



Chester County Employees' Retirement System

**Report on 2020 Actuarial Valuation Including
Determination of County Actuarially Determined
Contribution for 2020**





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for

Chester County Employees' Retirement Board

Marian D. Moskowitz	Commissioner
Josh Maxwell	Commissioner
Michelle Kichline	Commissioner
Margaret Reif	Controller/Secretary
Patricia Maisano	Treasurer

May 22, 2020



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I. Introduction

The primary purpose of this report is to investigate and fully and fairly disclose the actuarial position of the Chester County Employees' Retirement System as of January 1, 2020 and to establish the proper appropriation for the 2020 plan year, in accordance with the funding standards of Section 6 of Act 96, 1971 of the Commonwealth of Pennsylvania as amended.


On the basis of the actuarial methods, assumptions and major plan provisions summarized in this report and in reliance on the member data and statement of the Fund's assets furnished by the County, to the best of our knowledge the information in this report is complete and accurate.

To the best of our knowledge, this report is complete and accurate and all costs and liabilities have been determined in conformance with generally accepted actuarial principles and on the basis of actuarial assumptions and methods which are reasonable (taking into account past experience under the plan and reasonable expectations) and which represent our best estimate of anticipated experience under the plan.

The included measurements are based on a single set of assumptions regarding the future experience of the plan's investments and participants. Future measurements and funding needs of the plan could vary significantly based on the actual experience, including differences in investment performance, and any changes in the future expectations. Estimates of the potential impact of changes in the plan's assets and liabilities are included in Schedule O.

Respectfully submitted,

Korn Ferry (US)

By: 

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II. Findings

Certified Actuarially Determined Contribution

Please note that the certified actuarially determined contribution which is reported on page 12 of this report and which must be funded in 2020 is \$10,112,879. This amount is required to ensure that the fund accumulates sufficient assets to pay future benefits and should be paid by the County from the General Fund.

Actuarial Adjustments

Also note that the balances in the Reserve Accounts on page 8 reflect the following transfers which are necessary to keep the balance in the Retired Member's Reserve Account equal to the liability for the retired lives and to reflect the difference between the amount of interest credited to the respective reserves and the interest rate assumed in the valuation of the liabilities. Please make these transfers in your records:

	DEBIT		CREDIT	
County Annuity Reserve Account	\$	22,639,502.78		
Retired Members Annuity Reserve Account			\$	22,639,502.78

Actuarial Assumptions

Effective January, 2020, the accumulated deduction valuation method and the investment return assumption (from 7.5% to 7.25%) have been changed and the Pub-2010 mortality table has been adopted. The effect of these changes is an increase in the unfunded actuarial accrued liability of \$14,923,069 and a decrease in the actuarially determined contribution of \$32,858.



III. Schedules

Schedule A

CHESTER COUNTY EMPLOYEES' RETIREMENT SYSTEM

CHANGES IN PLAN NET ASSETS FOR THE CALENDAR YEAR 2019 AND 2018

	Additions	
	<u>2019 Total</u>	<u>2018 Total</u>
Contributions		
County	\$ 11,183,843.00	\$ 9,316,461.00
Plan Members	\$ 7,875,206.86	\$ 7,678,329.34
Miscellaneous	\$ 254,147.01	\$ 38,575.35
Total Contributions	\$ <u>19,313,196.87</u>	\$ <u>17,033,365.69</u>
Investment Income		
Realized Gain	\$ <u>21,518,456.93</u>	
Unrealized Gain	\$ <u>50,685,203.00</u>	
Net Gain in Fair Value	\$ 72,203,659.93	\$ (32,066,310.59)
Interest	\$ 2,049,566.92	\$ 2,036,680.63
Dividends	\$ 5,734,553.72	\$ 4,879,419.54
Net Accrued Interest	\$ 906,909.36	\$ 996,508.21
Investment Income	\$ <u>80,894,689.93</u>	\$ <u>(24,153,702.21)</u>
Less Investment Expense	\$ 1,033,531.40	\$ 761,587.26
Net Investment Income	\$ <u>79,861,158.53</u>	\$ <u>(24,915,289.47)</u>
Total Additions	\$ <u>99,174,355.40</u>	\$ <u>(7,881,923.78)</u>
	Deductions	
Benefits	\$ 25,304,373.14	\$ 24,114,013.44
Refunds of Member Contributions	\$ 1,430,483.56	\$ 1,483,225.35
Administrative Expense	\$ 138,916.50	\$ 125,760.75
Miscellaneous	\$ 24,488.02	\$ 0.00
Total Deductions	\$ <u>26,898,261.22</u>	\$ <u>25,722,999.54</u>
Net Increase/(Decrease)	\$ <u>72,276,094.18</u>	\$ <u>(33,604,923.32)</u>
	Net Assets Held In Trust For Pension Benefits	
Beginning of Year	\$ <u>404,640,276.81</u>	\$ <u>438,245,200.13</u>
End of Year	\$ <u>476,916,370.99</u>	\$ <u>404,640,276.81</u>

