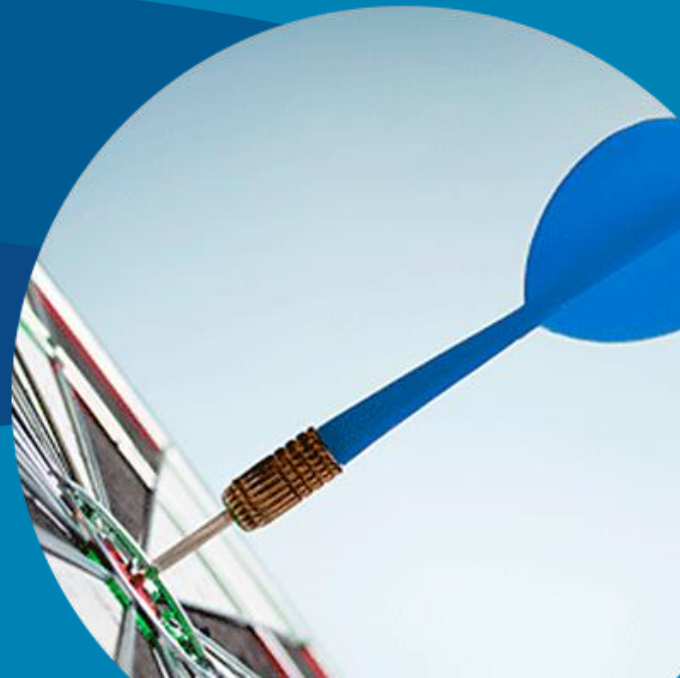


Bay County Employees' Retirement System December 31, 2018 Actuarial Valuations

Board of Trustees Meeting
October 8, 2019



Agenda

- Current Events
- Actuarial Valuation Process
- Highlights of 2018 Bay County Actuarial Valuations
- Looking Ahead
- Appendix - Historical Contributions/Funded Ratios

CURRENT EVENTS

Eroding Benefit Programs

THE DAILY NEWS

www.dailynews.com THE WORLDS FAVORITE NEWSPAPER - since 1962-

Michigan Supreme Court Jeopardizes Retiree Health Care

THE DAILY NEWS

www.dailynews.com THE WORLDS FAVORITE NEWSPAPER - since 1962-

Executive Order Cripples ACA

THE DAILY NEWS

www.dailynews.com THE WORLDS FAVORITE NEWSPAPER - since 1962-

Medicare HI Trust Fund to be Depleted in 2026

THE DAILY NEWS

www.dailynews.com THE WORLDS FAVORITE NEWSPAPER - since 1962-

Three-Legged Retirement Income Stool More Wobbly

THE DAILY NEWS

www.dailynews.com THE WORLDS FAVORITE NEWSPAPER - since 1962-

Social Security to Run Out of Money in 2035



Concerns About EE/Retiree Benefits

THE DAILY NEWS

www.dailynews.com THE WORLDS FAVORITE NEWSPAPER - since 1962-

Half of State ACA Exchanges Failing

THE DAILY NEWS

www.dailynews.com THE WORLDS FAVORITE NEWSPAPER - since 1962-

Michigan Local Governments hold \$5.5 Billion in Pension Debt

THE DAILY NEWS

www.dailynews.com THE WORLDS FAVORITE NEWSPAPER - since 1962-

More Employers Focusing on Lifetime Income

THE DAILY NEWS

www.dailynews.com THE WORLDS FAVORITE NEWSPAPER - since 1962-

86% of Americans are Concerned that the Nation Faces a Retirement Crisis

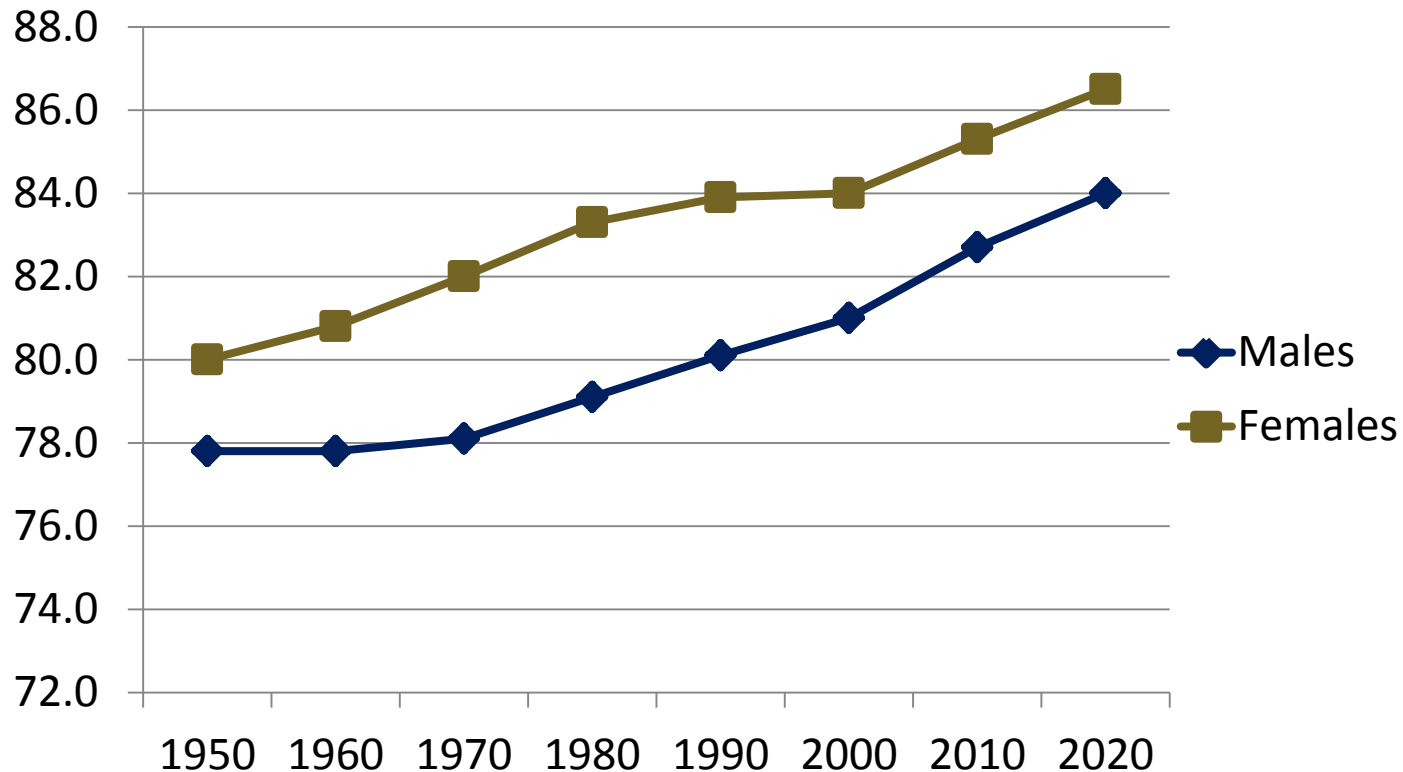
DAILY NEWS

www.dailynews.com THE WORLDS FAVORITE NEWSPAPER - since 1962-

Unsustainable Rise in Pension Contributions



Life Expectancy at Age 65 by Calendar Year



www.cdc.gov/nchs/hus/contents2013.htm#017 and SSA for 2020. The figures are expectations over the entire U.S. population and will not match figures shown elsewhere in this presentation.

