Other Post-Employment Benefits (OPEB)

The Governmental Accounting Standards Board (GASB) establishes generally accepted accounting principles (GAAP) for public institutions, including school systems. These are the rules used by independent auditors as they attest to the fair presentation of our annual financial statements. Statements 43 and 45 relate to the financial presentation of Other Post-Employment Benefits (OPEB). The main thrust of GASB Statement No. 45 is to require for the first time that public sector employers recognize the cost of Other Post-Employment Benefits over the active service life of their employees rather than on a pay-as-you-go basis. In simple terms:

> An employee earns retiree health care and other benefits while working and the employer should accrue that cost while the employee is working (similar to pension). If the employer has not established a fund for the future benefits, the employer has a liability. An actuarial valuation is required to determine the future liability. The future liability or plan includes the cost of benefits (health, dental and life premiums) plus expenses less a projected return on investment. An actuarial valuation is an estimate of the cost of the plan. Information needed to complete the actuarial valuation is current demographics and benefit costs, an estimate of future retirees (and dependents), demographic assumptions, an estimate of future benefit costs, and trends of current costs and claims. The end result would be to discount the future costs to the valuation date using a discount rate determined by whether the Plan is funded or not funded.

Other Post-Employment Benefits—Harford County Public Schools

The Board provides medical, dental and life insurance benefits to eligible employees upon retirement. The employer's contributions are financed on a pay-as-you-go basis, and the future payment of these benefits is contingent upon the annual approval of the operating budget. Details of the post-employment benefits provided are as follows:

Pre-Medicare retirees can chose between three medical plans; all three plans include prescription drug coverage.

- Carefirst BlueCross BlueShield PPO Core Plan
- Tripe Option Plan
- BlueChoice HMO Plan

Post-Medicare retirees can choose between two medical plans; both plans include prescription drug coverage:

- Carefirst BlueCross BlueShield Medical Supplemental Plan
- BlueChoice HMO Supplemental Plan

Retirees can choose between two dental plans:

- Delta Dental PPO Plus Premier
- Delta Dental PPO

Participants with less than 10 years of service receive no subsidy from HCPS. Participants with 10 or more years of service receive an employer subsidy that depends on the date of hire as follows:

Years of Service	Hired Prior to 7/1/2006	Hired After 7/1/2006
0 – 9	None	None
10 - 19	Full BOE Contribution	1/3 BOE Contribution
20 - 29	Full BOE Contribution	2/3 BOE Contribution
30 or more	Full BOE Contribution	Full BOE Contribution

The full BOE contribution is 95% for BlueChoice HMO, 90% for the PPO Core Plan, and 85% for the Triple Option Plan. The full BOE contribution for both dental plans is 90%

Annual OPEB Cost and Net OPEB Obligation

The Board's annual Other Post-Employment Benefit (OPEB) cost (expense) is calculated based on the Annual Required Contribution (ARC) of the employer, an amount actuarially determined in accordance with the parameters of GASB Statement 45. The ARC represents a level of funding that, if paid on an ongoing basis, is projected to cover normal costs each year and amortize any unfunded actuarial liabilities (or funding excess) over a period not to exceed thirty years. The following table shows the components of the Board's annual OPEB cost for the year ended June 30, 2017, the amount actually contributed to the plan, and changes in the Board's net OPEB obligation:

Annual required contribution	$ 69,997,000
Interest on net OPEB obligation	11,293,000
Amortization of net OPEB obligation	(14,250,000)
Annual OPEB cost (expense)	67,040,000
Contributions made	24,018,000
Increase in net OPEB obligation	43,022,000
Net OPEB obligation - beginning of year	231,964,929
Net OPEB obligation - end of year	$ 274,986,929

The Board's annual OPEB cost, the percentage of annual OPEB cost contributed to the plan, and the net OPEB obligation for the last three years was as follows:

Fiscal Year Ended	Annual OPEB Cost	Percentage of Annual OPEB Cost Contributed	Net OPEB Obligation
6/30/2017	$ 67,040,000	35.83%	$ 308,742,929
6/30/2016	59,695,000	43.45%	265,720,929
6/30/2015	56,570,000	43.40%	231,964,929

Funded Status and Funding Progress

As of July 1, 2016, the plan was 4.90% funded. The actuarial accrued liability for benefits was $815,357,000, and the actuarial value of assets was $39,943,081, resulting in an Unfunded Actuarial Accrued Liability (UAAL) of $775,413,919. The covered payroll (annual payroll of active employees covered by the plan) was $272,318,027, and the ratio of the UAAL to the covered payroll was 284.74%.

Actuarial valuations of an ongoing plan involve estimates of the value of reported amounts and assumptions about the probability of occurrence of events far into the future. Examples include assumptions about future employment, mortality, and the healthcare cost trend. Amounts determined regarding the funded status of the plan and the annual required contributions of the employer are subject to continual revision as actual results are compared with past expectations and new estimates are made about the future. The schedule of funding progress, presented as required supplementary information following the notes to the financial statements, presents multi-year trend information about whether the actuarial value of plan assets is increasing or decreasing over time relative to the actuarial accrued liabilities for benefits.

Actuarial Methods and Assumptions

Projections of benefits for financial reporting purposes are based on the substantive plan (the plan as understood by the employer and the plan members) and include the types of benefits provided at the time of each valuation and the historical pattern of sharing of benefit costs between the employer and plan members to that point. The actuarial methods and assumptions used include techniques that are designed to reduce the effects of short-term volatility in actuarial accrued liabilities and the actuarial value of assets, consistent with the long-term perspective of the calculations.

Significant valuation methods and assumptions are as follows:

Valuation Date	July 1, 2014
Actuarial Cost Method	Projected Unit Credit method
Amortization Method	Closed, level percent of payroll over 24 years (as of 7/1/14)
Asset Valuation Method	Market value of Assets
Actuarial Assumptions:	
Discount Rate	4.50%
Investment Rate of Return	7.00% per year compounded annually
Payroll Growth Rate	3.00%
Inflation Rate	2.80%
Healthcare Cost Trend Rates:	
Medical and prescription	8.00% initial year of valuation (not applicable to Life)
	4.30% final year of valuation (not applicable to Life)
Dental	5.00%

The actuarial value of assets was determined using market value of assets. The trust is assumed to earn 7% interest and contributions are assumed to be made in the middle of the year.

The unfunded liability was amortized over a closed period of 24 years using level percentage of pay for the fiscal year ended June 30, 2015.