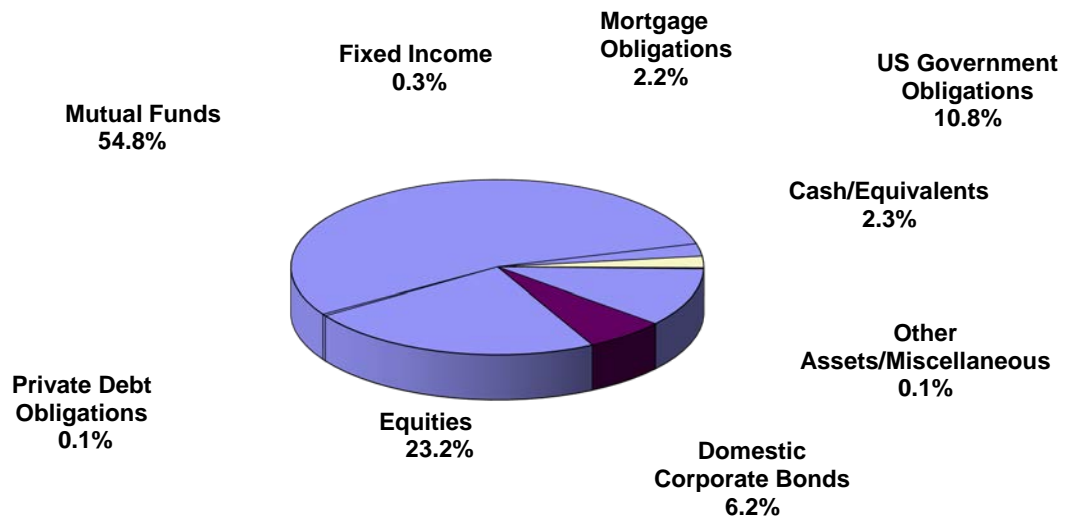


Schedule A – Continued

CHESTER COUNTY EMPLOYEES' RETIREMENT SYSTEM PLAN ASSETS AS OF DECEMBER 31, 2019 AND 2018

		Assets	
		<u>2019 Total</u>	<u>2018 Total</u>
Cash and Short-Term Investments	\$	10,187,333.26	\$ 13,077,518.53
Receivables	\$	906,909.36	\$ 996,508.21
Investments, at fair market value			
US Government Obligations	\$	51,368,948.91	\$ 49,356,581.39
Domestic Corporate Bonds	\$	29,816,731.80	\$ 32,201,160.89
Equities	\$	110,823,871.51	\$ 147,077,528.47
Miscellaneous Fixed Income	\$	1,585,942.76	\$ 2,069,299.94
Mutual Funds	\$	261,162,693.20	\$ 156,301,946.73
Mortgage Obligations	\$	10,581,337.27	\$ 3,483,767.52
Private Debt Obligations	\$	305,000.00	\$ 100,000.00
Other Assets/Miscellaneous	\$	204,951.00	\$ 0.00
Total Investments	\$	465,849,476.45	\$ 390,590,284.94
 Total Assets	 \$	 476,943,719.07	 \$ 404,664,311.68
 Liabilities			
Refunds Payable and Other	\$	27,348.08	\$ 24,034.87
 Net Assets Held In Trust For Pension Benefits			
	\$	476,916,370.99	\$ 404,640,276.81

TOTAL ASSETS (MARKET VALUE 12-31-2019)





Schedule A – Continued

Chester County Employees' Retirement System

Plan Description and Contribution Information

Basis of Accounting: The Chester County Employees' Retirement System financial statements are prepared using the accrual basis of accounting. Plan member contributions are recognized in the period in which the contributions are due. Employer contributions to each plan are recognized when due and the employer has made a formal commitment to provide the contributions. Benefits and refunds are recognized when due and payable in accordance with the terms of each plan.

Method Used to Value Investments: Investments are reported at fair value. Short-term investments are reported at cost, which approximates fair value. Securities traded on a national or international exchange are valued at the last reported sales price at current exchange rates. Investments that do not have an established market are reported at estimated fair value.

Membership of the plan consisted of the following as of January 1, 2020:

Retirees and Beneficiaries Receiving Benefits	1,409
Terminated Plan Members Entitled to but not yet Receiving Benefits	349
Active Plan Members	2,230
Total	<u>3,988</u>
Number of Participating Employers	1



Schedule A – Continued

Chester County Employees' Retirement System

Plan Description: The Chester County Employees' Retirement Plan is a single-employer defined benefit pension plan that covers all employees of the County. The plan provides retirement, disability, and death benefits to plan members and their beneficiaries. Cost-of-living adjustments (COLA) are provided at the discretion of the Chester County Employees' Retirement Board. Act 96 of 1971, as amended cited as the County Pension Law provides for the creation, maintenance and operation of this plan.

Contributions: Plan members who entered the system prior to 1/1/2011 are required to contribute 5% of their annual covered salary. Plan members entering on 1/1/2011 and thereafter are required to contribute 6% of their annual covered salary. The County is required to contribute at an actuarially determined rate. Per Act 96 of 1971, as amended, contribution requirements of the plan members and the County are established and may be amended by the General Assembly of the Commonwealth of Pennsylvania. Administrative costs may be financed through investment earnings.