Things That Impact Life Expectancy

Increase Life Expectancy

- **↑ Medical technology**
- **↑ Health care access**
- **Better sanitation**
- **Health consciousness**
- **Cleaner environment**

Reduce Life Expectancy

- **Environmental factors**
- **Inactivity**
- **Processed foods**
- **Obesity**
- **Opioid crisis**
- **Stress**

Discussion

- 65-year-olds today are expected to live
 - about six years longer than 65-year-olds in 1950,
 - and 3 to 5 years longer than they did in 1980
- This huge % increase in age 65 life expectancy affects long term costs of Defined Benefit plans materially
- Roughly half of the population will outlive their life expectancy and will have yet greater challenges
- People relying primarily on Defined Contribution income may find their retirement lifestyle challenged

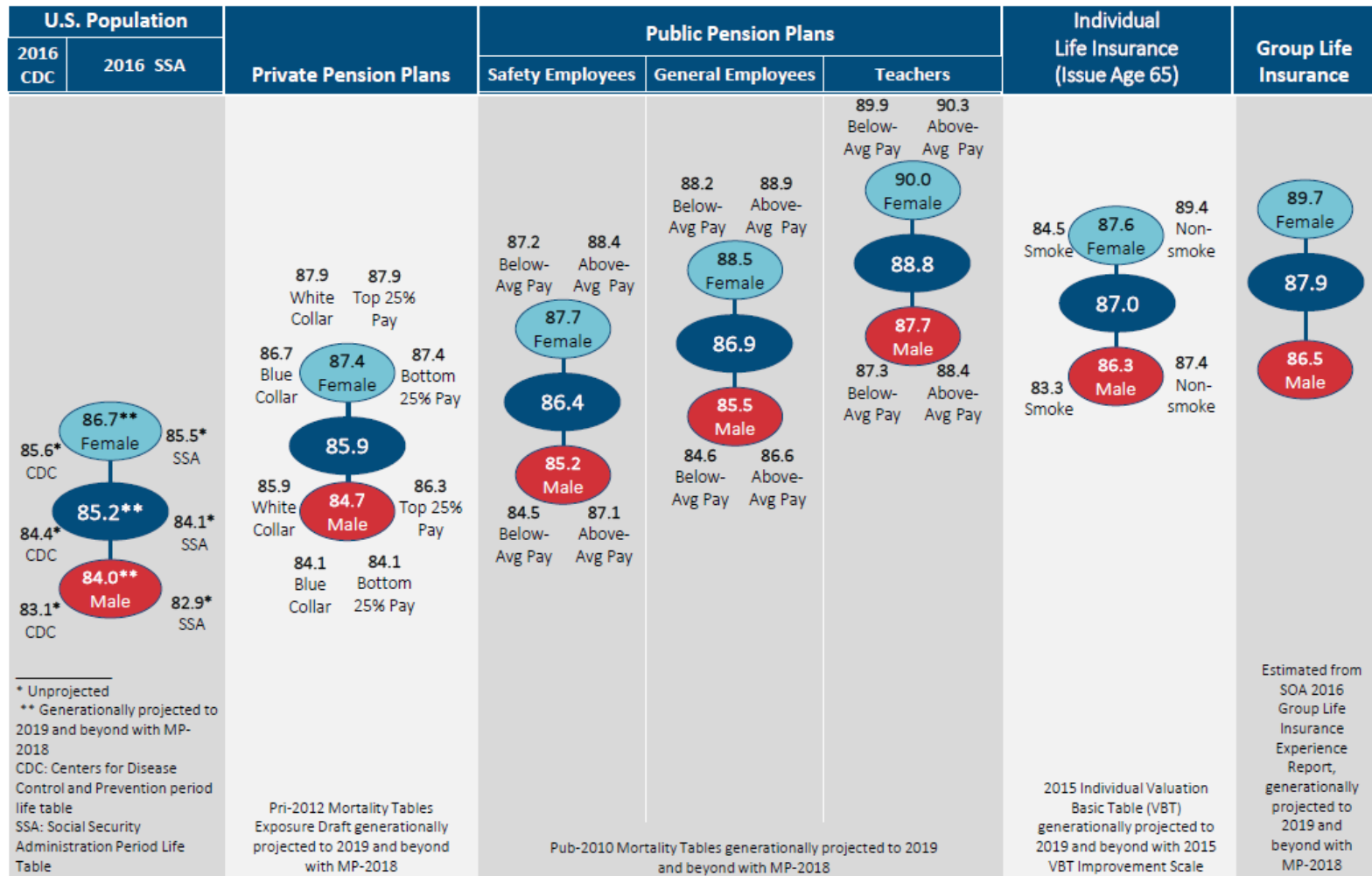
New Mortality Tables

- In October 2014, the Society of Actuaries (SOA) issued the RP-2014 mortality tables and MP-2014 mortality improvement scales
- Actuaries mostly now use a different but equivalent version of this table and call it "RP-2006"
- Based on private plan experience
- Improvement Scales have been issued annually since then: MP-2014, MP-2015,

New Mortality Tables for Public Sector

- The Society of Actuaries released the “Pub-2010” tables in 2018
 - Based on public sector experience
 - Broken out based on occupation (General, Teacher, Safety, etc.)
 - Many other breakdowns

Life Expectancy at Age 65, 2019



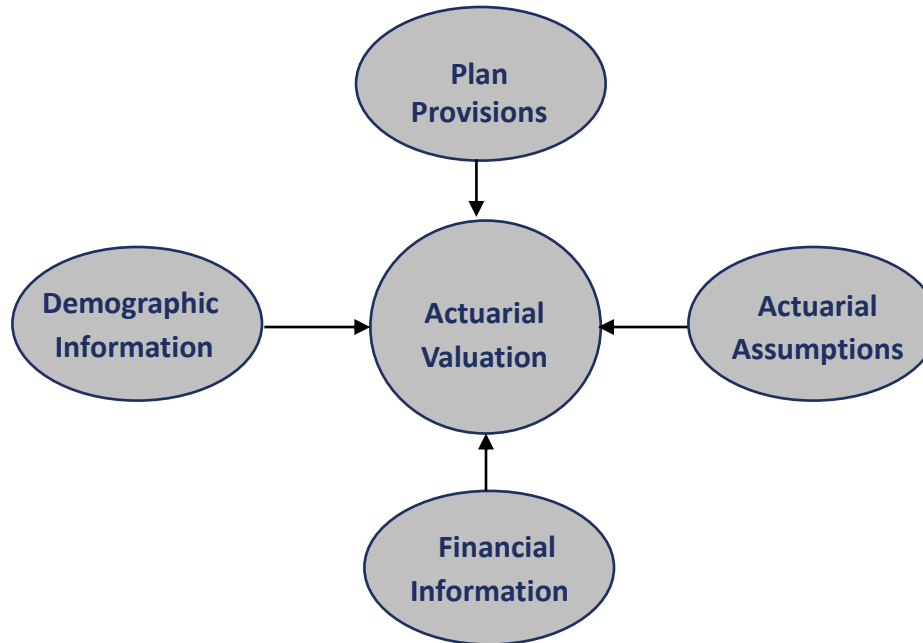
RP-2006 vs Pub-2010 – Females

Years of Future Life Expectancy For Females in 2019 by Employment Category						
Mortality Table: Projection Type:	RP2006 Generational	Pub-2010				
		Teacher Generational	Safety Generational	General by Income Level		
				All Incomes Generational	Below Median Generational	Above Median Generational
Age in 2019						
55	31.9	35.1	32.5	33.6	31.9	33.8
60	27.2	30.1	27.6	28.7	27.1	28.9
65	22.7	25.3	23.0	24.0	22.5	24.2
70	18.4	20.5	18.6	19.4	18.1	19.6
75	14.4	16.0	14.5	15.1	14.1	15.3
85	7.7	8.6	7.9	8.1	7.6	8.2
95	3.7	4.0	3.9	3.9	3.9	3.9