Schedule of Funding Progress

	Value of Assets	Accrued Liability (AAL)	Unfunded AAL (UAAL)	Funded Ratio	Covered Payroll	UAAL as a % of Covered Payroll
June 30, 2008	$ 12,136,368	$ 361,962,000	$ 349,825,632	3.35%	$ 274,153,946	127.60%
July 1, 2008	12,136,368	589,795,000	577,658,632	2.06%	278,038,509	207.76%
July 1, 2009	10,233,348	626,155,000	615,921,652	1.63%	278,636,614	221.05%
July 1, 2010	10,962,506	534,277,000	523,314,494	2.05%	278,479,993	187.92%
July 1, 2011	15,255,626	462,698,000	447,442,374	3.30%	276,823,307	161.63%
July 1, 2012	23,541,000	660,933,000	637,392,000	3.56%	273,638,115	232.93%
July 1, 2013	28,024,880	696,905,000	668,880,120	4.02%	265,952,457	251.50%
July 1, 2014	31,986,622	673,727,000	641,740,378	4.75%	262,514,165	244.46%
July 1, 2015	37,725,685	707,472,000	669,746,315	5.33%	265,888,092	251.89%
July 1, 2016	39,943,081	815,357,000	775,413,919	4.90%	272,318,927	284.74%

Valuations prior to June 30, 2008, were not valued in accordance with GASB Statement No. 43.

The Actuarial Report

The actuarial report was updated for FY 2014 and is reflected in the following pages. (Due to the new GASB75 the decision was made to delay a new actuarial report for FY2017. As of publication HCPS had not received the new report. GASB75 requires an actuarial report be completed in FY2018 and that report will be utilized for two years).

Actuarial Certification

The following sets forth the July 1, 2014 and July 1, 2015 GASB 45 Annual Expense for Harford County Public Schools for the Fiscal Years Ending June 30, 2015 and June 30, 2016. The appendices of the report show the FYE 2014 expense updated for the plan's actual market value of assets as of July 1, 2013.

The annual expense has decreased from $59,125,000 in FYE 2014 to $56,570,000 in FYE 2015. The unfunded liability has decreased from $668,880,120 as of July 1, 2013 to $641,740,378 as of July 1, 2014.

This report has been prepared for Harford County Public Schools for the purposes of complying with the GASB45 accounting standard. It is neither intended nor necessarily suitable for other purposes. Bolton Partners is not responsible for the consequences of any other use.

In general Post Retirement medical valuations are based on an assumption for post-retirement medical increases. If medical costs increase at a rate greater than our assumption there could be a dramatic increase in the cost. The report shows the impact of 1 percent (over all years) increase in the medical trend assumption. 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; 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, applicable law or accounting rules.

The report is based on July 1, 2013 census data. The census data was submitted by the Schools and medical claims for FYE 2012 were reported by the carriers. We have not performed an audit on the data and have relied on this information for purposes of preparing this report.

The actuarial methods and assumptions used in this report comply with GASB 45 and the actuarial standards of practice promulgated by the American Academy of Actuaries.

Bolton Partners is completely independent of Harford County Public Schools, its programs, activities, and any of its officers or key personnel. Bolton Partners, and anyone closely associated with us, does not have any relationship which would impair or appear to impair our independence on this assignment.

Kevin Binder 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 contained in this report.

These values have been computed in accordance with generally accepted actuarial principles and practices. The various actuarial assumptions and methods are, in our opinion, appropriate for the purposes of this report.

Prepared by:

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1. Executive Summary

Background
In June 2004 the Government Accounting Standards Board (GASB) released Statement 45 which revised the GAAP accounting standards for post employment benefits other than pensions (OPEB). This standard will be applied to post employment medical benefits that are provided to Harford County Public School retirees. Prior to the standard these benefits were accounted for on a pay as you go basis. The standard requires that these benefits be accounted for on an accrual basis.

The previous report prepared for FYE 2013 and FYE 2014 was completed on March 30, 2012. The expense for FYE 2014 has been recalculated using the actual trust assets at July 1, 2013 and the expected FYE 2014 contribution of $2,000,000, and is provided in the Appendix.

OPEB Trust Arrangement
The Harford County Public Schools participate in the Maryland Association of Boards of Education (MABE) pooled OPEB investment trust. The MABE OPEB investment trust is a member owned trust that provides the Board and other nine member boards a structure to pool assets to reduce investment costs and share administrative expenses. The trust value at July 1, 2013 is $28,024,880

Discount Rate Assumption and Funding Level
The discount rate used to determine the liabilities under GASB 45 depends upon the Schools' funding policy. Government entities that contribute an amount at least equal to the GASB 45 annual required contribution (ARC) to a trust that can only be used to pay other post-retirement benefits, discount liabilities based on the expected long-term rate of return of the Trust.

The discount rate assumption for disclosure purposes only is determined in Section 2 of the report and is 4.50% for FYE 2015 and FYE 2016. This rate is a partially funded discount rate. The funding level was determined based on expected Trust contributions of $3,500,000/year for FYE 2015 and FYE 2016. If Harford County Public Schools decides to fund the plan differently, the expense will need to be restated.

The Net OPEB Obligation (NOO)
The NOO is the cumulative difference between the School's OPEB expense and cash payments made for OPEB expenditures and is a liability in the School's Statement of Net Financial Position. As of June 30, 2014 we estimate the NOO will be $200.0 million. We estimate that this amount will increase to over $265.7 million by June 30, 2016. This amount is a debit on the Schools' statement of Net Financial Position in the CAFR.

The Annual OPEB Cost (AOC)
The annual cost of OPEB benefits under GASB 45 is called the annual OPEB cost or AOC. These amounts are for disclosure purposes only. The AOC is equal to the Annual Required Contribution (ARC) plus interest on the NOO minus the NOO divided by the amortization factor. Harford County Public School's AOC for FYE 2015 and FYE 2016 is shown in Section 3. The AOC is $56,570,000 for FYE 2015 and $59,695,000 for FYE 2016.

Comparison with Previous Valuation
The prior valuation was based on December 1, 2011 data and completed March 30, 2012. The expense has decreased from $59,125,000 to $56,570,000. Increase in expense due to demographic changes and assumption changes were offset by decrease in expense due to favorable claims experience and increase in the discount rate.

The following table compares the data and reconciles the expense.

