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Report of the Actuary on the Annual Valuation of the Gwinnett County Defined Benefit Plan

Prepared as of January 1, 2019

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May 14, 2019

Board of Trustees
Gwinnett County Defined Benefit Plan
75 Langley Drive
Lawrenceville, GA 30045

Dear Members of the Board:

We are pleased to submit herewith the results of the annual actuarial valuation of the Gwinnett County Defined Benefit Plan prepared as of January 1, 2019. The purpose of this report is to provide a summary of the funded status of the System as of January 1, 2019 and recommend employer contributions for fiscal year ending 2020. Financial reporting requirements prescribed by Governmental Accounting Standards Board Statements Nos. 67 and 68 will be provided in separate reports. While not verifying the data at source, the actuary performed tests for consistency and reasonability.

The actuarially determined contribution (ADC) for the fiscal year ending 2020 is $46,586,421, which will liquidate the unfunded accrued liability over a 14-year period.

In determining the County's contribution requirement we have included interest to reflect our understanding that the County makes bi-weekly contributions throughout the fiscal year. In the table below we present the County's contribution requirements if the County pays the full amount on January 1, 2020 or in bi-weekly installments throughout the 2020 fiscal year.

County contribution payable January 1, 2020	$44,902,713
Interest for bi-weekly payments during 2020 fiscal year	$1,683,708
County contribution payable in bi-weekly installments	$46,586,421

The promised benefits of the Plan are included in the actuarially calculated employer contributions which are developed using the projected unit credit cost method. Gains and losses are reflected in the unfunded accrued liability that is being amortized by regular annual contributions as a level dollar within a 14 year period. The assumptions recommended by the actuary are in the aggregate reasonably related to the experience under the Plan and to reasonable expectations of anticipated experience under the Plan.

Assuming that the annual required employer contributions to the Plan are made by the County from year to year in the future at the contributions recommended on the basis of the successive actuarial valuations, the continued sufficiency of the retirement fund to provide the benefits called for under the Plan may be safely anticipated.

Future actuarial results may differ significantly from the current results 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. Since the potential impact of such factors is outside the scope of a normal annual actuarial valuation, an analysis of the range of results is not presented herein.

In addition, I certify that I am a member of the American Academy of Actuaries, that I meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein, that I have experience in performing valuations for public retirement systems, that the valuation was prepared in accordance with the standards of practice prescribed by the Actuarial Standards Board, and that the actuarial calculations were performed by qualified actuaries in accordance with accepted actuarial procedures, based on the current provisions of the Plan and on actuarial assumptions that are internally consistent and reasonably based on the actuarial experience of the Plan.

We trust that the report will meet the approval of the Board and will furnish the desired information concerning the financial condition of the Plan.

Respectfully submitted,

Todd B. G

Todd Green ASA, FCA, MAAA
Principal and Consulting Actuary

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Section I - Summary of Principal Results

For convenience of reference, the principal results of the current valuation are summarized below.

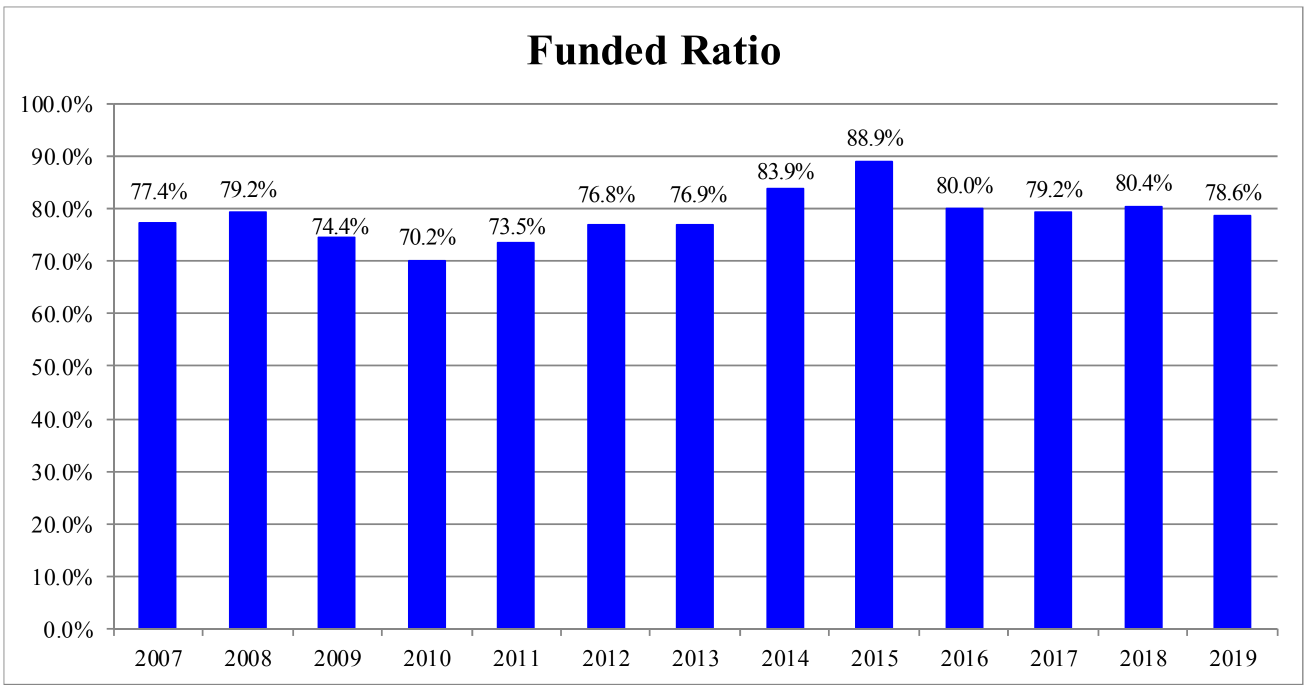
Valuation Date		January 1, 2019		January 1, 2018
Active Members:				
a. Number		1,208		1,320
b. Covered compensation	$	93,213,483	$	93,709,196
Retired Members, Disableds and Beneficiaries:				
a. Number		2,369		2,291
b. Total Annual Benefits	$	73,021,011	$	68,789,041
Number of Terminated Vested Members		807		806
Assets:				
a. Market Value	$	965,241,000	$	1,043,206,000
b. Actuarial Value	$	1,038,111,000	$	1,017,663,000
Actuarial Accrued Liability	$	1,319,949,399	$	1,265,966,714
Unfunded actuarial accrued liability (UAAL)	$	281,838,399	$	248,303,714
Amortization Period		14 years		15 years
Fiscal Year Ending		December 31, 2020		December 31, 2019
Total Actuarially Determined Contribution (ADC)				
a. Normal Cost	$	17,002,109	$	16,984,982
b. UAAL Amortization Payment		30,118,499		25,478,891
c. Administrative Expenses		757,000		724,000
d. Interest Adjustment		5,035,141		4,541,936
e. Total ADC	$	52,912,749	$	47,729,809
Total ADC				
a. Required County Contribution	$	46,586,421	$	41,349,740
b. Expected Employee Contribution		6,326,328		6,380,069
c. Total ADC	$	52,912,749	$	47,729,809

Section I - Summary of Principal Results

A. The promised benefits of the Gwinnett County Defined Benefit Plan are included in the actuarially calculated contribution rates which are developed using the projected unit credit cost method. Gains and losses are reflected in the unfunded accrued liability that is being amortized by regular annual contributions as a level dollar amount within a 14 year period. The plan is now closed to new participants effective January 1, 2007. The assumptions recommended by the actuary are in the aggregate reasonably related to the experience under the Plan and to reasonable expectations of anticipated experience under the Plan.