RP-2006 vs Pub-2010 – Males

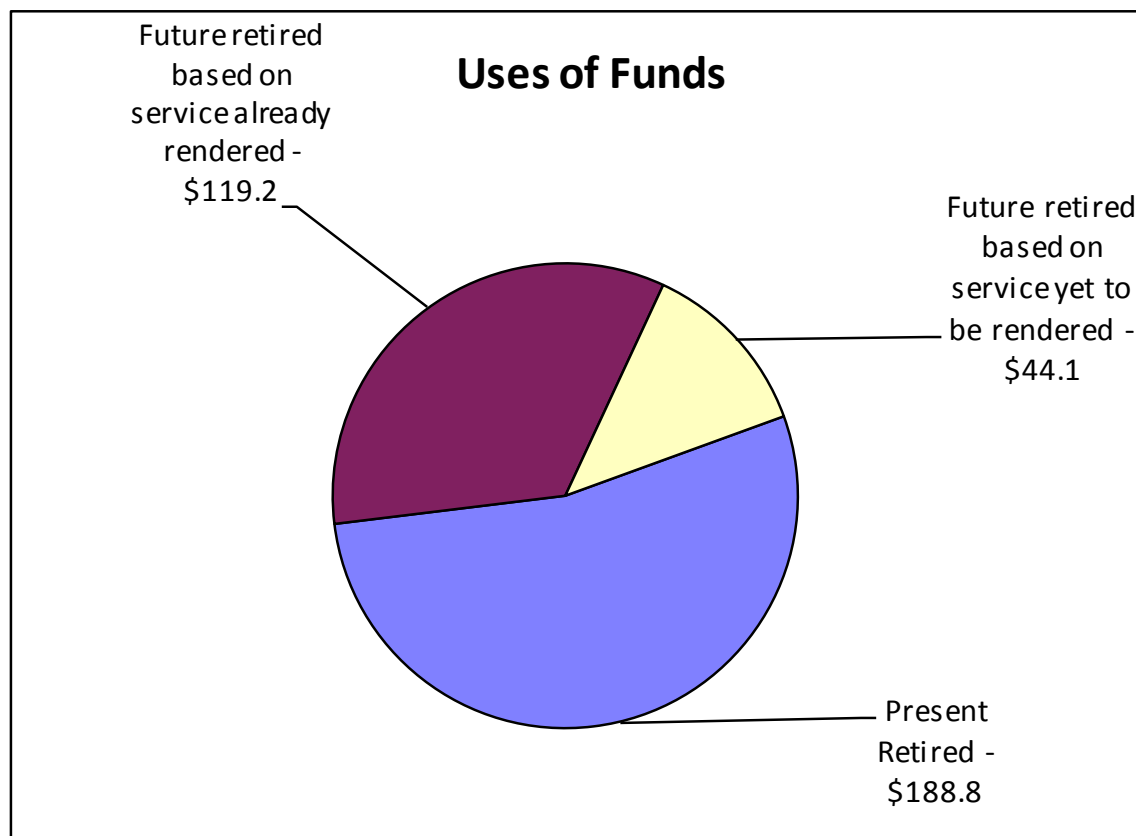
Years of Future Life Expectancy for Males in 2019 by Employment Category						
Mortality Table: Projection Type:	RP2006 Generational	Pub-2010				
		Teacher Generational	Safety Generational	General by Income Level		
				All Generational	Below Median Generational	Above Median Generational
Age in 2019						
55	29.5	32.9	30.6	30.7	29.0	31.4
60	25.0	27.9	25.7	26.0	24.3	26.7
65	20.7	23.1	21.1	21.5	19.9	22.1
70	16.6	18.6	16.8	17.2	15.9	17.8
80	9.6	10.6	9.4	9.8	8.9	10.2
90	4.7	5.0	4.6	4.8	4.5	5.0

Actuarial Valuation Process



- Demographic Information, Financial Information & Plan Provisions are provided by the plan sponsor.
- Actuarial assumptions are recommended by the actuary and approved by the Board.
- The actuarial valuation is a mathematical process used to project future payments on account of specified benefit provisions. These projected payouts are converted to equivalent present value amounts and a corresponding level percent-of-payroll contribution is determined.

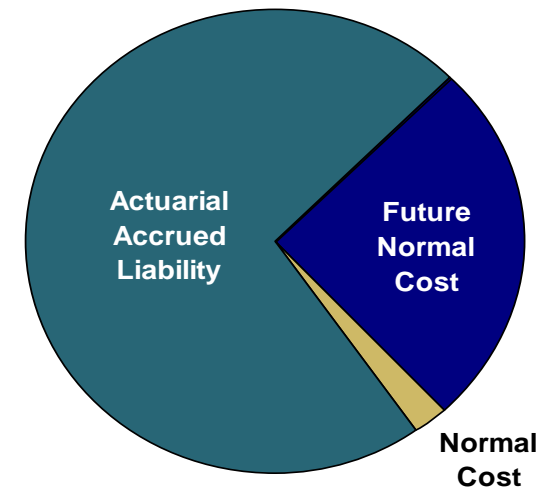
\$352.1 Million* of Benefit Promises to Present Active and Retired Members



* Present value of future benefits; all divisions combined.

Actuarial Valuation Process

- Present Value of Future Benefits - Present Value (PV) of all Future Benefits payable to current participants (active, retired, terminated vested).
- Actuarial Liability - Portion of PV of Future Benefits allocated to prior years.
- Normal Cost - Portion of PV of Future Benefits allocated to current year.
- Future Normal Costs - Portion of PV of Future Benefits allocated to future years.



Present Value of Future Benefits

Actuarial Valuation Process

$$\begin{array}{r} \text{Actuarial Accrued Liability} \\ - \text{Actuarial Value of Assets} \\ \hline \text{Unfunded Actuarial Liability} \end{array}$$

$$\text{Annual Contribution} = \text{Normal Cost} + \text{Amortization of the Unfunded Liability}$$

Highlights of 2018 BCERS Actuarial Valuations

- Two separate valuations as of December 31, 2018
 1. Stand alone valuation for Bay-Arenac Behavioral Health Authority (BABH)
 2. Valuation for all other groups
- Valuation asset development consistent with prior valuations

Highlights of 2018 BCERS Actuarial Valuations

	General	DWS	Library	Medical Care Facility	Sheriff's Department	Road Commission	Total	BABH
Participants								
Active	399	58	25	302	80	55	919	230
Retired	356	39	45	236	78	96	850	133
Terminated Vested	31	2	6	12	6	1	58	35
Total	786	99	76	550	164	152	1,827	398
Payroll	\$ 16,654,373	\$ 3,314,132	\$ 1,183,542	\$ 10,467,024	\$ 4,469,813	\$ 3,119,401	\$ 39,208,285	\$ 11,226,851
Actuarial Accrued Liability	104,004,621	17,332,419	11,473,205	53,570,161	32,605,316	33,865,078	252,850,800	55,163,699
Actuarial Value of Assets	125,083,900	14,683,296	12,593,017	60,605,359	40,460,608	29,900,841	283,327,021	55,569,686
Unfunded Actuarial								
Accrued Liability	(21,079,279)	2,649,123	(1,119,812)	(7,035,198)	(7,855,292)	3,964,237	(30,476,221)	(405,987)
Funded Ratio	120%	85%	110%	113%	124%	88%	112%	101%
Contribution Requirement								
Employer Normal Cost	6.12 %	9.53 %	\$ 109,325	5.89 %	9.75 %	10.56 %		7.15 %
Amortization Payment for ERIP [^]								1.28
Amortization Payment	(8.79)	4.89	(101,419)	(4.52)	(12.11)	7.73		(0.76)
Total	0.00 %	14.42 %	\$ 7,906	1.37 %	0.00 %	18.29 %	\$ 1,278,469	7.67 %

[^] Amortization payment associated with the Early Retirement Incentive Program (ERIP).

Highlights of 2018 BCERS Actuarial Valuations

Division	Valuation Year Fiscal Year	Contribution Rate	
		12/31/2017	12/31/2018
		1/1/2019	1/1/2020
General County		0.00 %	0.00 %
DWS		14.22	14.42
Library		\$ 10,430	\$ 7,906
Medical Care Facility		0.57 %	1.37 %
Sheriff's Department		0.00	0.00
Road Commission		18.66	18.29
<hr/>			
BABH		7.53 %	7.67 %

Highlights of 2018 BCERS Actuarial Valuations

- No changes to valuation assumptions or methods for the 2018 valuation.
- The Road Commission reported a multiplier change for this valuation, this reduced liabilities by \$30,000.
- The Medical Care Facility first reported an eligibility change for this valuation, this increased liabilities by \$3,000.