Comparison of Current and Previous Valuations		
Data as of	12/1/2011	7/1/2013
Demographic Data		
Employees with Medical Coverage	4,559	4,251
Retirees Less Than Age 65 with Medical Coverage	605	609
Retirees Age 65 or Greater with Medical Coverage	1,402	1,513
Reconciliation of Expense (AOC)		
FYE 2014 Expense, 4.25% discount rate		$59,125,000
Expected Increase (due to passage of time and asset experience)		$3,310,000
Increase (Decrease) due to Demographic Experience		$2,501,000
Increase (Decrease) due to Plan Changes		($173,000)
Increase (Decrease) due to Claims Experience		($6,613,000)
Increase (Decrease) due to Assumption Changes		$332,000
Increase (Decrease) due to Changes in Trend		$61,000
Increase (Decrease) due to Changes in the Discount Rate		($1,973,000)
FYE 2015 Expense, 4.50% discount rate		$56,570,000

Plan Provisions
Retirees can continue the same medical and dental coverage they had (including family coverage) as active employees. For employees hired prior to July 1, 2006, a subsidy of 85% or 90% for pre-Medicare retirees is provided based on the plan chosen. A 90% subsidy is provided to Medicare eligible retirees and for dental coverage. The subsidy is also provided for dependent coverage. However, no subsidy is provided to surviving spouses. Life insurance is also provided and partially paid for by the retiree.

For employees hired after July 1, 2006 the subsidy level depends upon service at retirement. See Section 4 for details.

Demographic Data
Demographic data as of July 1, 2013 was provided to us by Harford County Public Schools. This data included current medical coverage for current employees and retirees.

Because the census data is less than 24 months before the first day of fiscal year 2015, it can be relied on to comply with GASB 45 for FYE 2015 and FYE 2016.

Although we have not audited this data we have no reason to believe that it is inaccurate.

Claims Data
Monthly paid claims, administrative expense and enrollment reports for retirees (only) for the year ending June 30, 2012 were supplied by the providers. Claims were divided into pre and post 65 age retirees.

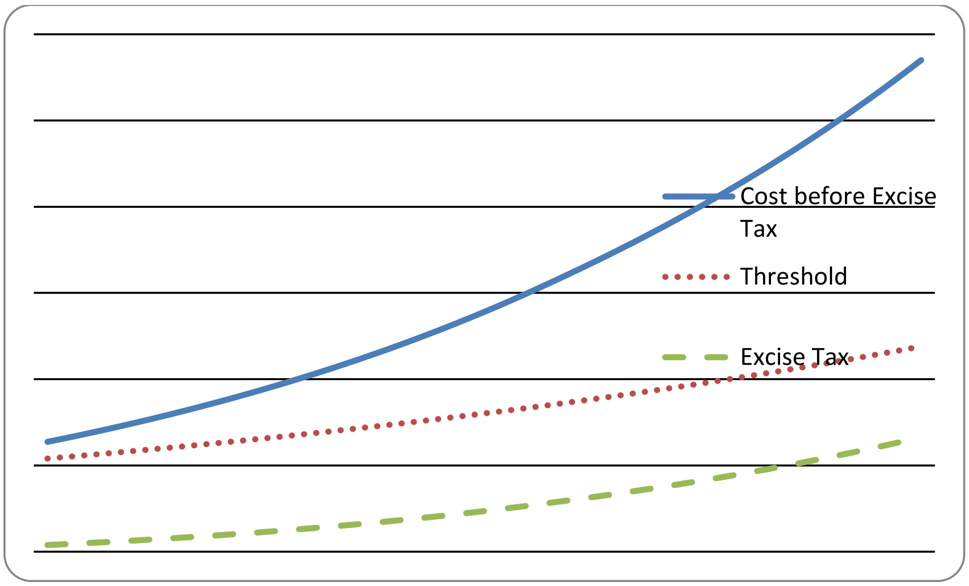
Although we have not audited the claims data we have no reason to believe that it is inaccurate.

Impact of Health Care Reform

We have not yet adjusted the pre-65 medical care trend due to the projected impact of the “Cadillac Tax”. The Cadillac Tax is one of the provisions of the Affordable Care Act (ACA) of 2010. The Cadillac Tax provision is effective in 2018. The Cadillac Tax only applies to plans that cost $10,200 or more annually for an individual or $27,500 per family. There will be a 40 percent excise tax for expenditures over these thresholds. The cost thresholds are indexed by general inflation each year after 2018. Because medical trends are projected to be higher than general inflation we would expect, without changes to the plan design, this plan would be subject to the premium tax before 2030, and for the portion subject to the tax to increase from that time forward.

Harford County Public Schools has communicated to us that they will take whatever steps are necessary to avoid becoming subject to the Cadillac Tax, and that plan changes will need to be made to avoid the Cadillac Tax.

The following graph shows the expected cost vs. the threshold for the Cadillac Tax for the current plan.



There are other provisions of the ACA that could impact future costs. Some of the provisions (for example risk adjustment charges for plans that cover healthier populations) could increase costs, while others (for example, less uninsured care costs might be passed on to those with insurance) may reduce costs over time. Because the impact of these provisions is unclear at this time, we have made no adjustments to the medical care trend.

Implicit Subsidy

HCPS has a rate structure that eliminates the “implicit subsidy” (also called hidden subsidy). Retirees use health care at a rate much higher than active employees. Beginning FYE 2008, the published rates for retirees are based solely on retiree healthcare usage, effectively eliminating the hidden subsidy.

Demographic Assumptions

Demographic assumptions mirror those used for the pension plan, with adjustments made for actual experience of County employees. All employees are assumed to participate in the Maryland State Teachers’ Pension System.

Section 6 details the assumptions for electing coverage. These assumptions have been changed since the last valuation.

Economic Assumptions
The discount rate assumption is tied to the return expected on the funds used to pay these OPEB benefits. The discount assumption will be materially tied to the decision of whether or not to pre-fund these benefits. The AOC for FYE 2015 and FYE 2016 is determined using a partially funded discount rate of 4.50%. This rate is a weighted average of a 4.00% unfunded rate, which is a long term estimate of general funds investment return, and a funded investment rate of 7.00%.