The actuarially determined contribution for the fiscal year ending 2020 is $46,586,421, which will liquidate the unfunded accrued liability over a 14-year period.

The following table represents the County's historical funded ratio. The funded ratio represents the percentage of the plan liability that is covered by the actuarial value of plan assets as of the valuation date.



B. The major benefit and contribution provisions of the County as reflected in the valuation are summarized in Section VIII. There have been no changes since the previous valuation.

C. Section VII of this report outlines the full set of actuarial assumptions and methods used in the valuation.

D. The projected unit credit cost method was used to prepare the valuation. Section VII contains a brief description of the actuarial cost method.

E. Comments on the valuation results as of January 1, 2019 are given in Section I and further discussion of the contributions is set out in Section II.

Contributions Payable

A. The Gwinnett County Defined Benefit Plan states that each member shall contribute an amount equal to the Member's Compensation multiplied by a specified percentage based on the contribution rates associated with Schedules B and C of the plan. As of January 1, 2019, the estimated employee contributions are $6,326,328.

B. The County contribution for the 2020 fiscal year consists of three components. The first component is the normal cost which includes administrative expenses. Under the projected unit credit cost method, the normal cost represents benefits that accrue over a one year period. Thus, for this year's valuation, this number represents the value of benefits to accrue during the 2019 plan year. The normal cost is $17,759,109 which includes administrative expenses of $757,000. Of the $17,759,109 the employees pay $6,326,328 which leaves $11,432,781 as the employer normal cost.

C. The second component of the County contribution is an interest adjustment to reflect that the payment is determined on the valuation date and payable one year from the valuation date assuming contributions are deposited on a bi-weekly basis. This amount is $5,035,141. If the County chooses to pay the entire required contribution on January 1, 2020 the interest adjustment will be reduced by $1,683,708.

D. The third component is the amortization of the unfunded liability. The unfunded liability is amortized on a level dollar basis over a closed 14-year period. On this basis, the amortization cost is $30,118,499.

E. The total required contribution to the Plan for the 2020 fiscal year is $52,912,749. The employee portion of this required contribution is $6,326,328, while the County's portion of this required contribution is $46,586,421. Under the Official Code of Georgia 47-20-10 the minimum funding standards are deemed to have been met if the employer contribution is equal to or greater than the annual required contribution as determined in accordance with the provisions of GASB No. 25 and No. 27. The County's actuarially determined contribution satisfies Official Code of Georgia 47-20-10.

Assets

As of January 1, 2019 the total market value of assets amounted to $965,241,000. The actuarial value of assets used for the current valuation was $1,038,111,000. Section IV shows the development of the actuarial value of assets as of January 1, 2019. The method for determining the Actuarial Value of Assets recognizes investment gains and losses over a five year period. As of the valuation date, the market value of assets are $72,870,000 less than the actuarial value of assets, which indicates investment losses will be recognized over the next four years. Absent of investment gains in the future, the employer contribution will increase over the next four years as the total loss of $72,870,000 is recognized.

Comments on the Valuation

The valuation was prepared in accordance with the actuarial assumptions and the actuarial cost method set forth in Section VII. The valuation shows that the System has a total actuarial accrued liability of $1,319,949,399. The liability on account of present retired members, beneficiaries of deceased members, and disabled members is $884,537,841. Terminated members account for $29,478,899 of the liability, and $405,932,659 of the actuarial accrued liability is associated with the active members. As of January 1, 2019, the System has actuarial value of assets of $1,038,111,000 against these liabilities.

There remains $281,838,399 as the amount of unfunded accrued liability. The amount necessary to fully amortize the unfunded liability over a 14 year period is $30,118,499. The development of the unfunded accrued liability is shown in Section II.

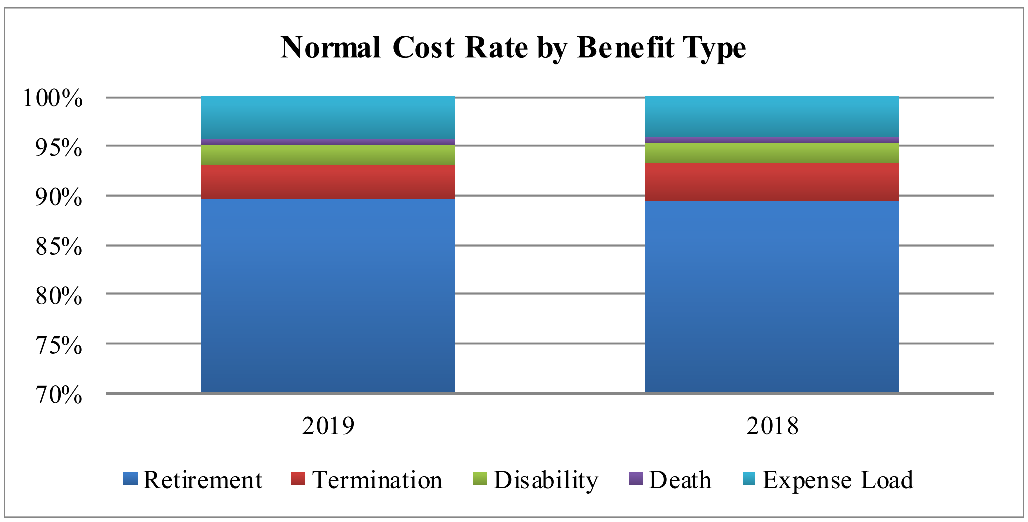
The normal cost contribution is equal to the actuarial present value of benefits accruing during the current year. For the 2019 plan year the normal cost contribution including expenses is determined to be $17,759,109 and is determined under the projected unit credit method. An interest adjustment of $3,351,433 reflects that the required contribution is determined on January 1, 2019 and payable one year from the valuation date. The additional interest adjustment of $1,683,708 reflects the County will contribute the required contribution bi-weekly throughout the year. If the County elects to pay the actuarial determined contribution in full on January 1, 2020, the bi-weekly interest adjustment is not necessary.