Highlights of 2018 BCERS Actuarial Valuations

- The aggregate experience during 2018 was unfavorable, with overall losses.
- Investment return on the market value of assets for calendar year 2018 fell short of the assumed rate of return for the valuation.

Highlights of 2018 BCERS

Actuarial Valuations: Demographic G/(L)

- Gains from greater member termination than expected for all groups, slightly offset for some groups by actual pay increases greater than assumed.
- Loss due to changes in payroll (actual pay increases were greater than expected).
 - For DWS, Medical Care Facility, Sheriff's Department

Highlights of 2018 BCERS

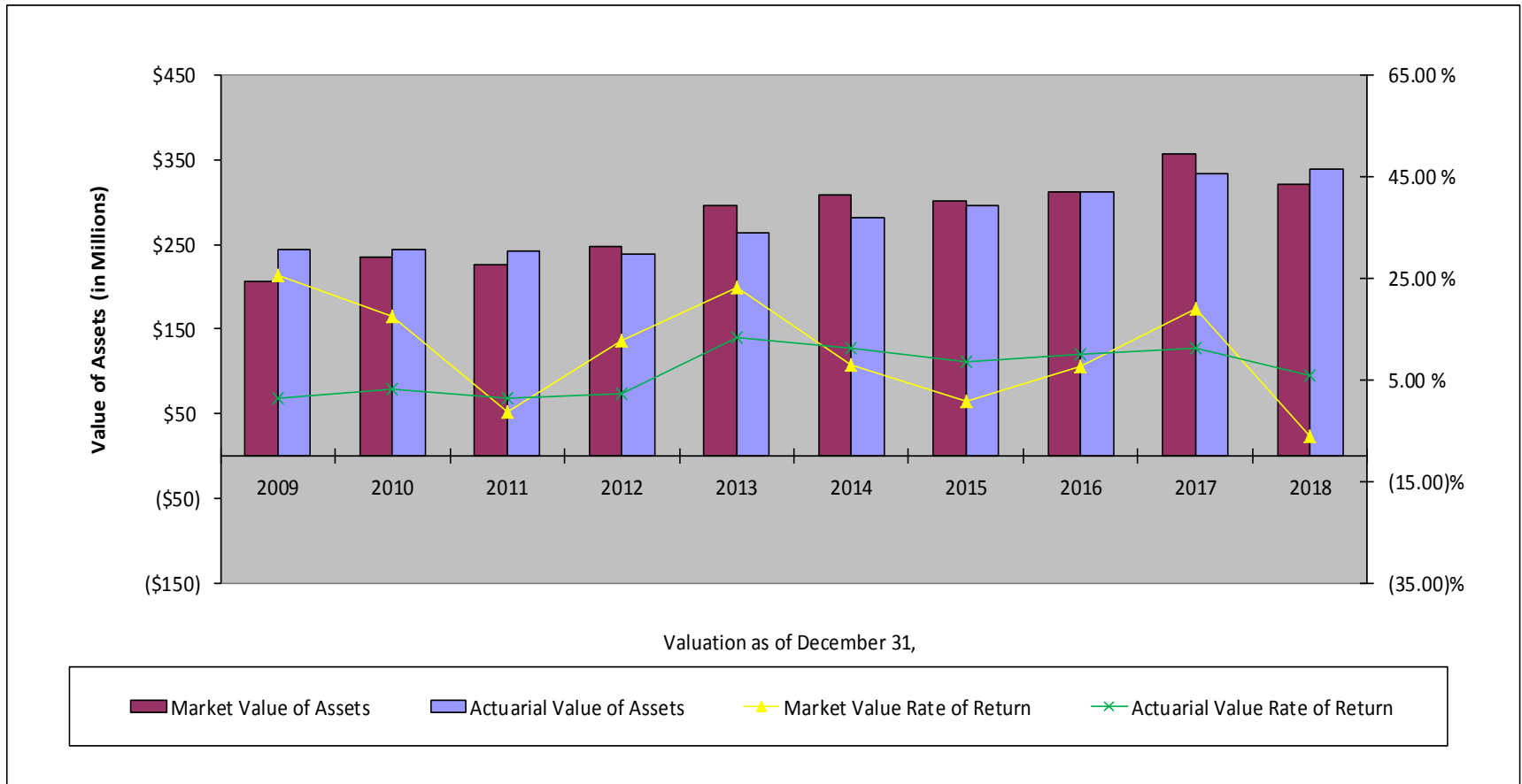
Actuarial Valuations: Asset Performance

	December 31,									
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Market Value of Assets*	\$206.0	\$235.4	\$225.7	\$246.9	\$295.4	\$308.1	\$300.9	\$311.5	\$356.5	\$321.2
Rate of Return	25.46 %	17.63 %	(1.22)%	12.65 %	23.03 %	7.98 %	0.77 %	7.68 %	19.10 %	(6.09)%
Actuarial Value of Assets*	243.3	244.7	241.2	239.3	263.4	282.2	296.1	312.7	333.8	338.9
Rate of Return	1.38 %	3.26 %	1.37 %	2.11 %	13.42 %	11.32 %	8.44 %	9.90 %	11.21 %	5.86 %

* Assets in millions of dollars.

Highlights of 2018 BCERS

Actuarial Valuations: Asset Performance



Highlights of 2018 BCERS Actuarial Valuations

- We developed the value of anticipated future benefit payments to retired members and their beneficiaries. We then compared this accrued liability to the reported value of the retirement reserve account. The figures below compare the retired liabilities and the reserves for each division.

<u>Division</u>	<u>Accrued Liability</u>	<u>Reported Retiree Reserve</u>	<u>Unfunded Retiree Liability</u>
General	\$ 61,396,479.00	\$ 54,375,881.05	\$ 7,020,597.95
DWS	11,921,309.00	10,465,080.59	1,456,228.41
Library	7,712,042.00	6,762,467.03	949,574.97
Medical Care Facility	33,223,336.00	28,662,798.24	4,560,537.76
Sheriff's Department	18,596,476.00	16,583,312.16	2,013,163.84
Road Commission	23,434,765.00	21,949,552.44	1,485,212.56
Total	\$ 156,284,407.00	\$ 138,799,091.51	\$ 17,485,315.49

<u>Division</u>	<u>Accrued Liability</u>	<u>Reported Retiree Reserve</u>	<u>Unfunded Retiree Liability</u>
BABH	\$ 32,555,730.00	\$ 28,868,458.59	\$ 3,687,271.41

- As of the valuation date, there is a shortfall in the retiree reserve for all groups.
- The valuation anticipates that the difference between the accrued liability and the reported reserve will be transferred from the Retirement System employer reserve to the retiree reserve effective January 1, 2019 to fully fund the retiree accrued liability.

ASOP 51 – Assessment/Disclosure of Risk

- Investment Risk
- Asset Liability Mismatch Risk
- Interest rate Risk
- Demographic Risk (mortality , etc)
- Contribution Risk

Specific Risks – Active Side

- Size of Plan vs Size of Plan Sponsor
- Example
 - Assets are 5-7 times payroll for BABH and All Other Groups
 - Plan loses 2.75% instead of earning 7.25%
 - 10% “loss” is 50%-70% of payroll for BABH and All Other Groups

Highlights of 2018 BCERS Actuarial Valuations

- Contribution rates should trend toward the long-term cost or normal cost of the benefits over time.
 - Experience gains/losses will always serve to deviate contributions from pure normal cost
- All divisions have required employer contributions, except the General County and Sheriff's Department.