The medical trend assumption was developed using the Society of Actuaries (SOA) Long-Run Medical Cost Trend Model baseline assumptions. For this valuation, we used the SOA Model that was released in November 2012 (v. 12.11). The following assumptions were used as input variables into this model:

Rate of Inflation	2.8%
Rate of Growth in Real Income / GDP per capita	0.9%
Income Multiplier for Health Spending	1.3
Extra Trend due to Technology and other factors	1.1%
Health Share of GDP Resistance Point	22.0%
Year for Limiting Cost Growth to GDP Growth	2060

The SOA Long-Run Medical Cost Trend Model and its baseline projection are based on an econometric analysis of historical U.S. medical expenditures and the judgments of experts in the field. The rate of growth in real income was reduced from the baseline assumption of 1.5% to 0.9% to be consistent with the payroll growth assumption. The long-run baseline projection and input variables have been developed under the guidance of an SOA Project Oversight Group. The GDP growth assumption was changed

Payroll is assumed to increase at 3.0% per annum. This assumption is used to determine the level percentage of payroll amortization factor.

Actuarial Certification
In preparing the valuation we relied on demographic and claims data provided by Harford County Public Schools. We reviewed the data for reasonableness, but did not audit the data. The actuarial methods and assumptions used in this report comply with GASB 45 and the actuarial standards of practice promulgated by the American Academy of Actuaries.

The healthcare cost trend rate selected is consistent with prevalent practices. As discussed above, increases of this magnitude cannot be sustained indefinitely. Accordingly, standard actuarial practice (and GASB 43 Paragraph 34.g.) is to assume an “ultimate trend” which is consistent with the best estimate of GNP growth. However, the number of years until the ultimate trend is attained and the rate of decrease are not known. There is a significant probability that between now and the next actuarial valuation we will not observe the anticipated amelioration of medical trend. If this is the case, the typical practice is to reset the initial trend and to defer the year that the ultimate trend rate is attained. If this occurs annual actuarial losses of 5% to 15% of liabilities due to the revised trend rate can be expected.

Kevin Binder 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 contained in this report.

2. Funding Target and Cash Contribution for FYE 2015 and FYE 2016

Below is a summary of the calculation of the Funding Target and the School's Cash Contribution under the funding policy. The funding policy is determined using the fully funded discount rate of 7.00%, and unfunded discount rate of 4.00%. Estimated market value of assets was determined assuming 7.0% return on assets. We assumed the Harford Schools will deposit $3,500,000/year to the OPEB Trust in both FYE 2015 and FYE 2016

		FYE 2015 7/1/2014	FYE 2016 7/1/2015
1)	Actuarial Accrued Liability		
	a. Actives	$208,439,000	$219,521,000
	b. Retirees in Pay Status	$252,071,000	$265,473,000
	c. Total	$460,510,000	$484,994,000
2)	Estimated Assets	$31,986,622	$37,725,685
3)	Amortization of Unfunded Accrued Liability		
	a. Unfunded Accrued Liability	$428,523,378	$447,268,315
	b. Amortization Period (years)	24	23
	c. Amortization Factor (rounded)	14.98	14.59
	d. Amortization Amount	$28,604,000	$30,652,000
4)	Gross Funding Target		
	a. Normal Cost	$14,053,000	$14,658,000
	b. Amortization of Unfunded Accrued Liability	$28,604,000	$30,652,000
	c. Total Funding Target	$42,657,000	$45,310,000
5)	Trust Contribution		
	a. Funding Target	$42,657,000	$45,310,000
	b. Less Expected Pay-Go Benefits	($21,068,000)	($22,439,000)
	c. Net Funding Target [a + b]	$21,589,000	$22,871,000
	d. Expected Contribution (as provided by HCPS)	$3,500,000	$3,500,000
	e. Percent of funding target contributed [c / d]	16%	15%
	f. Discount Rate* [(1 – (e)) x 4.00%] + [(e) x 7.00%]	4.50%	4.50%

* *Rounded to nearest quarter percent*

3. Plan Expense

Expense
Below is a summary of the calculation of the Plan's Expense under current plan provisions for the year ending June 30, 2015 and June 30, 2016. The amounts are calculated as of the end of the year and assume the Harford Schools will deposit $3,500,000/year to the OPEB Trust in both FYE 2015 and FYE 2016. Estimated market value of assets was determined assuming 7.0% return on assets.

		7/1/2014 Partially Funded	7/1/2015 Partially Funded
(1)	Interest Rate	4.50%	4.50%
(2)	Actuarial Accrued Liability		
	(a) Actives	$350,205,000	$367,746,000
	(b) Retirees in Pay Status	$323,522,000	$339,726,000
	(c) Total	$673,727,000	$707,472,000
(3)	Estimated Assets	$31,986,622	$37,725,685
(4)	Amortization of Unfunded Accrued Liability		
	(a) Unfunded Accrued Liability	$641,740,378	$669,746,315
	(b) Amortization Period	24	23
	(c) Amortization Factor (Rounded)	19.55	18.86
	(d) Amortization Amount	$32,832,000	$35,512,000
(5)	Annual Required Contribution of Employer (ARC)		
	(a) Normal Cost	$24,970,000	$26,044,000
	(b) Amortization of Unfunded Accrued Liability	$32,832,000	$35,512,000
	(c) Total ARC	$57,802,000	$61,556,000
(6)	Annual OPEB Cost (AOC)		
	(a) ARC	$57,802,000	$61,556,000
	(b) Less Amortization of NOO	($10,230,000)	($12,299,000)
	(c) Plus Interest on NOO	$8,998,000	$10,438,000
	(d) Total Cost	$56,570,000	$59,695,000
(7)	1% Sensitivity (ARC)	$72,100,000	$77,465,000
(8)	Net OPEB Obligation (NOO)		
	(a) Estimated Beginning of Year NOO	$199,962,929	$231,964,929
	(b) Current AOC	$56,570,000	$59,695,000
	(a) Expected Cash Payment to Retirees	($21,068,000)	($22,439,000)
	(d) Trust Contribution	($3,500,000)	($3,500,000)
	(e) Projected End of Year NOO (a + b + c + d)	$231,964,929	$265,720,929

4. Summary of Principal Plan Provisions

The following summary describes principal plan provisions assumed in calculating the cost of your plan.

General Eligibility Rules
Eligible participants are employees who retire from employment with Harford County Public Schools (HCPS). A dependent child can be covered until the child reaches age 26 (later if the child became disabled before reaching age 26). Spouses are also covered under this OPEB plan.

HCPS participates in the Maryland State Teachers/Employees' Pension System (EPS). Under EPS, members hired on or after July 1, 2011 are in the Reformed Contributory Pension System. The earliest retirement eligibility under the Reformed Contributory Pension System is the earlier of:

- Rule of 90 (age plus service is at least 90),
- Age 65 with 10 years of service, or
- Age 60 with 15 years of service (early retirement).