Section II - Plan Contribution Development

Normal Cost

The Normal Cost represents active participant benefits that are to accrue during the 2019 plan year and is a component of the contribution. The following table shows the Normal Cost as it is attributable to plan benefits under the current plan.

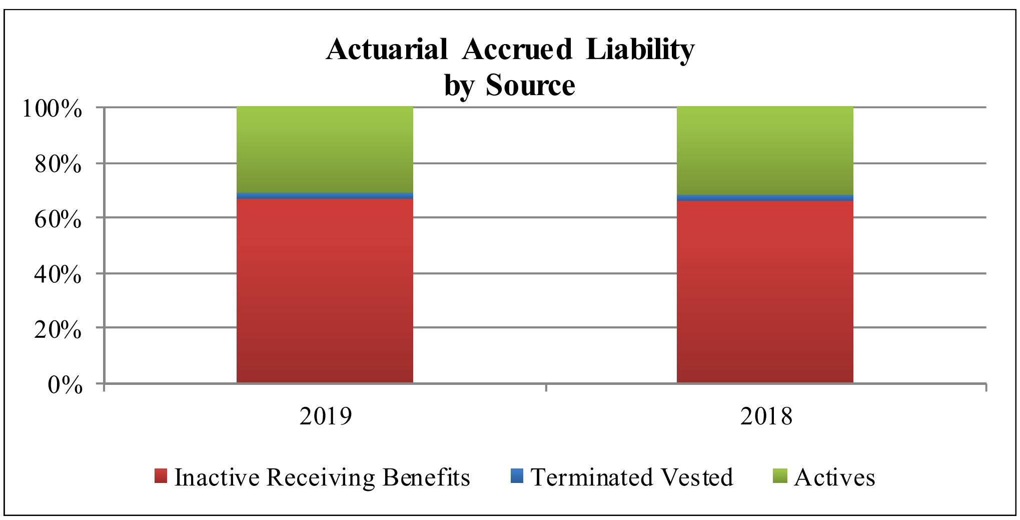
		January 1, 2019	January 1, 2018
1.	**Normal Cost**		
	a. Retirement Benefits	$ 15,937,357	$ 15,837,825
	b. Termination Benefits	613,333	675,782
	c. Disability Benefits	351,497	366,120
	d. Death Benefits	99,922	105,255
	e. Total	**$ 17,002,109**	**$ 16,984,982**
2.	**Expense Load**	**$ 757,000**	**$ 724,000**
3.	**Normal Cost as a Percent of Payroll**		
	a. With the Expense Load	**19.05%**	**18.90%**



Actuarial Accrued Liability

The Actuarial Accrued Liability represents the obligations of the plan as of the valuation date for active and inactive participant benefits. The following table shows the components of the liability.

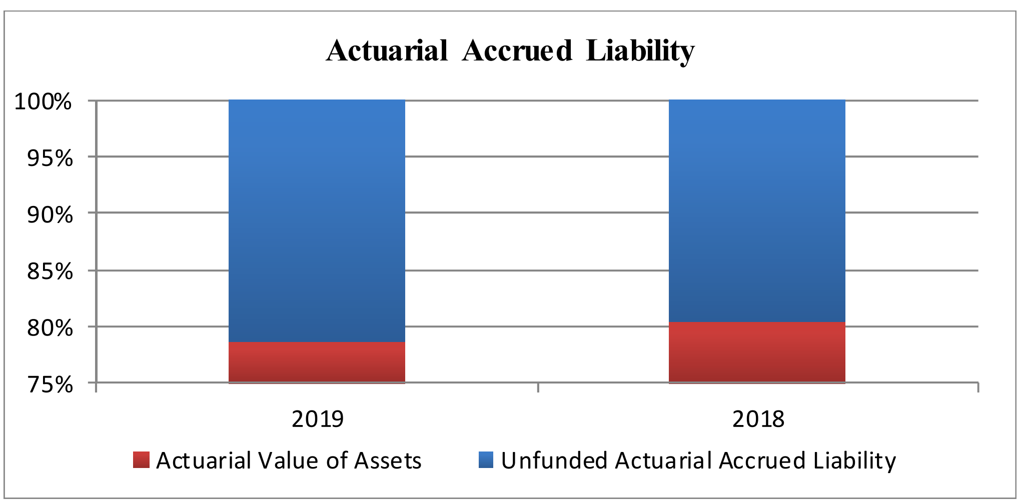
		January 1, 2019	January 1, 2018
1.	**Actuarial Accrued Liability**		
	a. Inactive Participants		
	i. Inactive Participants Receiving Benefits	$ 884,537,841	$ 841,922,871
	ii. Terminated Participant Benefits Deferred	29,478,899	27,289,874
	iii. Total Inactive Present Value	914,016,740	869,212,745
	b. Active Participants Liability	$ 405,932,659	$ 396,753,969
2.	**Total Actuarial Accrued Liability**	**$ 1,319,949,399**	**$ 1,265,966,714**



Development of the Unfunded Actuarial Accrued Liability

The Unfunded Actuarial Accrued Liability represents the Actuarial Accrued Liability over the Actuarial Value of Assets. The Unfunded Accrued Liability as of January 1, 2019 is $281,838,399, in other words, the plan liabilities exceed the plan assets by this amount as of the valuation date. The following table shows the components of the Unfunded Actuarial Accrued Liability of the plan.

		January 1, 2019	January 1, 2018
1.	**Actuarial Accrued Liability**		
	a. Present Active Members	$ 405,932,659	$ 396,753,969
	b. Present retired members, beneficiaries and former members entitled to deferred vested benefits	914,016,740	869,212,745
	c. Total	$ 1,319,949,399	$ 1,265,966,714
2.	**Actuarial Value of Assets**	$ 1,038,111,000	$ 1,017,663,000
3.	**Unfunded Actuarial Accrued Liability (1c.) - (2)**	**$ 281,838,399**	**$ 248,303,714**



Development of the Actuarial Gain / (Loss)

The actuarial valuation process relies heavily on demographic and economic assumptions. Actuarial gains and losses occur from year to year when actual Plan experience is different from assumed experience. Experience gains and losses are reflected in the Unfunded Actuarial Accrued Liability and are amortized over a closed period. Actuarial gains represent beneficial experience that reduces contribution rates while actuarial losses increase contribution rates. The table below develops the actuarial gains / (losses).

