2018	17.95%	34.32%	50.51%	66.77%	83.39%	Over 100%

For these projections, we assumed assets, contributions and benefit payments would decline by 80%. This implies that a level proportion of current actives at all ages will transfer to the DC Plan. In fact, the transfers may come from younger participants who prefer DC Plans and participants near retirement who view this transfer as a lump-sum option. The actual participant elections will impact the projected results, and it is likely the results will be worse than shown in these projections as a result of anti-selection.

Exhibit C (Continued): State Plan Closed to New Hires 01/01/2016 and 80% of Current DB Participants Move to DC Plan

	Investments Earn 8%	Investments Earn 7%	Investments Earn 6%	Investments Earn 5%	Investments Earn 4%	Investments Earn 3%
100% Funding (MV/AAL) Projected by	N/A	N/A	N/A	N/A	N/A	N/A
Additional Contributions needed to achieve 100% Funding in **20 years**						
01/01/2016	35.57%	47.80%	60.76%	74.53%	89.21%	Over 100%
	$422.1	$590.1	$782.1	$1,003.0	$1,258.6	$1,555.9
01/01/2017	54.29%	71.61%	89.34%	Over 100%	Over 100%	Over 100%
	$455.9	$631.4	$829.0	$1,053.2	$1,308.9	$1,602.6
01/01/2018	70.85%	92.18%	Over 100%	Over 100%	Over 100%	Over 100%
	$492.3	$675.6	$878.8	$1,105.8	$1,361.3	$1,650.6
Additional Contributions needed to achieve 100% Funding in **30 years**						
01/01/2016	34.02%	49.00%	65.79%	84.74%	Over 100%	Over 100%
	$422.5	$638.2	$901.9	$1,228.2	$1,636.2	$2,151.5
01/01/2017	50.73%	71.55%	94.03%	Over 100%	Over 100%	Over 100%
	$456.3	$682.8	$956.0	$1,289.6	$1,701.7	$2,216.1
01/01/2018	64.90%	90.13%	Over 100%	Over 100%	Over 100%	Over 100%
	$492.8	$730.6	$1,013.4	$1,354.1	$1,769.7	$2,282.6
Additional Contributions needed to achieve 100% Funding in **40 years**						
01/01/2016	33.85%	51.92%	73.67%	Over 100%	Over 100%	Over 100%
	$423.0	$681.6	$1,020.4	$1,473.1	$2,088.4	$2,937.9
01/01/2017	50.33%	75.53%	Over 100%	Over 100%	Over 100%	Over 100%
	$456.9	$729.3	$1,081.7	$1,546.8	$2,172.0	$3,026.0
01/01/2018	64.22%	94.86%	Over 100%	Over 100%	Over 100%	Over 100%
	$493.4	$780.3	$1,146.6	$1,624.1	$2,258.8	$3,116.8

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For these projections, we assumed assets, contributions and benefit payments would decline by 80%. This implies that a level proportion of current actives at all ages will transfer to the DC Plan. In fact, the transfers may come from younger participants who prefer DC Plans and participants near retirement who view this transfer as a lump-sum option. The actual participant elections will impact the projected results, and it is likely the results will be worse than shown in these projections as a result of anti-selection.