For members of EPS hired before July 1, 2011, the earliest retirement eligibility is the earlier of:

- Age 55 with 15 years of service (early retirement),
- Age 62 with 5 years of service,
- Age 63 with 4 years of service,
- Age 64 with 3 years of service,
- Age 65 with 2 years of service, or
- 30 years of service (regardless of age).

Disabled participants must meet the retirement eligibility requirements stated above. Surviving spouses can stay in the plan, but must pay the full cost to participate.

Retiree must make a one-time health plan selection upon retirement. Only "life style changes" are permitted subsequent to this selection for retirees enrolled in a HCPS health plan. A special open enrollment was held for the retirees in the OPEB plan on April 2007 so that they could make a one-time decision as well.

Underlying Medical Plan Description
Pre-Medicare retirees can choose between three medical plans (listed below). All three medical plans include prescription drug coverage.

- CareFirst - Preferred Provider Plus,
- CareFirst – Preferred Provider Core, or
- BlueChoice HMO.

Post-Medicare retirees can choose between two medical plans:

- CareFirst Medicare Supplemental, or
- BlueChoice HMO Medicare Supplemental.

Underlying Medical Plan Description (cont)
The post Medicare plans include prescription drug coverage.

Retirees can choose between two dental plans:

- Delta PPO Plus Premiere, or
- Delta PPO.

Harford County Public Schools (HCPS) self insures all medical and dental plans offered. HCPS also has stop loss insurance to protect against large individual claims as well as total claims.

Employer Subsidy
Participants with less than 10 years of service receive no subsidy from Harford County Public Schools. Participants with 10 or more years of service receive an employer subsidy that depends on date of hire. For employees hired before July 1, 2006, the subsidy percent is:

	Employer Subsidy Percent	***Retiree Percent***
CareFirst PPO Plus	85%	15%
All other medical plans	90%	10%
All dental plans	90%	10%
Life insurance	90%	10%

The employer subsidy percent is applied to the total premium. The subsidy percent also applies to the premium for dependent coverage, including family coverage. The subsidy percent also applies to the premium for dental coverage, including family dental coverage.

For employees hired after July 1, 2006, the medical, dental and life subsidy will depend upon years of service at retirement as summarized in the following table.

Years of Service At Retirement	**Employer Subsidy Percent**	**Annual retiree premium per $10,000 of life insurance ***
0 – 9	0%	N/A
10 – 19	30%	$ 16.80
20 – 29	60%	$ 9.60
30 +	90%	$ 2.40

* *These figures are based upon the current life insurance premium.*

Implicit Subsidy
HCPS has a rate structure that eliminates the "implicit subsidy" (also called hidden subsidy). Retirees use health care at a rate much higher than active employees. Beginning FYE 2008, the published rates for retirees are based solely on retiree healthcare usage, effectively eliminating the hidden subsidy.

Life Insurance
At retirement, retirees receive $20,000 of life insurance coverage. This amount decreases by $2,000 each subsequent July 1 to a floor of $10,000. For retirees with at least 10 years of service, and hired before July 1, 2006, the Board pays 90% of the life insurance premium; the retirees pay 10% of the life insurance premium. Currently this means retirees pay $0.20 per month (or $2.40/year) per $10,000 of coverage. There is no life insurance for spouses.

Employees hired after July 1, 2006, with at least 10 years of service, will pay life insurance premiums as outlined in the table above.

There is a small group of disabled participants who receive life insurance in an amount ranging from $46,000 - $74,000. These participants have "disability waivers". This means the participant will continue to receive the life insurance benefit until a certain fixed age. The disabled participant does not pay anything for this coverage. The entire cost is paid for by the insurer. Hence we did not value these participants' life insurance benefit.

Changes to plan provisions since prior valuation
The Maryland State Teachers/Employees' Pension System (EPS) was changed so that under EPS, members hired on or after July 1, 2011 are in the Reformed Contributory Pension System. These individuals have different retirement eligibility conditions.

5. Valuation Data

Counts
The following table summarizes the counts, ages and service for participants currently enrolled in the County's medical plan.

		7/1/2013	12/1/2011
(1)	Number of Participants		
	(a) Active Employees	4,251	4,559
	(b) Retirees (Pre-Medicare)	609	605
	(c) Retirees (Post-Medicare)	1,513	1,402
	(d) Total Retirees	2,122	2,007
(2)	Active Statistics		
	(a) Average Age	45.18	44.47
	(b) Average Service	12.16	11.33
(3)	Inactive Statistics (In Pay Status)		
	(a) Average Age – Pre-Medicare	61.44	60.81
	(b) Average Age – Medicare	73.35	72.95

Active Age - Service Distribution
Shown below is the distribution of active participants with medical coverage based on age and service as of the valuation date.

	Years of Service as of 7/1/2013								
Age	**Under 1**	**01-04**	**05-09**	**10-14**	**15-19**	**20-24**	**25-29**	**30+**	**Total**
Under 25	42	47	1	0	0	0	0	0	90
25 - 29	65	257	133	1	0	0	0	0	456
30 - 34	30	113	293	78	0	0	0	0	514
35 - 39	17	50	141	204	63	0	0	0	475
40 - 44	19	91	121	109	168	39	0	0	547
45 - 49	18	76	133	98	79	98	31	2	535
50 - 54	8	66	129	124	104	52	83	22	588
55 - 59	8	42	85	116	129	76	44	76	576
60 - 64	5	24	50	51	54	58	36	62	340
65 +	1	16	29	29	14	16	6	19	130
Totals	213	782	1,115	810	611	339	200	181	4,251

The following table shows averages in total for active participants in this valuation.

Averages	Amount
Age:	45.18
Service:	12.16

6. Valuation Methods and Assumptions

Cost Method
This valuation uses the Projected Unit Credit method with linear pro-ration to assumed benefit commencement.

Amortization
The unfunded liability was amortized over a closed period of 24 years using level percentage of pay for FYE 2015.

The unfunded liability was amortized over a closed period of 23 years using level percentage of pay for FYE 2016.

Coverage Status and Age of Spouse
Actual medical and dental coverage status is used. Females are assumed 3 years younger than male spouse.

Employees with family coverage are assumed to continue family coverage in retirement. Employees with individual coverage are assumed to elect individual coverage in retirement. Employees currently waiving coverage are assumed to continue to waive coverage in retirement.