(1)	Unfunded Accrued Liability (UAL) as of January 1, 2018	$ 248,303,714
(2)	Normal Cost	17,708,982
(3)	Contributions	48,052,000
(4)	Interest	16,939,069
(5)	Expected UAL at January 1, 2019 (1) + (2) - (3) + (4)	234,899,765
(6)	Actual UAL at January 1, 2019	281,838,399
(7)	Total Gain / (Loss) (5) - (6)	(46,938,634)
(8)	Asset Gain / (Loss)	(26,540,430)
(9)	Assumption Change	0
(10)	Liability Gain / (Loss) (7) - (8) - (9)	$ (20,398,204)

Development of the Actuarial Gain / (Loss)

1.	**Net Actuarial Gains/(Losses) During the 2018 Plan Year:**		
	a. Due to Salary	($11,679,997)	
	b. Due to Investment Performance	($26,540,430)	
	c. Due to Turnover	($5,597,869)	
	d. Due to New Retirements	($3,522,608)	
	e. Due to Mortality	($1,117,784)	
	f. Due to Disabled Retirements	$253,559	
	g. Total		($48,205,129)
2.	**Changes During the 2018 Plan Year due to:**		
	a. Assumption changes	$0	
	b. Method changes	$0	
	c. Plan changes	$0	
	d. Total change		$0
3.	**Other Effects (including Data Adjustments)**		$1,266,495
4.	**Total Gain / (Loss) as of January 1, 2019**		($46,938,634)

5. Comments on Gains/(Losses):

Salary/Service: Average salary increases of 9.0% compared to expected increases of 4.6%.
Investment Performance: 4.4% actual vs. 7.0% expected return on the actuarial value of assets.
Turnover: Net effect on the valuation liabilities of terminations of employment different from what was anticipated in the aggregate by the assumptions related to those events.
New retirements: Net effect of differences in expected vs. actual numbers of, and benefits for, new retirements and refund of employee contributions.
Assumption Changes: None
Method Changes: None
Plan Changes: None
Other Effects: Data adjustments, contribution timing, and differences between actual and expected benefit payments

Section III – Additional Disclosures

A. Plan Description:

The Gwinnett County Defined Benefit Plan is a single-employer defined benefit plan and the contributing entity is Gwinnett County. The employees covered are general employees and public safety employees. The Plan provides retirement benefits to participants according to provisions of the plan document normally in the form of a life annuity. The Plan may be amended at any time, at the sole discretion of the County.

The distribution of the number of employees by type of membership is as follows:

Number of Participants as of January 1, 2019		
1.	Retired participants, disabled and beneficiaries currently receiving benefits	2,369
2.	Terminated participants and beneficiaries entitled to benefits but not yet receiving benefits	807
3.	Active Participants	1,208
4.	Total	4,384

Effective January 1, 2007 the plan is closed to new entrants.

B. Summary of Actuarial Methods and Assumptions:

Valuation date	1/1/2019
Actuarial cost method	Projected Unit Credit
Amortization method	Level Dollar
Amortization period	Closed
Remaining amortization period	14 years
Asset valuation method	Five-year smoothed market value
Actuarial assumptions:	
Investment rate of return (includes inflation)	7.00%
Projected salary increases (includes inflation)	4.50% - 5.50%
Price Inflation	2.50%
Wage Inflation	3.50%
Cost-of-living adjustments	1.00%
Payroll increase	0.00%

C. Schedule of Funding Progress

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (UAAL) (b - a)	Funded Ratio (a / b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b - a) / c)
January 1, 2019	$ 1,038,111,000	$1,319,949,399	$ 281,838,399	78.6%	$ 93,213,483	302.4%
January 1, 2018	$ 1,017,663,000	$1,265,966,714	$ 248,303,714	80.4%	$ 93,709,196	265.0%
January 1, 2017	$ 966,170,000	$1,220,296,657	$ 254,126,657	79.2%	$ 95,658,479	265.7%
January 1, 2016	$ 933,994,000	$1,168,107,340	$ 234,113,340	80.0%	$ 92,832,221	252.2%
January 1, 2015	$ 887,207,000	$ 997,597,936	$ 110,390,936	88.9%	$ 98,504,606	112.1%
January 1, 2014	$ 802,857,000	$ 956,487,667	$ 153,630,667	83.9%	$ 103,602,731	148.3%
January 1, 2013	$ 704,197,000	$ 916,191,889	$ 211,994,889	76.9%	$ 110,766,363	191.4%

Section IV – Assets

Reconciliation of Market Value of Assets (in thousands)

1.	Market Value of Assets as of January 1, 2018	$1,043,206
2.	Adjustment	$ -
3.	Expenditures	
	a. Benefit Payments	$ (70,723)
	b. Administrative Expenses	(757)
	c. Total	$ (71,480)
4.	Income	
	a. Employer Contributions	$ 41,633
	b. Employee Contributions	6,419
	c. Total	$ 48,052
5.	Investment Income	
	a. Investment gains/losses	$ (50,310)
	b. Investment expense	(4,227)
	c. Total	$ (54,537)
6.	Market Value of Assets as of January 1, 2019	$ 965,241
7	Rate of Return on Market Value of Assets	(5.29)%

Development of Actuarial Value of Assets (in thousands)

	Valuation Date January 1:	2018	2019	2020	2021	2022	2023
1.	Actuarial Value Beginning of Year	$ 966,170	$ 1,017,663				
2.	Market Value End of Year	1,043,206	965,241				
3.	Market Value Beginning of Year	$ 925,851	$ 1,043,206				
4.	Cash Flow						
	a. Contributions	$ 44,807	$ 48,052				
	b. Benefit Payments	(67,254)	(70,723)				
	c. Administrative Expenses	(724)	(757)				
	d. Investment Expenses	(4,092)	(4,227)				
	e. Net	$ (27,263)	$ (27,655)				
5.	Investment Income						
	a. Market Total	$ 144,618	$ (50,310)				
	b. Assumed Rate	7.00%	7.00%				
	c. Amount for Immediate Recognition	68,091	76,431				
	d. Amount for Phased-In Recognition	$ 76,527	$ (126,741)				
6.	Phased-In Recognition of Investment Income						
	a. Current Year: 0.20 *5d	$ 15,305	$ (25,348)	$ -	$ -	$ -	$ -
	b. First Prior Year	(1,185)	15,305	(25,348)	-	-	-
	c. Second Prior Year	(15,019)	(1,185)	15,305	(25,348)	-	-
	d. Third Prior Year	(2,081)	(15,019)	(1,185)	15,305	(25,348)	-
	e. Fourth Prior Year	13,645	(2,081)	(15,019)	(1,185)	15,305	(25,348)
	f. Total Recognized Investment Gain	$ 10,665	$ (28,328)	$ (26,247)	$ (11,228)	$ (10,043)	$ (25,348)
7.	Actuarial Value End of Year	$ 1,017,663	$ 1,038,111				
8.	Difference Between Market & Actuarial Values	$ 25,543	$ (72,870)	$ (46,619)	$ (35,391)	$ (25,348)	$ -
9.	Rate of Return on Actuarial Value	7.82%	4.36%				

The actuarial value of assets recognizes assumed investment income (line 5c) fully each year. Differences between actual and assumed investment income (line 5d) are phased in over a closed 5 year period. During periods when investment performance exceeds the assumed rate, the actuarial value will tend to be less than market value. During periods when investment performance is less than assumed, the actuarial value will tend to be greater than the market value.