SCHEDULE OF EMPLOYER CONTRIBUTIONS

<u>Year</u>	<u>Contribution *</u>	<u>County Contribution</u>
2010	\$ 12,552,931	\$ 15,127,446
2011	\$ 10,948,849	\$ 10,948,849
2012	\$ 11,579,074	\$ 11,579,074
2013	\$ 9,880,939	\$ 9,880,939
2014	\$ 7,810,793	\$ 7,810,793
2015	\$ 6,025,657	\$ 6,025,657
2016	\$ 8,469,935	\$ 8,469,935
2017	\$ 9,681,308	\$ 9,681,308
2018	\$ 9,316,461	\$ 9,316,461
2019	\$ 11,183,843	\$ 11,183,843

Note: Effective in 2005 the Entry Age Funding Method was used to determine the annual required contribution. Prior to 2005 the Aggregate Method was used.

*Prior to 2014, contribution was described as Annual Required Contribution (ARC). After 2013, contribution was described as actuarially determined contribution (ADC).



Schedule A – Continued

SCHEDULE OF FUNDING PROGRESS

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) - Entry Age (b)	Unfunded AAL (UAAL) (b-a)	Funded Ratio (a/b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a)/c)
1/1/2011	257,781,217	335,527,874	77,746,657	76.8%	115,580,646	67.3%
1/1/2012	273,290,990	356,428,788	83,137,798	76.7%	115,886,844	71.7%
1/1/2013	302,569,569	368,776,415	66,206,846	82.0%	110,864,248	59.7%
1/1/2014	344,772,839	392,680,874	47,908,035	87.8%	112,704,901	42.5%
1/1/2015	378,750,852	412,238,288	33,487,436	91.9%	111,337,938	30.1%
1/1/2016	385,640,127	438,522,954	52,882,827	87.9%	118,689,818	44.6%
1/1/2017	389,316,617	454,921,746	65,605,129	85.6%	117,904,220	55.6%
1/1/2018	416,737,272	477,651,600	60,914,328	87.2%	120,941,257	50.4%
1/1/2019	417,640,292	495,738,272	78,097,980	84.2%	120,116,713	65.0%
1/1/2020	446,689,952	529,120,777	82,430,825	84.4%	123,646,608	66.7%



Schedule B

Schedule B shows the allocation of the assets among the Fund's reserve accounts (see Schedule I for Determination of Reserve Balances) and the Fund's liabilities as of January 1, 2020. The liabilities were determined from the actuarial valuation of the System based upon the data submitted by the County.

ASSETS

Members' Annuity Reserve Account	\$	117,269,007.89
County Annuity Reserve Account	\$	52,676,631.32
Retired Members' Reserve Account	\$	228,067,327.00
Unrealized Appreciation of Assets	\$	78,903,404.78
<i>Total Assets, (Market Value) of the Chester County Employees' Retirement Fund</i>	\$	476,916,370.99

LIABILITIES

Actuarial Present Value of:

Accumulated Plan Benefits		
Vested participants (1,422)	\$	121,619,333
Nonvested participants (808)	\$	1,087,653
Future Benefit Accruals	\$	94,177,664
Terminated Vested Benefits	\$	18,366,063
Retired Benefits	\$	228,067,327
Member Accumulated Deductions	\$	117,269,008
<i>Total Liabilities of the Chester County Employees' Retirement Fund</i>	\$	580,587,048



Schedule C

Unfunded Actuarial Liability and Normal Cost

Schedule C shows the development of the unfunded actuarial liability and the normal cost for 2020.

1. Unfunded Actuarial Liability January 1, 2020

1. Actuarial Liability:	
(a) Active Participants	
Retirement Benefits	\$ 173,807,010
Termination Benefits	8,900,183
Death Benefits	3,884,940
Total	<u>\$ 186,592,133</u>
(b) Terminated Vested Participants	\$ 18,366,063
(c) Retired Members and Beneficiaries	
Retirement Benefits	\$ 223,499,573
Cost-of-Living Benefits	4,567,754
Total	<u>\$ 228,067,327</u>
(d) Actuarial Present Value of Member Accumulated Deductions	<u>\$ 96,095,254</u>
(e) Total (a) + (b) + (c) + (d)	\$ 529,120,777
2. Actuarial Value of Plan Assets (see page 14)	\$ 446,689,952
3. Unfunded Actuarial Liability as of January 1, 2020: (1e) – (2)	<u><u>\$ 82,430,825</u></u>

II. Normal Cost for 2020

1. Normal Cost for:	
(a) Retirement Benefits	\$ 3,752,183
(b) Termination Benefits	555,082
(c) Death Benefits	93,077
(d) Members Accumulated Deductions	<u>4,528,856</u>
(e) Normal Cost as of January 1, 2020	\$ 8,929,198
(f) Normal Cost with interest to end of year: (e) x 1.0725	\$ 9,576,565



Schedule D

Actuarial Gain (Loss) for One Year Period Ending December 31, 2019

Schedule D shows the development of the actuarial gain (loss) for the 2019 plan year.