All employees hired before 7/1/2006 and currently in the Preferred Provider Plus Plan are assumed to choose the Preferred Provider Plus Plan upon retirement, and receive 85% employer subsidy pre age 65. All other employees hired before 7/1/2006 are assumed to elect a medical plan other than the Preferred Provider Plus Plan and receive 90% subsidy pre age 65.

The employer subsidy percent for all employees hired on or after 7/1/2006 is assumed to follow the table given in Section 4. In particular, the subsidy percent does not depend upon the medical plan chosen by the employee.

Assets
Assets are valued using market value of assets. To estimate future market value of assets, the Trust is assumed to earn 7.00% interest per annum. Employer contributions to the Trust are assumed to be made at the end of the year.

Election Percentage
Participants are assumed to elect coverage based on service as described below:

Service	Election Rate
4 or less	N/A
5 - 9	5%
10 or more	95%

Interest Assumptions

Funded Discount Rate	7.00%
Partially Funded Discount Rate	4.50%
Unfunded Discount Rate	4.00%
Payroll Growth	3.00%

Trend Assumptions

Based upon the SOA Model that was released in November 2012 (v. 12.11), assuming 0.9% GDP growth.

Medical and Prescription Drug	Base	Sensitivity
2013	8.0%	9.0%
2014	7.0%	8.0%
2015	6.5%	7.5%
2016	6.0%	7.0%
2017 – 2022	5.1%	6.1%
2023 – 2028	5.0%	6.0%
2029	4.9%	5.9%
2030 – 2039	4.9%	5.9%
2040 – 2049	4.6%	5.6%
2050 – 2059	4.4%	5.4%
2060 – 2069	4.2%	5.2%
Ultimate	3.7%	4.7%

Dental costs were assumed to increase 5 percent per annum.

Decrement Assumptions

Below is a summary of decrements used in this valuation. Sample retirement, disability, and termination rates are illustrated in the tables below.

Mortality Decrements	Description
(1) Healthy	RP-2000 Fully Generational with Scale AA Combined Healthy Table, sex distinct
(2) Disabled	RP-2000 Fully Generational Combined with Scale AA Disabled Table, sex distinct

Rates of normal retirement

Age	*At least 30 years of service*		*Less than 30 years of service*	
	Male	*Female*	*Male*	*Female*
45	10.0%	9.0%	-	-
46	10.0%	9.0%	-	-
47	10.0%	9.0%	-	-
48	10.0%	9.0%	-	-
49	10.0%	9.0%	-	-
50	10.0%	9.0%	-	-
51	10.0%	9.0%	-	-
52	10.0%	9.0%	-	-
53	10.0%	9.0%	-	-
54	10.0%	9.0%	-	-
55	10.0%	10.0%	-	-
56	10.0%	10.0%	-	-
57	10.0%	10.0%	-	-
58	10.0%	10.0%	-	-
59	10.0%	11.0%	-	-
60	13.0%	12.0%	-	-

61	15.0%	16.0%	-	-
62	22.0%	23.0%	14.0%	21.0%
63	18.0%	20.0%	14.0%	16.0%
64	18.0%	18.0%	14.0%	16.0%
65	20.0%	20.0%	16.0%	16.0%
66	22.0%	22.0%	16.0%	19.0%
67	18.0%	15.0%	16.0%	15.0%
68	18.0%	15.0%	16.0%	15.0%
69	18.0%	15.0%	16.0%	15.0%
70	18.0%	20.0%	16.0%	15.0%
71	18.0%	20.0%	16.0%	15.0%
72	18.0%	20.0%	16.0%	15.0%
73	18.0%	20.0%	16.0%	15.0%
74	18.0%	20.0%	16.0%	15.0%
75 & over	100.0%	100.0%	100.0%	100.0%

Reformed system -
Additional rate added to annual rate of normal retirement at age of first eligibility

Age	*At least 30 years*	*Less than 30 years*
55 and Under	35.0%	-
56	28.0%	-
57	21.0%	-
58	14.0%	-
59	7.0%	-
60	0.0%	-
61	0.0%	-
62	0.0%	-
63	0.0%	-
64	0.0%	-
65+	0.0%	25.0%

Rates of early retirement

	Non-Reformed		Reformed	
Age	*Male*	*Female*	*Male*	*Female*
55	2.0%	3.5%		
56	1.5%	3.0%		
57	2.0%	3.5%		
58	2.0%	3.5%		
59	3.5%	4.5%		
60	4.5%	5.5%	10.0%	15.0%
61	6.5%	7.0%	6.5%	7.0%
62			6.5%	7.0%
63			6.5%	7.0%
64			6.5%	7.0%

Rates of disability

Age	*Male*	*Female*
25	0.02947%	0.24930%
30	0.02947%	0.24930%
35	0.02947%	0.05706%
40	0.09792%	0.11493%
45	0.19577%	0.19692%
50	0.29366%	0.28692%
55	0.39158%	0.49185%
60	0.48941%	0.49185%

Annual rates of withdrawal for first 10 years of service

Service	*Male*	*Female*
0	18.00%	14.00%
1	15.00%	12.50%
2	14.00%	12.00%
3	11.00%	9.00%
4	8.50%	7.75%
5	6.50%	6.50%
6	5.75%	5.50%
7	5.00%	5.00%
8	4.50%	4.25%
9	3.75%	4.00%

Annual rates of withdrawal after 10 years of service

Age	*Male*	*Female*
25	4.00%	4.00%
30	3.75%	4.00%
35	3.00%	3.50%
40	1.50%	2.50%
45	1.00%	2.00%
50	1.00%	1.00%
55	1.00%	1.00%
60	1.00%	1.00%
65	1.00%	1.00%

Claims Assumption

Monthly paid claims, administrative expense and enrollment reports for retirees (only) for the year ending June 30, 2012 were supplied by the providers. Claims were divided into pre and post 65 age retirees. The claims were projected to Fiscal Year 2014. Claims were projected assuming annual increases of 9 percent for all claims.

Medical claims were increased by 1.0 percent to adjust for IBNR. The prescription drug claims were reduced by 6 percent to account for prescription drug rebates. Administrative costs are assumed to be $721 per year for pre-age 65 retirees and $301 per year for post age 65 retirees.

The pre Medicare cost for family medical coverage was assumed to be 2.07 times the cost for single medical coverage. The post Medicare cost for family medical coverage was assumed to be 2 times the cost for single medical coverage.