Overview

Actuarial Standards of Practice (ASOP) No. 51, issued by the Actuarial Standards Board, provides guidance on assessing and disclosing risks related to pension plan funding. This guidance is binding on all credentialed actuaries practicing in the United States. This standard was issued as final in September 2017 with application to measurement dates on or after November 1, 2018.

The term "risk" frequently has a negative connotation, but from an actuarial perspective, it may be thought of as simply the fact that what actually happens in the real world will not always match what was expected, based on actuarial assumptions. Of course, when actual experience is better than expected, the favorable risk is easily absorbed. The risk of unfavorable experience will likely be unpleasant, and so there is an understandable focus on aspects of risk that are negative.

Risk usually can be reduced or eliminated at some cost. Consumers, for example, buy auto and home insurance to reduce the risk of accidents or catastrophes. Another way to express this concept, however, is that there is generally some reward for assuming risk. Thus, retirement plans invest not just in US Treasury bonds which have almost no risk, but also in equities which are considerably riskier – because they have an expected reward of a higher return that justifies the risk.

Under ASOP 51, the actuary is called on to identify the significant risks to the pension plan and provide information to help those sponsoring and administering the plan understand the implications of these risks. In this section, we identify some of the key risks for the Plan and provide information to help interested parties better understand these risks.

Investment Risk

The investment return on assets is the most obvious risk – and usually the largest risk – to funding a pension plan. To illustrate the magnitude of this risk, please review the following chart showing the Asset Volatility Ratio (AVR), defined as the market value of assets divided by covered payroll.

Valuation	Market Value of Assets	Covered Payroll	Asset Volatility Ratio
2012	$634,497,000	$116,610,085	5.44
2013	$723,656,000	$110,766,363	6.53
2014	$862,455,000	$103,602,731	8.32
2015	$921,171,000	$98,504,606	9.35
2016	$899,516,000	$92,832,221	9.69
2017	$925,851,000	$95,658,479	9.68
2018	$1,043,206,000	$93,709,196	11.13
2019	$965,241,000	$92,835,984	10.40

The asset volatility ratio is especially useful to compare across plans or through time. It is also frequently useful to consider how the AVR translates into changes in the Required Contribution Rate (actuarially determined contribution rate). For example, the following table demonstrates that with an AVR of 10.00, if the market value return is 10% below assumed, or -3.00% for Gwinnett County, there will be an increase in the Required Contribution Rate of 0.79% payroll in the first year. Without asset smoothing or without returns above the expected return in the next four years, the impact on the Required Contribution Rate would be 11.05%. A higher AVR would produce more volatility in the Required Contribution Rate.

AVR	Unsmoothed Amortization	Smoothed Amortization
6.0	6.63%	0.47%
8.0	8.84%	0.63%
10.0	11.05%	0.79%
12.0	13.26%	0.95%

Sensitivity Measures

Valuations are generally performed with a single set of assumptions that reflects the best estimate of future conditions, in the opinion of the actuary and typically the governing board. Note that under actuarial standards of practice, the set of economic assumptions used for funding must be consistent. To enhance the understanding of the importance of an assumption, a sensitivity test can be performed where the valuation results are recalculated using a different assumption or set of assumptions.

The following tables contains the key measures for Gwinnett County under the valuation assumption for investment return of 7.00%, along with the results if the assumption were 6.00% or 8.00%. In this analysis, only the investment return assumption is changed. Consequently, there may be inconsistencies between the investment return and other economic assumptions such as inflation or payroll increases. In addition, simply because the valuation results under alternative assumptions are shown here, it should not be implied that Cavanaugh Macdonald Consulting believes that either assumption (6.00% or 8.00%) would comply with actuarial standards of practice.

As of January 1, 2019	Plan's Normal Cost	Accrued Liability	Unfunded Accrued Liability	Funded Status
7.00% (current Discount rate)	11.41%	1,319,949,399	281,838,399	78.65%
6.00%	14.72%	1,478,565,973	440,454,973	70.21%
8.00%	8.90%	1,188,145,397	150,034,397	87.37%

The following tables contains the sensitivity of the assumed inflation of 2.50%, along with the results if the assumption was increased and decreased by 1.00%. In this analysis, the inflation assumption is changed. Consequently, when the inflation assumption is reduced by 1%, the corresponding assumed rate of return and the assumed wage inflation were both reduced by 1%. When the inflation assumption is increased by 1%, the assumed rate of return and the assumed wage inflation are both increased by 1%.

As of January 1, 2019	Current Inflation Rate	-1% Inflation Rate	+1% Inflation Rate
a) Accrued Liability	1,319,949,399	1,463,093,994	1,199,539,011
b) Market Value of Assets	965,241,000	965,241,000	965,241,000
c) Unfunded Liability (Surplus) [(a)-(b)]	354,708,399	497,852,994	234,298,011
d) Funded Ratio [(b)/(a)]	73.13%	65.97%	80.47%

Mortality Risk

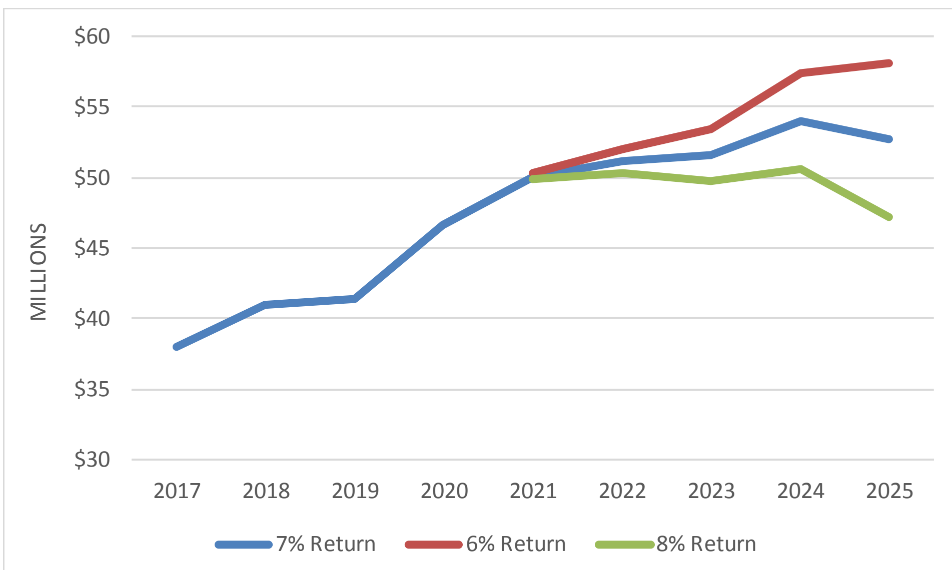
The mortality assumption is a significant assumption for valuation results, second only to the investment assumption in most situations. The Gwinnett County mortality assumption utilizes a mortality table with separate rates for males and females.