1.	Unfunded Actuarial Liability as of January 1, 2019	\$	78,097,980
2.	Normal Cost as of January 1, 2019		3,848,024
3.	Interest at 7.5% Per Year to December 31, 2019 on (1) and (2)		6,145,950
4.	Employer Contributions for the 2019 Plan Year		11,183,843
5.	Change in Unfunded Actuarial Liability Due to Change in Accumulated Deduction Valuation Method		(21,173,754)
6.	Change in Unfunded Actuarial Liability Due to Change in Assumptions (Public Sector Mortality)		24,378,177
7.	Change in Unfunded Actuarial Liability Due to Change in Assumptions (Investment return)		11,718,646
8.	Expected Unfunded Actuarial Liability as of January 1, 2020: (1) + (2) + (3) – (4) + (5) + (6) + (7)		91,831,180
9.	Unfunded Actuarial Liability as of January 1, 2020		82,430,825
10.	Actuarial Gain (Loss) for 2019 Plan Year: (7) – (8)		9,400,355



Schedule E

Amortization Schedule

Schedule E provides a record of the amortization amounts. Actuarial gains (losses) will be amortized over 15 years from the date determined; increases or decreases created by pension plan establishing an unfunded actuarial accrued liability will be amortized over 25 years from the effective establishment date; increases or decreases created by a modification in the benefit plan applicable to active members will be amortized over 15 years beginning with the January 1st coinciding with or next following the effective date of change; increases or decreases created by a modification in the benefit plan applicable to retired members will be amortized over 10 years beginning with the January 1st coinciding with or next following the effective date of change; increases in actuarial accrued liability attributable to the special early retirement provision will be amortized over 5 years beginning with the January 1st coinciding with or next following the end of the early retirement period; and increases or decreases created by changes in actuarial assumptions will be amortized over 15 years from the effective date of change; resetting the unfunded actuarial liability (UAL) due to outstanding balance becoming negative will be amortized over 15 years beginning with the January 1st coinciding with or next following when the outstanding balance becomes negative. When resetting, any previous charges or credits will be considered paid off and eliminated.

Amortization Record for 2020

As of January 1, 2020					
	<u>Initial Amount</u>	<u>Effective Date</u>	<u>Remaining Period</u>	<u>Outstanding Balance</u>	<u>Amortization Charge or (Credit)</u>
Amortization of Liability for:					
(a) Initial UAAL	\$ 79,404,679	1/1/2010	20 Years	\$68,540,549	\$6,595,989
(b) Experience gain	(890,081)	1/1/2011	6 Years	(473,301)	(100,064)
(c) Experience loss	6,182,598	1/1/2012	7 Years	3,709,795	694,376
(d) Experience gain	(15,843,421)	1/1/2013	8 Years	(10,513,027)	(1,777,688)
(e) Experience gain	(17,736,315)	1/1/2014	9 Years	(12,817,087)	(1,988,223)
(f) Experience gain	(14,494,990)	1/1/2015	10 Years	(11,271,490)	(1,623,402)
(g) Chg. In mort table	6,385,724	1/1/2016	11 Years	5,292,131	714,556
(h) Experience loss	12,374,723	1/1/2016	11 Years	10,255,480	1,384,719
(i) Experience loss	12,758,023	1/1/2017	12 Years	11,179,963	1,426,392
(j) COLA	2,187,231	1/1/2018	8 Years	1,866,422	315,600
(k) Experience gain	(6,351,163)	1/1/2018	13 Years	(5,846,588)	(709,495)
(l) Experience loss	17,661,474	1/1/2019	14 Years	16,985,264	1,971,398
(m) Experience gain	(9,400,355)	1/1/2020	15 Years	(9,400,355)	(1,048,465)
(n) Acc Ded mthd chg	(21,173,754)	1/1/2020	15 Years	(21,173,754)	(2,361,607)
(o) Mort tbl chg	24,378,177	1/1/2020	15 Years	24,378,177	2,719,011
(p) Interest assmp chg	11,718,646	1/1/2020	15 Years	<u>11,718,646</u>	<u>1,307,035</u>
(q) Total				<u>82,430,825</u>	<u>7,520,132</u>



Schedule F

Schedule F determines the certified actuarially determined contribution of \$10,112,879 for 2020 for the Chester County Employees' Retirement System.

1.	Total Amortization Charge/(Credit) (page 11 (q))	\$ 7,520,132
2.	Normal Cost with interest to end of year (page 9 II 1(f))	\$ 9,576,565
3.	Expected Member Contributions with Interest	\$ 6,983,818
4.	Total Funding Requirement for 2020 (actuarially determined contribution for 2020): (1) + (2) – (3), but not less than 0	\$ 10,112,879

Notes:

The actuarially determined contribution for 2020 as a percentage of the estimated 2020 compensation (\$123,646,608) for active members is 8.18%.

The equivalent normal cost accrual rate to be applied to actual 2019 salaries to determine reimbursable expenses is 8.47%.



Schedule G

The following are notes to Schedules B and I:

Members' Annuity Reserve Account: The balance of \$117,269,007.89 in this account is the total of the contributions deducted from the salaries of the active and terminated vested members of the retirement system and the IRC 414(h)(2) pickup contributions together with the interest additions as of January 1, 2020. Since these accumulations represent the present value as of January 1, 2020, of future benefits, the reserve balance and liability are identical.

County Annuity Reserve Account: The balance of \$52,676,631.32 in this account as of January 1, 2020 and the amounts expected to be credited in the future, plus investment earnings, represent the reserves set aside for the payment of the county's share of the retirement allowances.

This is the account out of which regular interest is credited to the member's annuity and retired members' reserve account, administrative expenses may be paid and the pension obligations of the County are funded.

When a County Annuity is scheduled to commence for a particular member, sufficient monies are transferred from the County Annuity Reserve Account to the Retired Members' Reserve Account to provide for such County Annuities actually entered upon.