The cost for family dental coverage was assumed to be 2 times the cost for single dental coverage.

The chart below shows the current cost (per annum) broken down between the published per capita cost (i.e. the blended rates) and the hidden subsidy.

Total Costs	**Single**	**Family**
1. Explicit Costs		
a. Pre-Medicare	9,285	19,220
b. Post-Medicare	6,001	12,002
2. Total Medical and Drug Costs		
a. Under 50	6,536	13,530
b. Age 50-54	7,907	16,367
c. Age 55-59	9,174	18,990
d. Age 60-64	10,744	22,240
e. Age 65-69	4,766	9,532
f. Age 70-74	5,557	11,114
g. Age 75-79	5,693	11,386
h. Age 80-84	5,976	11,952
i. Age 85 and over	5,850	11,700
3. Dental Costs	323	646

Other Assumptions

- Retirees with parent/child medical coverage are valued as if they have individual coverage.

Changes to assumptions and methods since prior valuation

The decrements (retirement, termination, disability) were updated to match the rates used to value the State of Maryland Teachers' Pension System for its 7/1/2012 valuation.

The medical trend was updated to a trend based upon the SOA Model that was released in November 2012 (v. 12.11), 0.9% GDP growth. The prior valuation used the SOA Model that was released in April 2010, 0.9% GDP growth assumption.

7. Glossary

Annual OPEB Cost (AOC): An accrual-basis measure of the periodic cost of an employer's participation in an OPEB plan.

Annual Required Contributions of the Employer(s) (ARC): The employer's periodic required contributions to an OPEB plan, calculated in accordance with the parameters.

Covered Group: Plan members included in an actuarial valuation.

Employer's Contributions: Contributions made in relation to the annual required contributions of the employer (ARC). An employer has made a contribution in relation to the ARC if the employer has (a) made payments of benefits directly to or on behalf of a retiree or beneficiary, (b) made premium payments to an insurer, or (c) irrevocably transferred assets to a trust, or an equivalent arrangement, in which plan assets are dedicated to providing benefits to retirees and their beneficiaries in accordance with the terms of the plan and are legally protected from creditors of the employer(s) or plan administrator.

Fully Funded Rate: The discount rate assumption used to determine liabilities under the GASB45 accounting standard if the Plan's funding policy is to contribute consistently to the Plan (through a combination of benefit payments to participants or contributions to an irrevocable trust) an amount to an at least equal to the ARC. The rate is based on the long term expected return of the OPEB trust fund investments.

Funded Ratio: The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Healthcare Cost Trend Rate: The rate of change in per capita health claim costs over time as a result of factors such as medical inflation, utilization of healthcare services, plan design, and technological developments.

Investment Return Assumption (Discount Rate): The rate used to adjust a series of future payments to reflect the time value of money.

Level Percentage of Projected Payroll Amortization Method: Amortization payments are calculated so that they are a constant percentage of the projected payroll of active plan members over a given number of years. The dollar amount of the payments generally will increase over time as payroll increases due to inflation; in dollars adjusted for inflation, the payments can be expected to remain level. This method can not be used if the plan is closed to new entrants.

Net OPEB Obligation: The cumulative difference since the effective date of this Statement between annual OPEB cost and the employer's contributions to the plan, including the OPEB liability (asset) at transition, if any, and excluding (a) short-term differences and (b) unpaid contributions that have been converted to OPEB-related debt.

Normal Cost or Normal Actuarial Cost: That portion of the Actuarial Present Value of benefit plan benefits and expenses which is allocated to a valuation year by the Actuarial Cost Method.

OPEB Plan: An OPEB plan having terms that specify the amount of benefits to be provided at or after separation from employment. The benefits may be specified in dollars (for example, a flat dollar payment or an amount based on one or more factors such as age, years of service, and compensation), or as a type or level of coverage (for example, prescription drugs or a percentage of healthcare insurance premiums).

Other Post-employment Benefits: Post-employment benefits other than pension benefits. Other post-employment benefits (OPEB) include post-employment healthcare benefits, regardless of the type of plan that provides them, and all post-employment benefits provided separately from a pension plan, excluding benefits defined as termination offers and benefits.

Partially Funded Rate: The discount rate assumption used determine liabilities under the GASB45 accounting standard if the Plan's funding policy is to contribute consistently some amount to an irrevocable trust but at a level less than the ARC. The partially funded rate is between the unfunded and funded rates.

Pay-as-you-go (PAYG): A method of financing a benefit plan under which the contributions to the plan are generally made at about the same time and in about the same amount as benefit payments and expenses becoming due.

Payroll Growth Rate: An actuarial assumption with respect to future increases in total covered payroll attributable to inflation; used in applying the level percentage of projected payroll amortization method.

Plan Liabilities: Obligations payable by the plan at the reporting date, including, primarily, benefits and refunds due and payable to plan members and beneficiaries, and accrued investment and administrative expenses. Plan liabilities do not include actuarial accrued liabilities for benefits that are not due and payable at the reporting date.

Plan Members: The individuals covered by the terms of an OPEB plan. The plan membership generally includes employees in active service, terminated employees who have accumulated benefits but are not yet receiving them, and retired employees and beneficiaries currently receiving benefits.

Post-employment: The period between termination of employment and retirement as well as the period after retirement.

Post-employment Healthcare Benefits: Medical, dental, vision, and other health-related benefits provided to terminated or retired employees and their dependents and beneficiaries.

Select and Ultimate Rates: Actuarial assumptions that contemplate different rates for successive years. Instead of a single assumed rate with respect to, for example, the investment return assumption, the actuary may apply different rates for the early years of a projection and a single rate for all subsequent years. For example, if an actuary applies an assumed investment return of 8 percent for year 2000, 7.5 percent for 2001, and 7 percent for 2002 and thereafter, then 8 percent and 7.5 percent are select rates, and 7 percent is the ultimate rate.

Unfunded Rate: Discount rate assumption used to determine liabilities under the GASB45 accounting standard if the Plan's has no trust assets. The rate is based on the long term expectations for the rate of return on internal funds.

Appendix 1
Harford County Public Schools
FYE 2014 Plan Expense under GASB 45
Based on a Roll forward of FYE 2013 Results
For Disclosure Purposes

Below is a summary of the calculation of the Plan's Expense as of July 1, 2013. These results are based on the data, methods, assumptions and plan provisions as described in our valuation report dated March 20, 2012. The partially funded interest rate of 4.25% is based on the School's funding policy for FYE 2014. The expense is calculated as of the end of the year.