The future, however, is not known, and actual mortality improvements may occur at a faster rate than expected, or at a slower rate than expected (or even decline). Although changes in mortality will affect the benefits paid, this assumption is carefully studied through annual improvements to smoothly reflect unfolding experience.

As of January 1, 2019	Current Mortality	10% Lower Mortality Rates	10% Higher Mortality Rates
a) Accrued Liability	1,319,949,399	1,343,896,434	1,297,720,257
b) Market Value of Assets	965,241,000	965,241,000	965,241,000
c) Unfunded Liability (Surplus) [(a)-(b)]	354,708,399	378,655,434	332,479,257
d) Funded Ratio [(b)/(a)]	73.13%	71.82%	74.38%

Contribution Risk

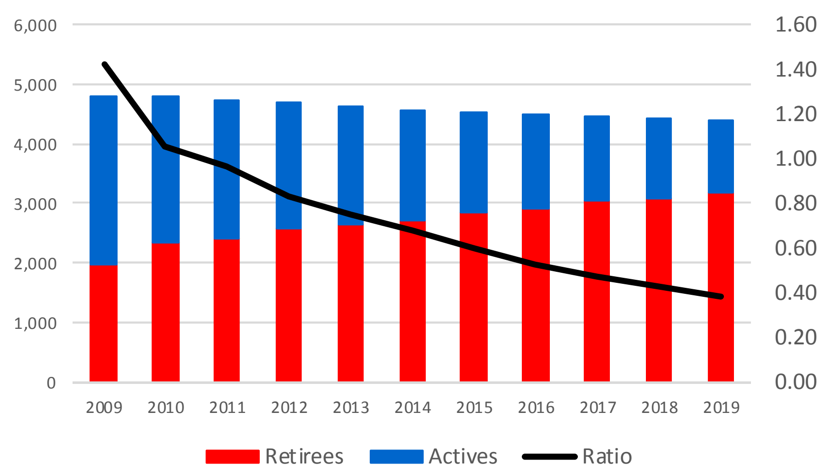
The Gwinnett County Defined Benefit Plan is funded by member and employer contributions to the trust fund, together with the earnings on these accumulated contributions. The annual valuation determines the employer's Actuarial Determined Employer Contribution (ADEC). The ADEC changes from year to year based upon actual experience. ADEC's are very sensitive to investment performance. The Plan's assumed rate of return is 7.00%. The table below illustrates past employer contribution amounts and projected employer contribution amounts assuming the Plan earns the assumed rate of 7%, 6% and 8% over the coming five years. Actual returns less than the assumed rate will increase the ADEC and actual returns higher than the assumed rate or return will reduce the ADEC.



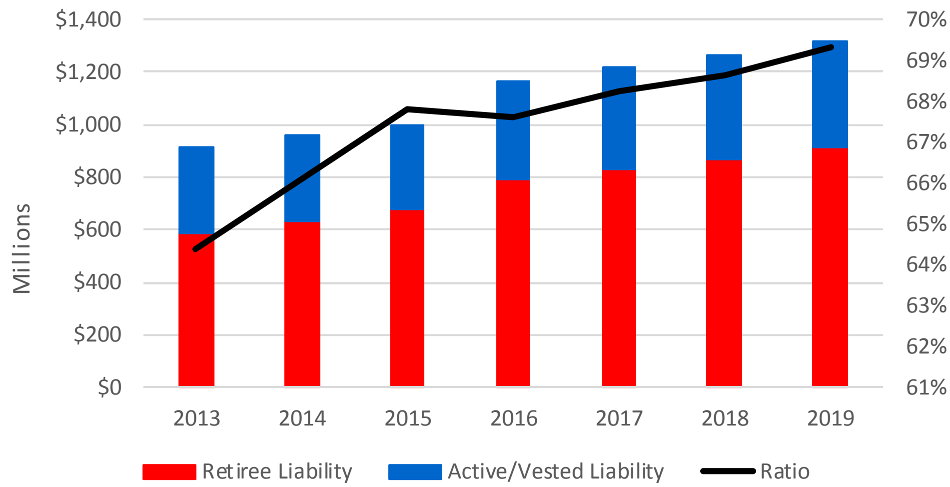
Maturity Measures

Most of the public retirement systems in the United States were created over 40 years ago. The aging of the population, including the retirement of the baby boomers, has created a shift in the demographics of most retirement systems. This change is not unexpected and has, in fact, been anticipated in the funding of the retirement systems. Even though it was anticipated, the demographic shift and maturing of the plans have increased the risk associated with funding the systems.

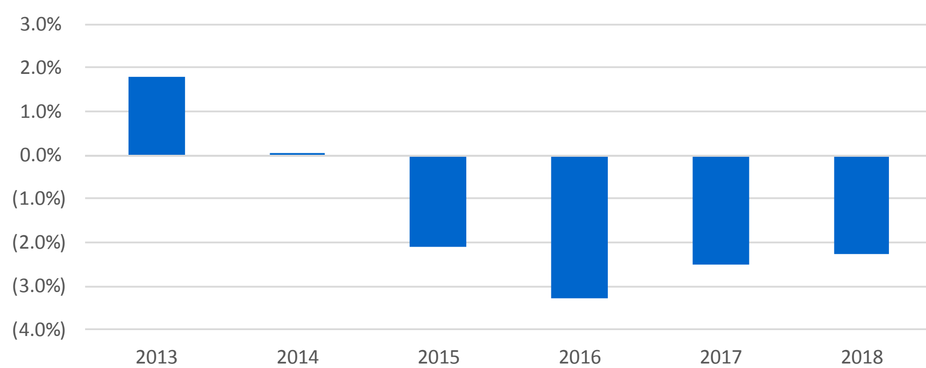
One way to assess the maturity of the system is to consider the ratio of active members to retirees. In the early years after a retirement system is established, the ratio of active to retired members will be very high as the system is largely composed of active members. As the system matures over time, the ratio starts to decline. A very mature system often has a ratio near or below one. In addition, if the size of the active membership declines over time, it can accelerate the decline in the ratio. The current ratio for Gwinnett County is 0.38.