Retired Members' Reserve Account: This is the account out of which monthly retirement allowances including cost-of-living increases and death benefits are paid.

The assets allocated to this reserve account as of January 1, 2020 amount to \$228,067,327.00. The corresponding liability for those annuitants on the roll is identical.



Schedule G – Continued

Actuarial Value of Assets: In order to reduce the fluctuations in the County normal cost which can result from full recognition of the unrealized appreciation or depreciation of the Fund's securities each year, the value of assets used to determine costs was determined by adjusting the cost value of the assets by the average ratio of market to cost value for the past five years:

RATIO OF MARKET VALUE TO COST VALUE OF ASSETS				
January 1		(1) Cost Value of Assets	(2) Market Value of Assets	Ratio (2) / (1)
2016	\$	347,611,436	\$ 363,600,790	1.0460
2017	\$	350,356,927	\$ 385,880,382	1.1014
2018	\$	368,012,427	\$ 438,245,200	1.1908
2019	\$	376,422,075	\$ 404,640,277	1.0750
2020	\$	398,012,966	\$ 476,916,371	1.1982
Average				1.1223

ACTUARIAL VALUE OF ASSETS JANUARY 1, 2020

(1) Cost Value of Assets	\$	398,012,966.21
(2) Average Ratio		1.1223
(3) Actuarial Value of Assets	\$	446,689,951.98



Schedule H

APPROXIMATE RATE OF RETURN FOR 2019 PLAN YEAR

	<u>Actuarial Value</u>	<u>Market Value</u>
1. Value as of December 31, 2018	\$ 417,640,292.25	\$ 404,640,276.81
2. Contributions Received During Year	\$ 19,313,196.87	\$ 19,313,196.87
3. Benefits and Expenses Paid During Year	\$ 27,931,792.62	\$ 27,931,792.62
4. Value as of December 31, 2019	\$ 446,689,951.98	\$ 476,916,370.99
5. Non-Investment Increment: (2) - (3)	\$ (8,618,595.75)	\$ (8,618,595.75)
6. Investment Increment: (4) - (1) - (5)	\$ 37,668,255.48	\$ 80,894,689.93
7. Time Weighted Value of Assets: (1) + .5 x (5)	\$ 413,330,994.37	\$ 400,330,978.94
8. Approximate Rate of Return for 2019: (6) / (7)	9.11%	20.21%

HISTORY OF RATE OF RETURNS

<u>Plan Year</u>	<u>Actuarial Value Rate of Return</u>	<u>Market Value Rate of Return</u>
2019	9.11%	20.21%
2018	2.51%	(5.57%)
2017	9.00%	15.61%
2016	2.75%	8.08%
2015	4.17%	(1.56%)
2014	11.73%	6.09%
2013	14.25%	19.00%
2012	10.40%	11.34%
2011	5.08%	(0.15%)
2010	6.16%	11.87%
Five Year Average (2015 - 2019):	5.47%	6.90%
Ten Year Average (2010 - 2019):	7.45%	8.17%



Schedule I

Determination of Reserve Balances

	<u>M.A.R.A.</u>	<u>C.A.R.A.</u>	<u>R.M.R.A.</u>	<u>TOTAL</u>
Balance 1/1/2019	\$ 114,786,350.37	\$ 63,081,915.66	\$ 198,553,809.00	\$ 376,422,075.03
County Appropriations		11,181,923.52		11,183,843.00
Member Contributions	7,867,116.03			7,867,116.03
Member Purchases		8,090.83		8,090.83
Net Investment Income		30,209,486.93		30,209,486.93
Investment Expenses		(1,033,531.40)		(1,033,531.40)
Member Contributions Refunded	(1,430,483.56)			(1,430,483.56)
Pension Payments			(23,745,022.61)	(23,745,022.61)
Death Benefits			(1,559,350.53)	(1,559,350.53)
Retiree and Death Benefit Transfers	(8,492,948.43)	(15,764,231.44)	24,257,179.87	0.00
Miscellaneous		(24,488.02)		(24,488.02)
Administrative Expenses		(138,916.50)		(138,916.50)
Miscellaneous		254,147.01		254,147.01
Cty fund of Act. Mil. Duty	1,919.48			1,919.48
Reclass to interest posting	(14,427.02)	14,427.02		0.00
Balance Before Interest	112,717,526.87	87,788,823.61	197,506,615.73	398,012,966.21
Interest Allocated in 2019	4,551,481.02	(12,472,689.51)	7,921,208.49	
Balance Before Actuarial Adjustments	117,269,007.89	75,316,134.10	205,427,824.22	398,012,966.21
Actuarial Adjustments		(22,639,502.78)	22,639,502.78	
Ending Balance 12/31/2019	117,269,007.89	52,676,631.32	228,067,327.00	398,012,966.21
Unrealized Appreciation				78,903,404.78
Total Assets (12/31/2019) (Market Value)				476,916,370.99



Schedule J

Membership History

Below is a ten-year history of the Retirement System's membership.