Looking Ahead

Asset Smoothing – \$ in Thousands

	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>
Actual Investment Return	\$ (21,290)				
Assumed Investment Return	23,690				
Gain/(Loss) to be phased-in	(44,980)				
Phased-in recognition					
• Current year	\$ (8,996)				
• First prior year	7,208	\$ (8,996)			
• Second prior year	178	7,208	\$ (8,996)		
• Third prior year	(3,696)	178	7,208	\$ (8,996)	
• Fourth prior year	760	(3,696)	178	7,208	\$ (8,996)
Total recognized gain (loss)	\$ (4,546)	\$ (5,306)	\$ (1,610)	\$ (1,788)	\$ (8,996)

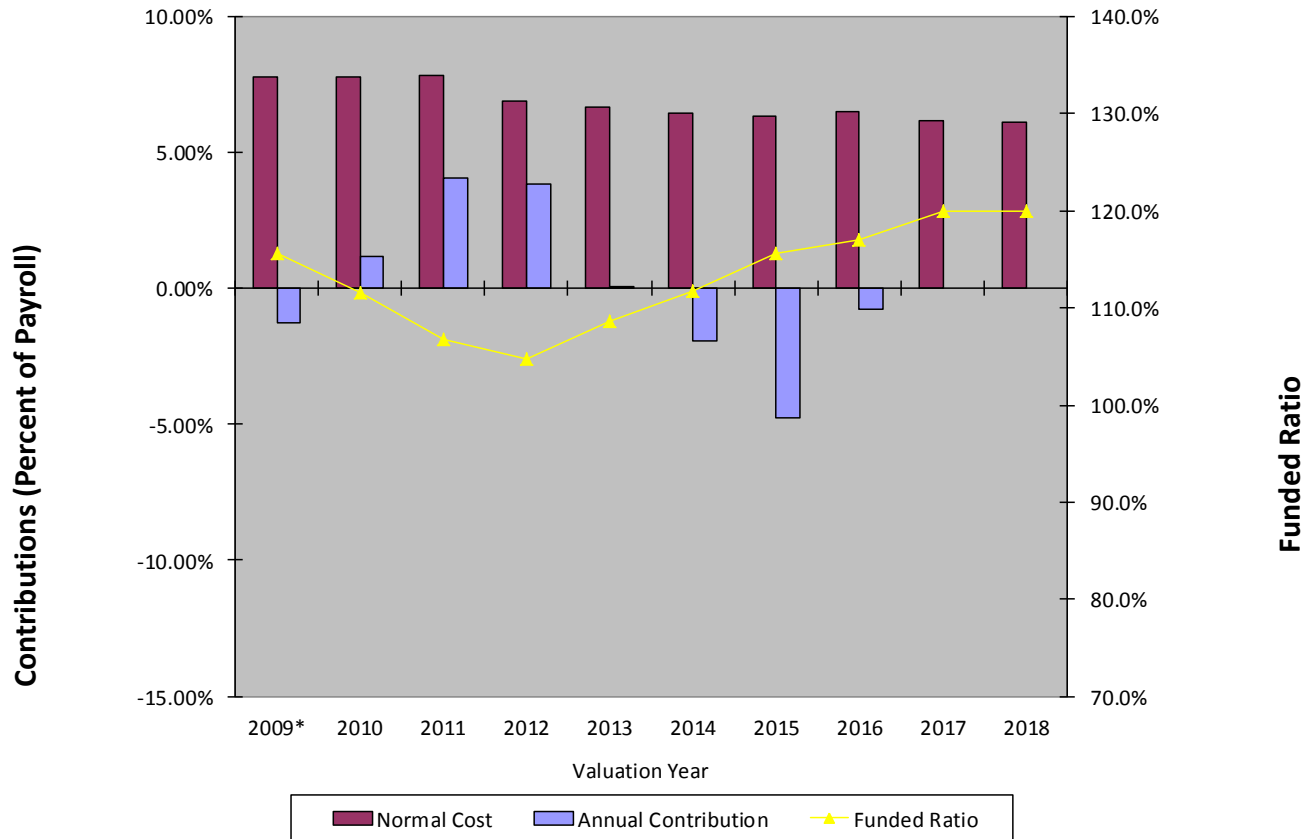
Looking Ahead – Contributions

- Asset smoothing helps reduce the volatility of the employer contributions.
 - The funding value of assets is 106% of market value.
 - Remaining phase-in of past market losses from previous valuations.
- The Retirement System will continue to mature.
 - More retirees than active employees.
 - Normal for a prefunded retirement system.