Another measure of the maturity of the system is to consider the ratio of retiree liability to the total accrued liability. With more of the total liability residing with retirees, investment volatility has a greater impact on the funding of the system since it is more difficult to restore the system financially after losses occur when there is comparatively less payroll over which to spread costs. A mature plan will often have a ratio above 60-65 percent.



Plans with negative cash flows will experience increased sensitivity to investment return volatility. Cash flows, for this purpose, are measured as contributions less benefit payments and expenses. If the Plan has negative cash flows and then experiences returns below the assumed rate, there are fewer assets to be reinvested to earn the higher returns that typically follow.



Section VI - Data

A. Data regarding the membership of the System for use as a basis of the valuation were furnished by the County and plan administrator. The valuation included active members with annualized compensation totaling $93,213,483.

B. The following table shows the number of retired members and beneficiaries as of January 1, 2019 together with the amount of their annual retirement benefits payable under the System as of that date.

The Number and Average Annual Benefits of Retired Members, Disabled Members and Beneficiaries as of January 1, 2019

Group	Number	Average Annual Benefits
Service Retirements	2,178	$31,988
Disability Retirements	20	18,020
Beneficiaries of Deceased Members	171	17,484
Total	2,369	$30,824

C. Table 1 on the next page shows the distribution by age and years of membership service of the number of active members included in the valuation, while Table 2 shows the number and annual benefits of retired members, disabled members and beneficiaries included in the valuation, distributed by age. Table 3 shows the reconciliation of valuation data from last year's valuation carried forward to this year's valuation.

Section VI - Data

Table 1: Distribution of Active Members by Age and Service Groups as of January 1, 2019

Attained Age	Completed Years of Service									
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	> 35	Total
Under 25										
Average Pay										
25 to 29										
Average Pay										
30 to 34				15	1					16
Average Pay				70,953	61,617					70,370
35 to 39				42	70	7				119
Average Pay				70,092	70,396	63,199				69,865
40 to 44				32	138	55	2			227
Average Pay				70,757	77,695	78,218	86,301			76,919
45 to 49				25	119	125	30	4		303
Average Pay				70,952	73,744	88,942	80,060	96,284		80,706
50 to 54				29	87	74	44	22	1	257
Average Pay				65,005	69,877	83,801	93,622	86,795	64,555	78,841
55 to 59				24	69	36	19	18	3	169
Average Pay				57,665	69,168	76,133	90,736	91,127	117,481	74,640
60 to 64				10	40	14	14	8	3	89
Average Pay				54,380	66,136	90,768	83,159	112,100	97,999	76,573
65 to 69				2	9	5	3	4	1	24
Average Pay				54,302	55,035	75,431	101,812	92,830	168,339	76,091
70 & up					3	1				4
Average Pay					86,875	77,481				85,404
Total Count				179	536	317	112	56	8	1,208
Average Pay				66,859	72,276	83,700	88,280	92,911	110,282	77,163

Section VI - Data

Table 2: Number of Retired Members, Disabled, and Beneficiaries and their Benefits

Attained Age	Number of Members	Total Annual Benefits	Average Annual Benefit
50 & Under	31	$ 1,012,950	$ 32,676
51 – 55	221	10,206,886	46,185
56 – 60	393	17,537,027	44,623
61 – 65	459	17,530,708	38,193
66 – 70	590	14,741,225	24,985
71 – 75	379	7,776,603	20,519
76 – 80	180	2,827,732	15,710
Over 80	116	1,387,881	11,964
Total	**2,369**	**$ 73,021,012**	**$ 30,824**

Section VI - Data

Table 3: Reconciliation of Plan Participants as of January 1, 2019

	Active Participants	Disabled Participants	Inactive Participants with Deferred Benefits	Inactive Participants Receiving Benefits	Total
January 1, 2018	**1,320**	**21**	**806**	**2,270**	**4,417**
Retirements	(93)		(17)	110	
Deaths		(1)	(4)	(35)	**(40)**
Disabled					
Nonvested Terminations	(2)				**(2)**
Vested Terminations	(17)		17		
Rehires					
Survivors				8	**8**
Benefits Expired				(7)	**(7)**
Transfer Out					
Transfer In					
Correction			5	1	**6**
Status Change				2	**2**
Lump Sum/Refund of Contributions					**0**
Net Change	(112)	(1)	1	79	**(33)**
January 1, 2019	**1,208**	**20**	**807**	**2,349**	**4,384**

Section VII - Actuarial Assumptions and Methods

A. Investment Return:

7.00% per year, compounded annually.

B. Salary Increases:

Representative values of the assumed annual rates of salary increases are shown in the following table.

Years of Service	Salary Increase
Under 5	5.50%
5	5.25
6	5.25
7	5.25
8	5.00
9	5.00
10	5.00
11	5.00
12	5.00
13	4.75
14 and Over	4.50

C. Mortality:

Pre-Retirement Mortality
Male Rates: 1983 Group Annuity Mortality Table multiplied by 50%.
Female Rates: 1983 Group Annuity Mortality Table

Post Retirement Healthy Mortality
1994 Group Annuity Mortality Static Table Projected to 2001 using scale AA for males and females.

Post Retirement Disabled Mortality
1994 Group Annuity Mortality Static Table Projected to 2001 using scale AA for males and females.

D. Separations from Active Service:

Representative values of the assumed annual rates of withdrawal and disability are shown in the following table.

Age	Withdrawal	Disability
Under 20	18.0 %	0.00 %
20	15.5	0.01
25	9.3	0.06
30	7.6	0.10
35	6.1	0.14
40	4.9	0.20
45	4.2	0.32
50	3.7	0.52
55	3.2	0.00
60	2.4	0.00
65 and Over	2.0	0.00

Disability: Male rates (used for both sexes) derived from a 1977 Social Security Administration study multiplied by 50%. Incidence of disability resulting in eligibility for both disability benefits under the county retirement plan and the Social Security.

Retirement: An experience based, age related set of rates; sample rates are as follows:

Age	Retirement*	Age	Retirement*
50 – 55	30%	65	50%
56 – 61	25%	66 – 69	30%
62 – 64	30%	70	100%

* If service is at least 30 years or when member first becomes eligible for Rule of 75, the rate is 37.5%

E. Administrative Expenses:

An expense load is determined to account for administrative expenses to be paid from the trust. Expenses are estimated to be $757,000 for the plan year.