January 1	ACTIVE MEMBERS AND VESTED TERMINATED MEMBERS			RETIRED MEMBERS AND BENEFICIARIES		
	Male	Female	Total	Male	Female	Total
2020	988	1,591	2,579	467	942	1,409
2019	980	1,553	2,533	456	907	1,363
2018	984	1,584	2,568	444	869	1,313
2017	989	1,604	2,593	437	834	1,271
2016	972	1,599	2,571	420	813	1,233
2015	982	1,601	2,583	408	811	1,219
2014	1,005	1,614	2,619	370	774	1,144
2013	990	1,616	2,606	366	724	1,090
2012	997	1,646	2,643	342	680	1,022
2011	1,010	1,634	2,644	316	641	957



Schedule K

Changes in Plan Participation From January 1, 2019 to January 1, 2020

ACTIVE PARTICIPANTS

Number as of January 1, 2019		2,210
Changes During Plan Year:		
Retired	(-)	67
Terminated and Vested	(-)	37
Terminated	(-)	152
Died	(-)	7
New Participants	(+)	283
Number as of January 1, 2020		2,230

RETIRED PARTICIPANTS

Number as of January 1, 2019		1,363
Changes During Plan Year:		
Returned to Active Service	(-)	0
Died	(-)	45
New Retirements from Active Service	(+)	67
New Surviving Annuitants	(+)	8
Vested Terminated Participants Whose Benefits Commenced	(+)	12
Additions	(+)	4
Number as of January 1, 2020		1,409

TERMINATED VESTED PARTICIPANTS

Number as of January 1, 2019		323
Changes During Plan Year:		
Returned to Active Service	(-)	1
Benefits Commenced	(-)	12
Died	(-)	0
New Termination's with Vesting	(+)	37
Additions	(+)	2
Number as of January 1, 2020		349



Schedule L

Age, Service and Average Salary Profile of the Active Members on January 1, 2020.

MALES -- FULL YEARS OF SERVICE TO JANUARY 1, 2020

<u>Age</u>	<u>0-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25-29</u>	<u>30+</u>	<u>Total</u>	<u>Average Salary</u>
0-19	0	0	0	0	0	0	0	0	\$ 0
20-24	22	0	0	0	0	0	0	22	\$ 40,763
25-29	64	26	0	0	0	0	0	90	\$ 47,563
30-34	53	40	16	0	0	0	0	109	\$ 51,558
35-39	34	26	42	4	0	0	0	106	\$ 57,815
40-44	25	19	14	20	11	0	0	89	\$ 61,077
45-49	16	16	11	20	33	10	1	107	\$ 63,463
50-54	18	18	18	14	19	18	16	121	\$ 70,889
55-59	10	8	9	12	13	9	28	89	\$ 74,078
60-64	7	5	12	14	6	4	25	73	\$ 73,208
65 +	3	3	10	8	6	6	14	50	\$ 62,959
Total	252	161	132	92	88	47	84	856	\$ 61,699

Average Age: 44.94
Average Service: 12.94

FEMALES -- FULL YEARS OF SERVICE TO JANUARY 1, 2020

<u>Age</u>	<u>0-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25-29</u>	<u>30+</u>	<u>Total</u>	<u>Average Salary</u>
0-19	3	0	0	0	0	0	0	3	\$ 31,640
20-24	55	2	0	0	0	0	0	57	\$ 37,030
25-29	118	28	0	0	0	0	0	146	\$ 41,975
30-34	80	63	18	2	0	0	0	163	\$ 45,547
35-39	42	38	29	13	2	0	0	124	\$ 48,026
40-44	33	34	26	24	27	1	0	145	\$ 51,124
45-49	23	26	21	19	30	19	3	141	\$ 55,995
50-54	34	33	16	16	18	17	30	164	\$ 59,222
55-59	23	21	26	31	26	14	35	176	\$ 57,492
60-64	14	18	23	18	21	21	35	150	\$ 56,429
65 +	5	8	25	13	18	11	25	105	\$ 55,264
Total	430	271	184	136	142	83	128	1,374	\$ 51,761

Average Age: 45.81
Average Service: 12.50



Schedule M

Actuarial Assumptions and Actuarial Cost Method for Funding Purposes, January 1, 2020.

Actuarial Assumptions

Mortality Rates: SOA Pub-2010 for general employees with generational projection using Scale MP-2019.

Withdrawal Rates: Members not eligible to retire are assumed to terminate employment in accordance with a percentage of the withdrawal rates set forth in Table T-7 of the Actuary's Handbook. The applicable percentage depends on the member's years of service as follows:

YEARS OF SERVICE	PERCENTAGE
Less than 1	300%
1 but less than 2	275%
2 but less than 3	250%
3 but less than 4	225%
4 but less than 5	200%

It is further assumed that a percentage of members who terminate after having met the Plan's five year vesting requirement will elect an immediate refund of their own contributions with interest thus forfeiting the County -- provided pension. The applicable percentage is 100% for termination ages up to age 30. After age 30 the applicable percentage is determined as 100% less $(age - 30) \times 3 \frac{1}{3}\%$. Illustrative percentages are as follows:

AGE	PERCENTAGE
30 or less	100.0%
35	83.3%
40	66.7%
45	50.0%
50	33.3%
55	16.7%

Once member reaches retirement eligibility, a withdrawal rate of zero is assumed.



Schedule M - Continued

The following tables set forth illustrative withdrawal rates as determined in accordance with the methodology described on the previous page.