QUESTIONS

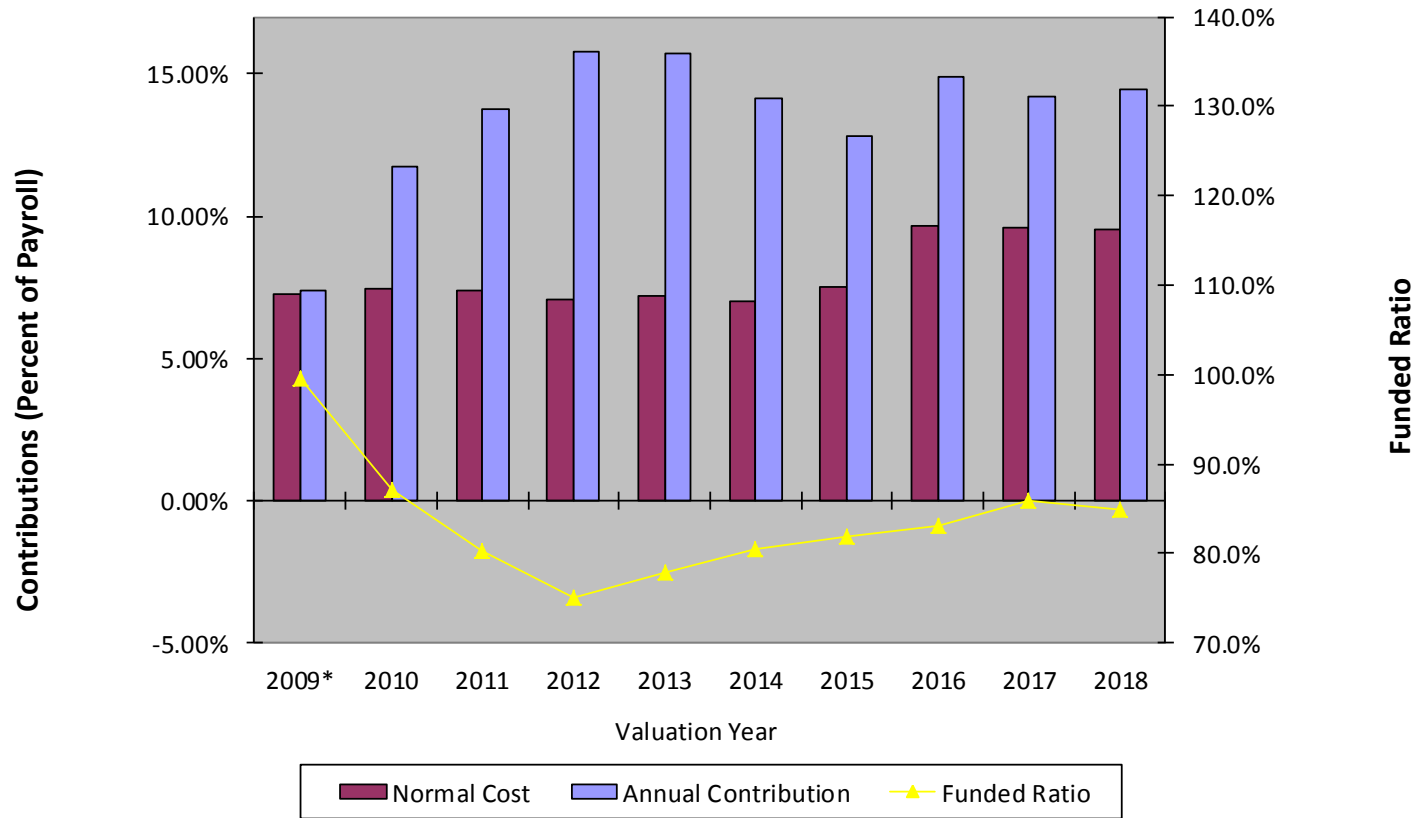
APPENDIX

Historical Information – General



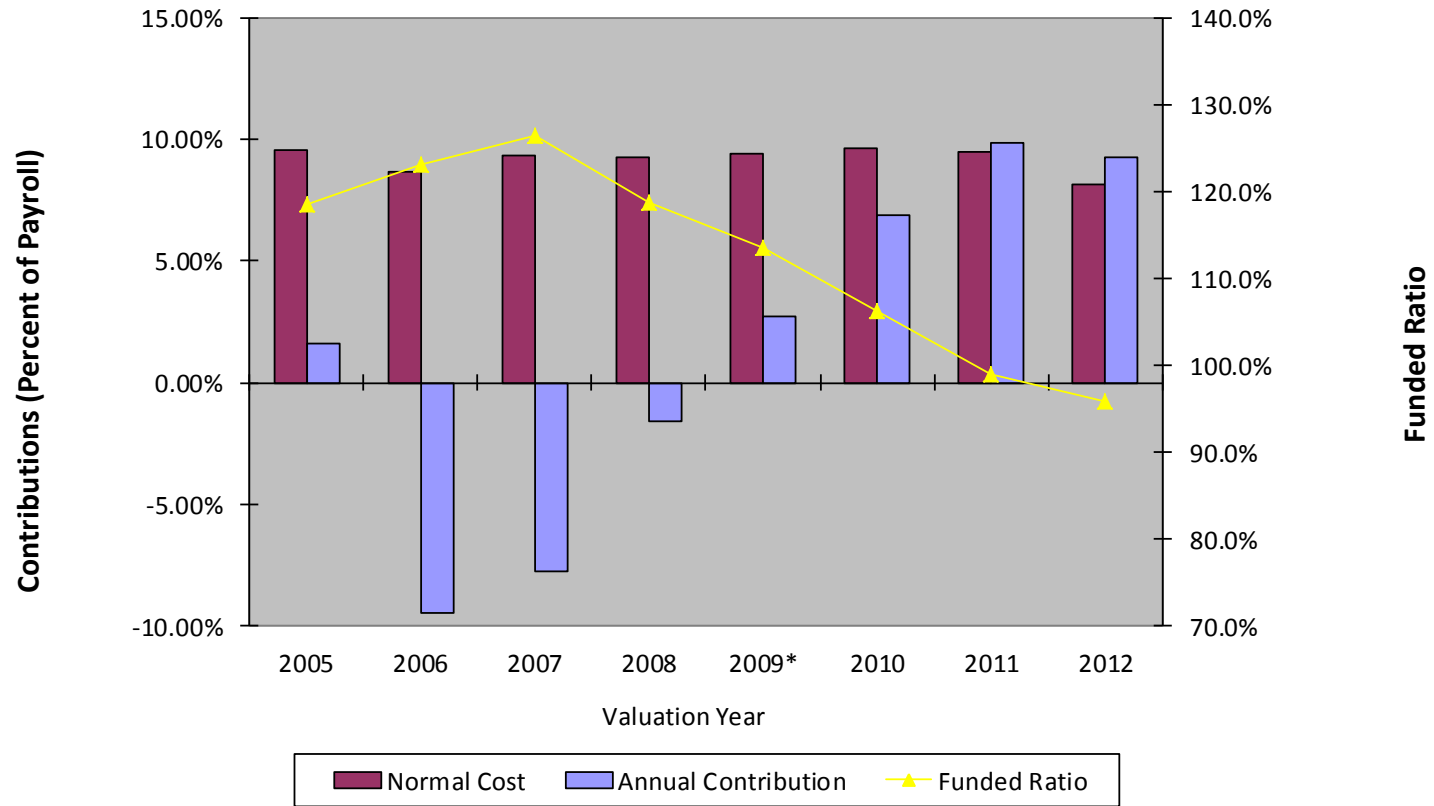
* 2009 valuation implemented a 1-year lag – results used for FY 2010 and FY 2011.

Historical Information – DWS



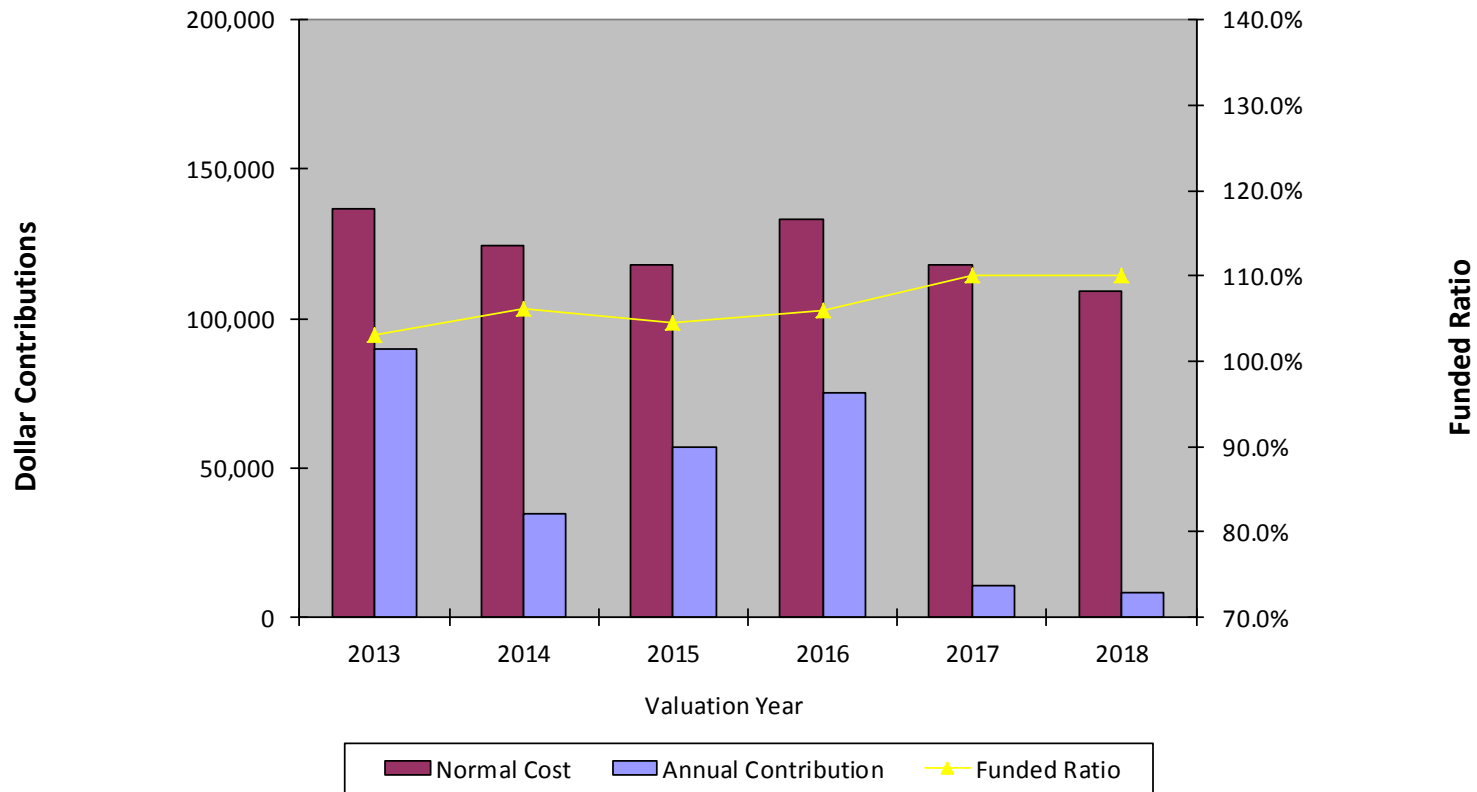
* 2009 valuation implemented a 1-year lag – results used for FY 2010 and FY 2011.