(1) Interest Rate	4.25%
(2) Liability as of July 1,2013	$696,905,000
(3) Assets as of July 1, 2013	$28,024,880
(4) Amortization of Unfunded Accrued Liability	
(a) Unfunded Accrued Liability	$668,880,120
(b) Amortization Period (years)	25
(c) Amortization Factor (rounded)	20.83
(d) Amortization Amount	$32,115,000
(5) Annual Required Contribution of Employer (ARC) – As of End of Fiscal Year	
(a) Normal Cost	$27,908,000
(b) Amortization of Unfunded Accrued Liability	$32,115,000
(c) Total ARC	$60,023,000
(6) Annual OPEB Cost (AOC)	
(a) ARC	$60,023,000
(b) Less NOO Amortization	($7,816,000)
(c) Plus Interest on NOO	$6,918,000
(d) Total AOC	$59,125,000
(7) Net OPEB Obligation (NOO)	
(a) NOO as of July 1, 2013	$162,782,929
(b) FY2014 AOC	$59,125,000
(c) Estimated Payments of Retirees	($19,945,000)
(d) Estimated Trust Contribution	($2,000,000)
(e) Projected End of Year NOO (a + b + c + d)	$199,962,929

Appendix 2

CAFR Disclosures

Schedules of Employer Contributions

Year Ended June 30	*Annual OPEB Cost*	*Actual Contribution[1]*	*Percentage Contributed*	*Net OPEB Obligation*
2011	$46,036,000	$18,308,000	39.8%	109,940,815
2012	42,027,000	24,556,886	58.4%	127,410,929
2013	55,980,000	20,608,000	36.8%	162,782,929
2014	59,125,000	21,945,000	37.1%	199,962,929
2015	56,570,000	24,568,000	43.4%	231,964,929

1/ Sum of estimated retiree medical payments plus scheduled trust contributions

Schedule of Funding Progress

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (UAAL) (c)	Funded Ratio (a)/(b)	Covered Payroll (c)	UAAL as a % of Covered Payroll [(b)-(a)]/(c)
7/1/2010	10,962,506	534,277,000	523,314,494	2.05%		
7/1/2011	15,255,626	462,698,000	447,442,374	3.30%		
7/1/2012	23,541,000	660,933,000	637,392,000	3.56%		
7/1/2013	28,024,880	696,905,000	668,880,120	4.02%		
7/1/2014	31,986,622	673,727,000	641,740,378	4.75%		

The schedule of funding progress presented as required supplementary information (RSI) following the notes to financial statements, present multiyear trend information about whether the actuarial values of the plan assets are increasing or decreasing over time relative to the AALs for benefits.

The Schools' annual contribution is based on annual actuarial valuations.

Actuarial Cost Method: Projected Unit Credit
Amortization Method: Closed, level percent of payroll
Amortization Period 24 years (as of July 1, 2014)
Asset Valuation Method: Market Value of Assets
Actuarial Assumptions
Discount Rate: 4.50% for FYE 2014 and FYE 2015
Payroll Increase 3.00%
Medical Trend Based on Society of Actuaries Long Term Medical Trend Model, the 2013 rate is 8.00% decreasing gradually. The rate in 2050 is 5.00%. The ultimate rate is 4.30% and is attained in 2070.

Appendix 3

The Actuarial Valuation Process

Step 1 – Determining the Present Value of Benefits

The first step of the actuarial valuation process is to determine the Present Value of Benefits (PVB). The PVB represents the estimated amount needed to provide all future OPEB benefits.

For a retiree it is based on the following assumptions:

- The current cost of medical benefits
- How fast medical costs will increase (medical trend)
- Mortality

For an employee it *also* considers the following assumptions:

- How many employees will leave before becoming eligible for the benefit
- At what age will employees retire
- What percentage of eligible retirees will elect coverage
- What percent of eligible retirees will have spouse coverage

Based on these assumptions, the actuary estimates a payment stream for each year in the future.

The streams of payments are discounted to the valuation date using a discount rate. The discount rate is similar to the rate of return you would expect to earn on funds in a bank or other investment vehicle. The sum of the discounted payment stream is the PVB.

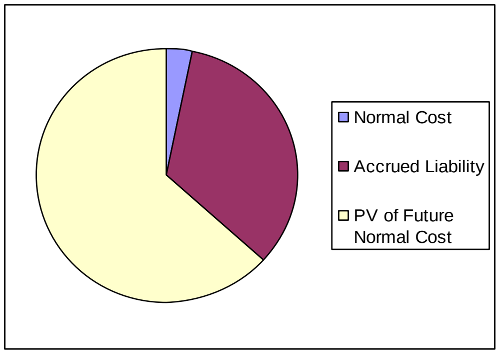
Step 2 – The Actuarial Funding Method

If the entire present value of benefits was deposited into a trust when every new employee was hired, there would be (in the absence of actuarial losses caused by experience different than that assumed) no cost after the first year. The goal of an actuarial funding method is to spread the present value of benefits throughout the employee's career.

Accordingly, the second step of an actuarial valuation is to divide the Present Value of Benefits into three components:

- The normal cost (the liability accrual for the year)
- The accrued liability (the liability amount allocated for past service)
- The present value of future normal costs (the liability amount allocated to the future)

The following chart illustrates the 3 components of the Present Value of Benefits:



For a retired employee, the present value of benefits equals the accrued liability.

Step 3 – Determining the Annual Required Contribution (ARC)

Under the GASB standard, the Annual required contribution is equal to the sum of the:

- Normal Cost and
- An Amortization Payment of the Unfunded Accrued Liability

The unfunded accrued liability is equal to the accrued liability minus the assets (if any).

The amortization payment is not a straight line amortization payment. It is more like a mortgage payment on a house. It includes interest on the unfunded liability and a principal payment, and is designed to be a level payment. This could mean level as in a dollar payment, or as a level percentage of payroll. If it is a level percentage of payroll, the payment amount will increase as payroll increases.

Under the GASB standard, this payment period could be up to 30 years.

Also under the GASB standard, the payment period could be "closed" or "open". A "Closed" payment period decreases each year. The unfunded amount will be zero at the end of the payment period. An "Open" payment period is reset each year to 30 years. The effect of resetting the payment period each year is similar to refinancing a loan every year. The loan will never be repaid.

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