Probability of Withdrawing During the Year:

LESS THAN FIVE YEARS OF SERVICE

<u>Age at Hire</u>	<u>Years of Service</u>				
	<u>0</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
20	.2982	.2720	.2460	.2202	.1947
30	.2791	.2532	.2275	.2021	.1770
40	.2326	.2067	.1814	.1570	.1335
50	.1267	.1013	.0781	.0577	.0407
59	.0086	-	-	-	-

FIVE OR MORE YEARS OF SERVICE

<u>Age at Beginning of Year</u>	<u>Probability of Withdrawing and Forfeiting County Pension</u>	<u>Probability of Withdrawing and Retaining County Pension</u>
30	.0930	.0000
40	.0517	.0258
50	.0141	.0281
59	.0001	.0028



Schedule M - Continued

Retirement Rates: Members eligible to retire are assumed to retire in accordance with the following rates:

<u>AGE AT BEGINNING OF YEAR</u>	<u>PROBABILITY OF RETIRING DURING YEAR</u>
55-59	.07
60-61	.08
62-64	.15
65	.34
66-70	.23
71-79	.21
80	1.00

Disability Rates: Disability rates are not used.

Investment Return: 7.25% per annum, compounded annually.

Salary Increases: 3.5% per annum.

Valuation Assets: The assets at cost value adjusted by the past five-year average of the market to cost ratio of assets.

Administrative Expenses: Assumed to be paid from the County's general fund and not from plan assets. However, administrative expenses may from year to year be paid from the fund unless it is determined by the actuary that such payment will impair the actuarial soundness of the fund.

Actuarial Cost Method: The actuarial cost method used to determine the plan's funding requirements is the entry age normal method. Under this method, an actuarial accrued liability is determined as the actuarial present value of projected benefits for all participants minus the actuarial present value of future normal costs. The normal cost is determined as the annual amount required to fund between entry age and assumed exit age the actuarial present value of projected benefits for each active participant under the assumed retirement age.

Changes Since Prior Valuation: The accumulated deduction valuation method was changed. The investment return assumption was changed from 7.5% to 7.25%. The Pub-2010 for General mortality table was adopted. There were no other charges.



Schedule N

Summary of Plan Provisions

1. **Effective Date** - The effective date of this plan is January 1, 1943.
2. **Eligibility for Plan Membership** - An employee shall be eligible to become a participant immediately upon becoming an employee.
3. **Accrued Benefit** - The Retirement Board has authorized benefits equal to a percentage of the members Final Average Salary for each year of service the member has participated in the following Classes:

Class	Percentage	Effective
1/120	0.833%	01/01/1943
1/80	1.250%	01/01/1972
1/70	1.429%	01/01/2001
1/100	1.000%	01/01/2011*

*Effective for new county employees hired on or after this date.

4. Normal Retirement (Superannuation)

Eligibility: Retirement occurs at age 60 or at age 55 if the participant has completed 20 years of service.

Pension: A monthly pension equal to (a) and (b), as follows:

- (a) 0.833% of 1/12th of Final Average Salary multiplied by years of credited service on the 1/120 Class,
1.250% of 1/12th of Final Average Salary multiplied by years of credited service on the 1/80 Class,
1.429% of 1/12th of Final Average Salary multiplied by years of credited service on the 1/70 Class,
1.000% of 1/12th of Final Average Salary multiplied by years of credited service on the 1/100 Class,

PLUS

- (b) a monthly annuity based on the actuarial equivalent of the member's accumulated contributions with credited interest.



Schedule N - Continued

5. **Final Average Salary** - The average of the member's annual compensation received for the three years which produce the highest such average.
6. **Compensation** - Pick-up contributions plus remuneration received as a county employee excluding refunds for expenses, contingency and accountable expense allowances and excluding severance payments or payments for unused vacation or sick leave.
7. **Early Retirement**
 - Eligibility:**
 - Voluntary:** Upon completion of 20 years of service.
 - Involuntary:** Upon completion of 8 years of service.
 - Pension:** (a) a monthly pension equal to the actuarial equivalent of the benefits calculated in 4(a),

PLUS

(b) a monthly annuity based on the actuarial equivalent of the member's accumulated contributions with credited interest.
8. **Vesting** - One Hundred Percent (100%) upon completion of five years of credited service. A member who terminates employment after five years of credited service will receive a deferred annuity commencing at age 60 (or at age 55 if the member has at least 20 years of service at termination). The deferred benefit shall be calculated using the normal retirement pension formula but based on credited service, final average salary and accumulated contributions at termination.

If a member terminates employment prior to entitlement to Plan benefits, he will receive his accumulated contributions with interest.
9. **Postponed Retirement** - A member may work past normal retirement age and continue to accrue pension credits.



Schedule N - Continued

10. Disability Retirement

Eligibility: Total and permanent disability prior to Superannuation (Normal Retirement) age and after completion of five years of credited service.

Pension: A total monthly pension commencing on the last day of the month following disability retirement equal to 25% of the 1/12th of Final Average Salary at time of retirement. Such total monthly pension shall include the monthly disability that is actuarially equivalent to the member's accumulated contributions at retirement.

11. Normal Form of Pension - Benefits are payable in the form of a modified cash refund life annuity, that is for the member's lifetime only, except that disability benefits shall cease upon cessation of disability.

12. Optional Retirement Benefits - A member may elect to receive the actuarial equivalent of his retirement benefit as a full cash refund annuity (Option One) or a reduced joint and survivor pension payable for the remainder of his life, with either 100% or 50% of the member's pension continuing after death to the designated beneficiary. A member may also elect to receive, in one payment, the full amount of his accumulated deductions and continue to receive the annuity provided by the county.