Historical Information – Library



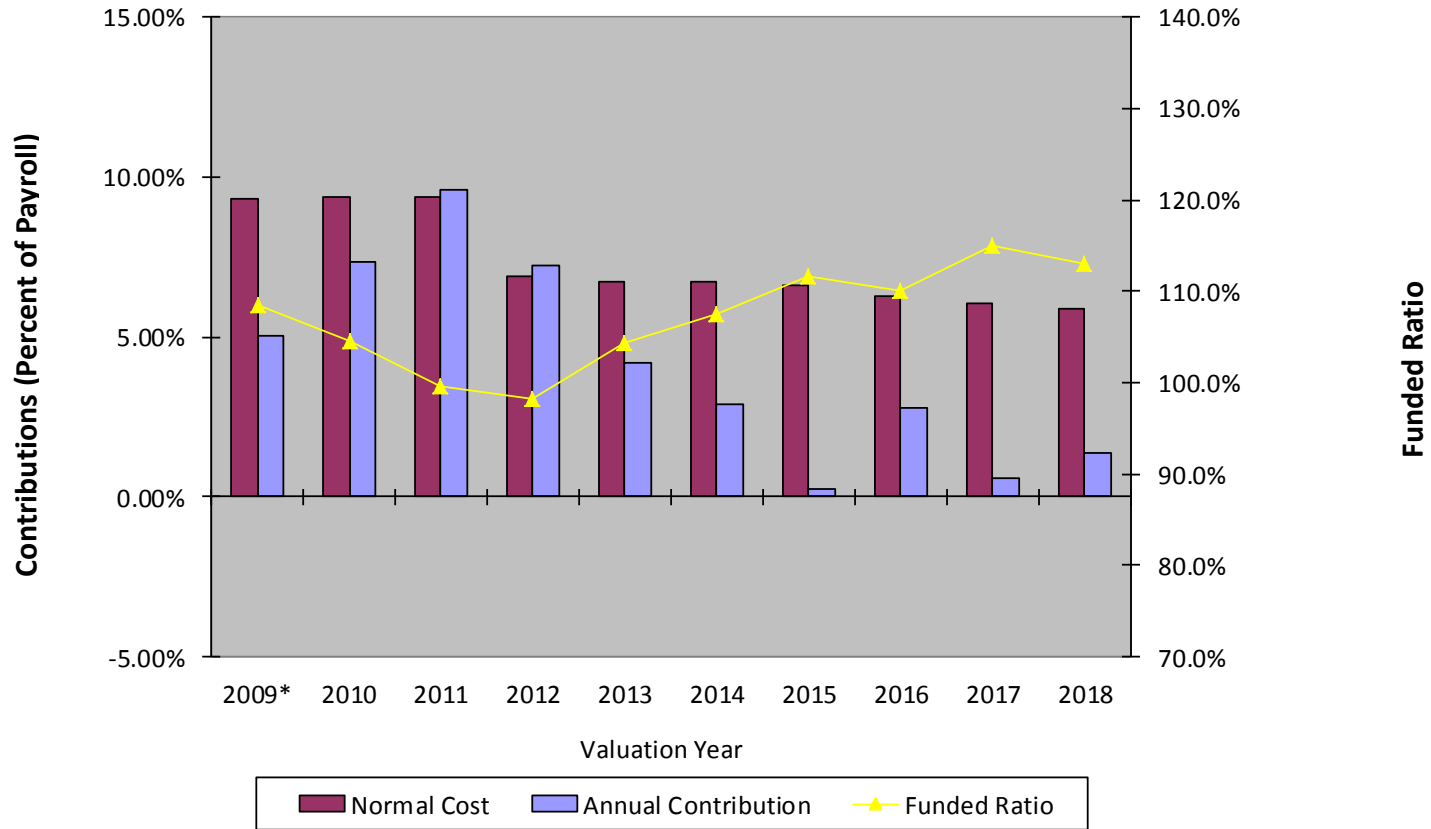
* 2009 valuation implemented a 1-year lag – results used for FY 2010 and FY 2011.

Historical Information – Library (Concluded)



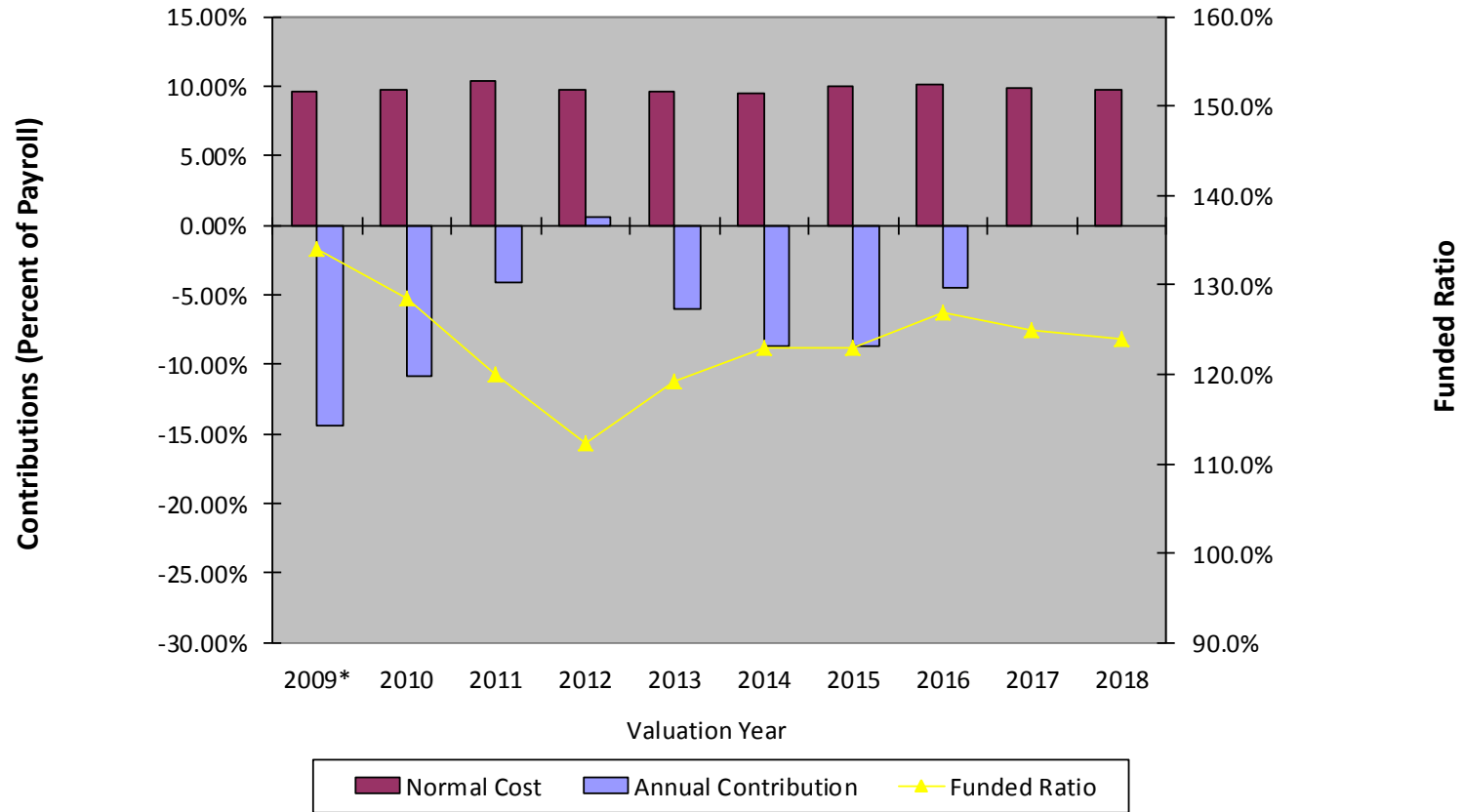
2013 valuation reflects closure of plan to new hires – contribution expressed as level dollar amount.