F. Actuarial Value of Assets:

The actuarial value of assets recognizes a portion of the difference between the market value of assets and the expected market value of assets, based on the assumed valuation rate of 7.00% effective January 1, 2019. The amount recognized each year is 20% of the difference between market value and expected market value.

G. Actuarial Cost Method:

Projected Unit Credit. This cost method measures past service liabilities as the actuarial present value of benefits accrued for service up to the valuation date, but based on salaries projected to the date of assumed retirement for the plan.

H. Amortization of Unfunded Accrued Liability:

Level dollar over a closed amortization period of 17 years beginning January 1, 2016.

I. Beneficiary:

The plan provides either a lump-sum benefit or an annuity to the beneficiary of a deceased inactive participant. Therefore all participants are assumed to have a beneficiary and such beneficiary is assumed to be the same age as the participant.

J. Percent Married:

For the purposes of valuing the spouse pre-retirement survivor annuity, 50% of the plan participants are assumed married with males three years older than the spouse.

K. Load for Unused Sick Leave and Retirement Reserve Leave:

Members can apply unused sick leave or retirement reserve leave toward Credited Service in order to meet retirement eligibility requirements. The three year experience study covering the period January 1, 2006 through January 1, 2009 found that members are able to retire one year earlier than the retirement eligibility condition allowable by the Plan through conversion of unused sick leave or retirement reserve leave. Thus, retirement benefits and liabilities for Plan B and Plan C members are increased by 3.50% to estimate the increase in benefit due to the application of unused sick leave or retirement reserve leave toward Credited Service.

Section VIII - Plan Provisions

A. Effective Date

January 1, 2007

B. Participation

Each Employee who was a participant in the ACCG Plan on the day before the Effective Date of this Plan shall be a participant in this plan. Each employee hired before January 1, 2007 is eligible to participate as of his employment commencement date. No employee hired on or after January, 1 2007 shall be eligible to participate in this Plan. An Employee who has a termination date prior to December 31, 2006 with a reemployment commencement date on or before December 31, 2007 shall be eligible to participate in the plan provided he has not incurred a one-year break in service. Effective January 1, 2008, only those employees participating in the plan on December 31, 2007 shall be eligible to participate in the plan.

C. Credited Service

Measurement of a participant's service as an employee after the original effective date of the plan that is used to determine the participant's accrued benefit. Credited service shall include only full-time service and shall be determined under the Elapsed Time Method. Credited service shall include service prior to the effective date of the plan, sick leave, and retirement reserve leave. The County as part of an employment contract with Appointed officials may agree to provide additional Credited Service. In no event shall the additional credited service exceed five years.

D. Compensation

Total amounts of all payments, direct or indirect, made by the County to an employee for services rendered to the County, for a calendar year which ends within a Plan Year, as defined in Code Section 3401(a) for purposes of tax withholding at the source excluding overtime, overtime premium, scheduled overtime and scheduled overtime premium. Compensation shall include before-tax or salary deferral contribution made to this plan or any other plan of the County.

E. Average Final Compensation

Arithmetic average of Compensation paid to a participant by the employer for the highest five consecutive years of Credited Service, ignoring the breaks in service, out of the employee's last 10 years of credited service earned immediately prior to termination date.

F. Schedule A

Benefit established in 2004 for the noncontributory defined benefit plan previously adopted by Gwinnett County and known as the "Pre-Amended Pension Plan"

G. Schedule B

Benefit established in 2004 for the contributory defined benefit plan previously adopted by Gwinnett County and known as the "1995 Amended Pension Plan" and subsequently amended and restated

H. Schedule C

Benefit established in 2004 for the contributory defined benefit plan adopted by Gwinnett County as of November 1, 2004

I. Normal Retirement Benefit

Eligibility

For those members with an employment date or a reemployment commencement date prior to November 1, 2004, the later of the date the Participant attains age 65 and completes three years of vesting service. For employees hired on or after November 1, 2005, the later of the date the participant attains age 65 and five years of vesting service.

Benefit Amount

Schedule A or B

2.25% of a participants Average Monthly Compensation multiplied by years of full time Credited Service.

Schedule C

2.50% of a participants Average Monthly Compensation multiplied by years of full-time credited service.

J. Early Retirement Benefit

Eligibility

Schedule A: Earlier of

1) 60 years and 10 years of service, or

2) 30 Years of service, regardless of age

Schedule B or C: Earlier of

1) Age 60 and 10 years of service, or

2) 30 Years of service, regardless of age, or

3) Age 50 and the Rule of 75

Benefit Amount

Schedule A, B or C

Computed as a Normal Retirement Benefit that is actuarially reduced for those members retiring with less than 30 years of service

Schedule C

Computed as a Normal Retirement Benefit that is actuarially reduce for those member that have not obtained age 50 and the Rule of 75

K. Late Retirement

Eligibility

Date participant actually retirees from employment with the County after his normal retirement date

Benefit Amount

Computed as a Normal Retirement Benefit

L. Disability Benefit

Eligibility

10 Years of service and is determined to be totally disabled by the Social Security Administration.

Benefit Amount

Calculated as Normal Retirement Benefit

M. Pre-Retirement Death Benefit

Eligibility

If the participant dies while an Employee of the County, the Plan provides a lifetime pre retirement survivor annuity to the spouse. If the participant is not married at the time of death, the participant's dependent child will receive the same benefit in total until the child reaches age 18 at which time the benefit will cease.

Benefit Amount

50% of the Participant's non forfeitable accrued benefit determined as of the date of the participants death.

N. Post-Retirement Death Benefit

Eligibility

If a participant dies after he retires his beneficiary may receive a post-retirement death benefit.

Benefit Amount

If the monthly benefit was less than $100, the post-retirement death benefit is equal to $5,000.

If the monthly benefit was $100 or greater but less than $300, the Post-Retirement Death benefit is equal to $10,000

If the monthly benefit was $300 or more, the Post Retirement Death Benefit is equal to $15,000.

O. Vested Termination

Eligibility

Members employed prior to November 1, 2004 must have completed 3 years of service. Those members employed on or after November 1, 2004 must have competed 5 years of service upon termination.

Benefit Amount

Computed as a normal retirement benefit as of the date of termination payable upon reaching age 65.

P. Non-Vested Termination

A member terminating from the plan that is not 100% vested in the accrued benefit is entitled to a refund of their employee contributions with interest.

Q. Cost-of-Living Adjustments

Schedule A

None

Schedule B or C

1.00% annually

R. Normal Form of Benefit

Single Life Annuity

S. Contributions

Member

Schedule A: None

Schedule B: Members are required to contribute 5.75% of Compensation

Schedule C: Members are required to contribute 9.00% of Compensation

County

The County contributes an actuarially determined amount which, together with member contributions, equals the sum of the normal cost and payments for the amortization of the unfunded actuarial accrued liability.