13. Death Benefits

(a) **Pre-Retirement.** If a member dies after having attained age 60 or having completed ten years of credited service, his beneficiary will receive a lump sum equal to the actuarially determined present value of the benefits calculated in (7a) based on the member's Final Average Salary and credited service at time of death plus the member's accumulated contributions with interest at time of death.

(b) **Post-Retirement.** Upon the death of a terminated or retired member, his beneficiary will receive survivor benefits, if any, in accordance with the form under which benefits were being paid to the member. In any event, the total amount of benefits paid to the deceased member and beneficiary must, at least, equal the member's accumulated contributions with interest.



Schedule N - Continued

14. Employee Contributions

The Retirement Board has authorized each member of the retirement system to individually elect to contribute between 5% and 15% of his salary.

The Retirement Board has authorized each member hired on or after 1/1/2011 to contribute between 6% and 16% of salary.

15. Deposit Administrator

Investment Managers:

Birch Run Investments, LLC
Brandes Investment Partners
Chester County Commingled Funds
Chester County ETF
Chester County Mutual Funds
Eagle Asset Management
Metropolitan West Capital Management

Custodian:

Wells Fargo Bank, NA

Investment Consultant:

RBC Wealth Management

16. Administration - Retirement Board as designated in Act 96 of 1971, the County Pension Law.

17. Cost-of-Living - The cost-of-living increase shall be reviewed at least once in every three years by the Retirement Board. Prior to 2017, a percentage of the CPI could be granted. After 2016, the annual CPI could be granted. The Board has granted cost-of-living increases ten times in the past from January, 1972 through January, 1989 and since then as follows:

PERCENTAGE/ANNUAL CHANGE IN C.P.I.	EFFECTIVE DATE OF INCREASE
70%	1/1/1991
70%	1/1/1993
70%	1/1/1995
70%	1/1/1997
70%	1/1/1999
70%	1/1/2001
70%	1/1/2003
70%	1/1/2005
70%	1/1/2007
1.4%	1/1/2018



Schedule N - Continued

18. Early Retirement Provision - The Retirement Board has authorized the following Early Retirement Provisions:

<u>Percent of Additional Service</u>	<u>Early Retirement Period</u>
20%	3/2/95 - 6/30/95
20%	8/1/00 - 1/31/01
25%	7/1/06 - 1/05/07



Schedule O

Historical Trend Information

REVENUES BY SOURCE

<u>Fiscal Year</u>	<u>Employee Contributions</u>	<u>Employer Contributions</u>	<u>Investment Income</u>	<u>Miscellaneous</u>	<u>Total</u>
2010	\$ 6,531,430	\$ 15,127,446	\$ 11,263,621	\$ 81,138	\$ 33,003,635
2011	6,604,509	10,948,849	17,553,519	442,657	35,549,534
2012	6,521,604	11,579,074	30,317,405	64,192	48,482,275
2013	6,497,708	9,880,939	24,074,498	68,451	40,521,596
2014	6,703,445	7,810,793	34,909,229	40,891	49,464,358
2015	7,151,007	6,025,657	22,886,827	54,127	36,117,618
2016	7,116,103	8,469,935	9,570,806	704,763	25,861,607
2017	7,452,798	9,681,308	24,960,475	127,168	42,221,749
2018	7,678,329	9,316,461	17,860,869	38,576	34,894,235
2019	7,875,207	11,183,843	30,209,487	254,147	49,522,684

EXPENSES BY TYPE

<u>Fiscal Year</u>	<u>Benefits</u>	<u>Refunds</u>	<u>Administrative/ Miscellaneous</u>	<u>Total</u>
2010	\$ 11,731,686	\$ 1,169,794	\$ 940,092	\$ 13,841,572
2011	13,104,208	1,253,190	1,272,564	15,629,962
2012	15,041,115	1,174,248	1,125,677	17,341,040
2013	15,892,598	1,238,336	174,905	17,305,839
2014	18,332,761	1,350,688	967,583	20,651,032
2015	19,702,148	1,333,270	907,555	21,942,973
2016	20,309,633	1,396,777	1,409,706	23,116,116
2017	21,945,700	1,266,416	1,354,133	24,566,249
2018	24,114,014	1,483,225	887,348	26,484,587
2019	25,304,373	1,430,484	1,196,936	27,931,793



Schedule O - Continued

Plan Maturity Measures

Assets are accumulated over participants' careers to pay future benefits. The natural growth of liabilities and assets is referred to as plan maturity. As the plan matures, the size of the plan grows relative to the active members' payroll and will cause changes in the assets or liabilities to have a larger effect on the Actuarially Determined Contribution (ADC). The following table shows a history of the plan's maturity and the effect of a 1% change in plan assets or liabilities on the ADC.

<u>Fiscal Year</u>	<u>Actives Per Retirees</u>	<u>Ratio of Assets to Payroll</u>	<u>Effect on ADC of a 1% Change in Assets</u>	<u>Ratio of Actuarial Liability to Payroll</u>	<u>Effect on ADC of a 1% Change in Liability</u>
2018	1.6	3.4	\$ 460,000	4.1	\$ 560,000
2019	1.6	3.9	\$ 540,000	4.3	\$ 590,000