Historical Information – Medical Care Facility



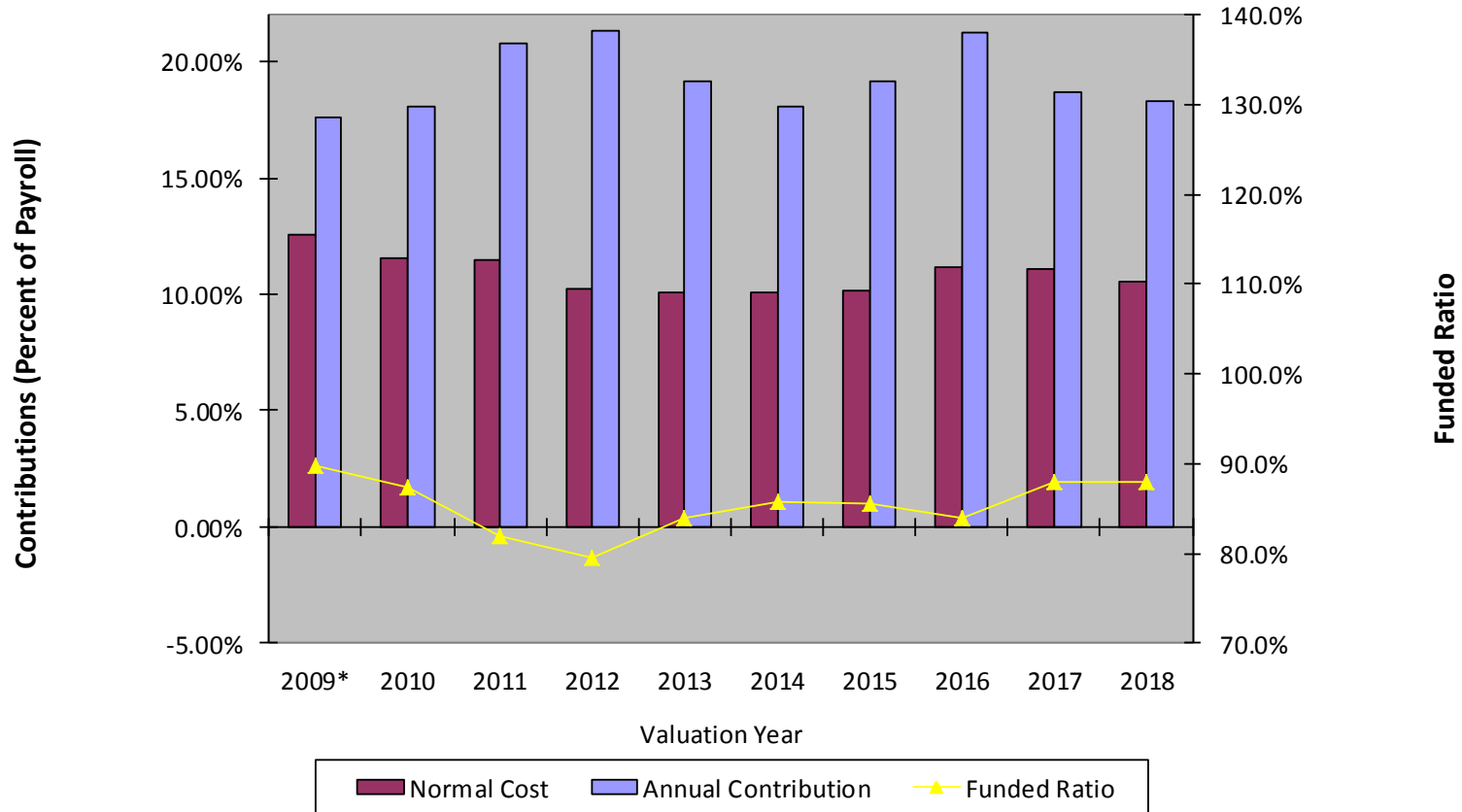
* 2009 valuation implemented a 1-year lag – results used for FY 2010 and FY 2011.

Historical Information – Sheriff's Department



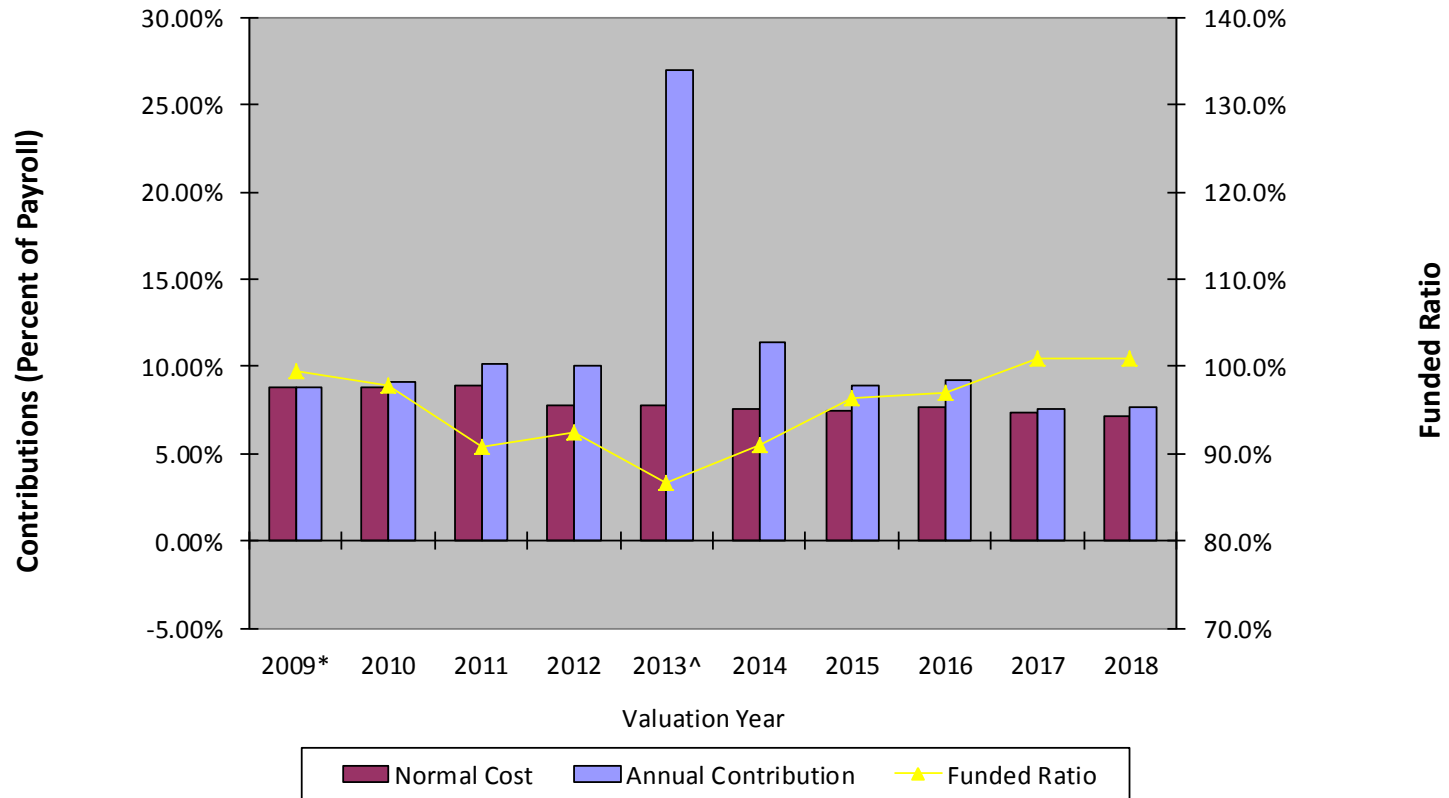
* 2009 valuation implemented a 1-year lag – results used for FY 2010 and FY 2011.

Historical Information – Road Commission



* 2009 valuation implemented a 1-year lag – results used for FY 2010 and FY 2011.

Historical Information – BABH



* 2009 valuation implemented a 1-year lag – results used for FY 2010 and FY 2011.

^ 2013 valuation reflected an advanced payment of the unfunded ERIP liability.

Disclaimers

- This presentation is one of many documents comprising the December 31, 2018 actuarial valuations of the Bay County Employees' Retirement System. This presentation should not be relied on for any purpose other than the purpose described in the valuation report.
- Future actuarial measurements may differ significantly from the current measurements presented in this report 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; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law.

Disclaimers

- This presentation shall not be construed to provide tax advice, legal advice or investment advice.
- James D. Anderson and Stephanie Crawford are independent of the plan sponsor, are Members of the American Academy of Actuaries (MAAA), and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.