

Adams County Retirement Plan

ACTUARIAL VALUATION REPORT
as of January 1, 2020





May 28, 2020

Ms. Debbie Haines, CEBS
Executive Director
Adams County
4430 South Adams County Parkway, Suite C3406
Brighton, CO 80601-8202

Re: Actuarial Valuation of the Adams County Retirement Plan as of January 1, 2020

Dear Debbie:

We are pleased to present our Report on the actuarial valuation of the Adams County Retirement Plan as of January 1, 2020.

This Report presents the results of the January 1, 2020 actuarial valuation of the Adams County Retirement Plan. The Report describes the current actuarial condition of the Adams County Retirement Plan, determines the Actuarially Determined Contribution (ADC), and analyzes changes in these required rates.

We certify that the information included herein and contained in our January 1, 2020 Actuarial Valuation Report is accurate and fairly presents the actuarial position of the Adams County Retirement Plan as of the valuation date.

All of our work conforms with generally accepted actuarial principles and practices, and to the Actuarial Standards of Practice issued by the Actuarial Standards Board. In our opinion, our calculations also comply with the requirements of, where applicable, the Internal Revenue Code, ERISA, and the Statements of the Governmental Accounting Standards Board.

The valuation was based upon information, furnished by the Plan, concerning Plan benefits, financial transactions, active members, terminated members, retirees and beneficiaries. We checked for internal and year-to-year consistency, but did not audit the data. This report and these calculations are not intended as legal or accounting advice, and we would recommend review by legal counsel for the compliance of these calculations with all relevant agreements.

The valuation results summarized in this report involve actuarial calculations that require assumptions about future events for the Pension Plan. Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following:

- plan experience differing from that anticipated by the economic or demographic assumptions;
- changes in economic or demographic assumptions;
- increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status) and;
- changes in plan provisions or applicable law.

Ms. Debbie Haines, CEBS

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The 9.50% employer and 9.00% employee contribution are the rates that comply with law. Due to the many factors affecting a retirement system, users of this report should be aware that contributions made at that rate do not necessarily guarantee long-term benefit security.

This report does not include a detailed assessment of the risks of future experience not meeting the actuarial assumptions. Additional assessment of risks was outside the scope of this assignment. We encourage a review and assessment of investment and other significant risks that may have a material effect on the plan's financial condition.

We believe that the assumptions and methods used in this report are reasonable and appropriate for the purpose for which they have been used. However, other assumptions and methods could also be reasonable and could result in materially different results. In addition, because it is not possible or practical to consider every possible contingency, we may use summary information, estimates or simplifications of calculations to facilitate the modeling of future events. We may also exclude factors or data that are deemed to be immaterial.

Certification

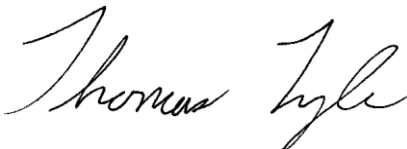
The undersigned are independent actuaries and consultants. Paul Wood and Thomas Lyle are actuaries and meet the Qualification Standards of the American Academy of Actuaries. Both of the undersigned are experienced in performing valuations for large public retirement systems.

Respectfully submitted,

Gabriel, Roeder, Smith & Company



Paul Wood, ASA, FCA, MAAA
Consultant



Thomas Lyle, ASA, FCA, EA, MAAA
Consultant



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SECTION A

EXECUTIVE SUMMARY

Executive Summary

Valuations are prepared annually, as of January 1 of each year, the first day of the fiscal year. The primary purposes of the valuation report are to measure the plan's liabilities, to determine the required contribution rate and to analyze changes in the Adams County Retirement Plan's actuarial position.

In addition, the report provides summaries of the member data, financial data, plan provisions, and actuarial assumptions and methods.

Financing Objectives

The Adams County Retirement Plan is supported by member contributions, employer contributions, and net earnings on the investments of the fund. Contribution rates are set in the plan document, currently at 9.00% for members and 9.50% for employers. Furthermore, the employer rate is scheduled to increase over the next four years until an ultimate rate of 11.50% is met.

Beginning in 2018, the County began making an additional contribution to the Plan, pursuant to an agreement between the County and the Plan; such contributions shall not be less than \$2 million per year and will continue until the Plan reaches a specified funding level on a market and actuarial basis. The contribution is based on a reallocation of at least 0.314 mills of the County's total mill levy.

The combined member and employer contributions are intended to be sufficient to pay the normal cost and to amortize the Unfunded Actuarial Accrued Liability (UAAL) over a period of 24 years from the valuation date. This closed period amortization method was first adopted for use in this valuation.

Progress toward Realization of Financing Objectives

The UAAL/(surplus) and the funded ratio (ratio of the actuarial value of assets to the actuarial accrued liability) illustrate the progress toward the realization of certain financing objectives. Based on the actuarial valuation as of January 1, 2020, the Plan has an unfunded liability of \$254.17 million and a funded ratio of 52.0%. The funded ratio decreased from 52.6% to 52.0% and the Net Employer Actuarially Determined Contribution (ADC) decreased, from 15.49% of pay, to 12.14% of pay. The ADC decreased as a result of the change in amortization method from a 30-year open level dollar amortization to 24-year closed level percent of payroll amortization.

The net employer Actuarially Determined Contribution as a percentage of pay for the year beginning January 1, 2020 is 12.14%. The expected County contribution is 9.50% of pay which creates a contribution shortfall of 2.64% of pay. This compares to a shortfall in the prior year of 6.49% of pay. The employer payroll contribution is scheduled to increase each year by 0.50% of pay until it reaches 11.50% as of January 1, 2024

The recent amendments to lower future benefit accruals help to decrease the future cost of the plan. Projections indicate an improvement in funded status over time. However, projections are built on assumptions from which experience may vary over time. Ongoing monitoring of the funded levels of the plan is recommended.



Experience During the Year

The plan experienced a liability loss of \$7.41 million during fiscal year 2019. The largest source of this loss was due to salary increases that were higher than expected.

The plan experienced an actuarial asset loss of \$3.64 million during fiscal year 2019. This loss was due to the actuarial value of assets earning a return less than the assumed 7.25% return. The net overall result of the liability loss and the actuarial asset loss was an unfunded liability \$11.05 million greater than expected at January 1, 2020.

In addition, there was also a loss due to a contribution shortfall relative to the ADC of \$6.3 million.

At the time this report is being issued, we are living through the global COVID-19 pandemic. As a result, the financial markets are significantly down and experiencing extreme volatility. A discussion of possible impacts of the pandemic will be provided outside of this report.

Assumptions and methods

There have been no changes in assumptions since the prior valuation. The assumptions have been selected by the Adams County Board of Retirement based upon the actuary's analysis and recommendations from the 2018 Experience Study.

There was a change in the amortization method. Starting January 1, 2020, the method was changed from 30-year open level dollar amortization to 24-year closed level percent of payroll amortization. This change was made to better align the ADC with the Board's objectives and the way in which the Plan is funded. The change lowered the ADC by approximately 2.84% of payroll.

The actuarial assumptions are summarized in Section G of our report.

The results of any actuarial valuation are dependent upon the actuarial assumptions used. Actual results can and almost certainly will differ, as actual experience deviates from the assumptions. Even seemingly minor changes in the assumptions can materially change the liabilities, calculated contribution rates and funding periods. The actuarial calculations presented in this Report are intended to provide information for rational decision making.

Benefit Provisions

All of the benefit provisions reflected in this valuation are those which were in effect on January 1, 2020. There have been no changes to the benefit provisions since the prior valuation.

The benefit provisions are summarized in Section D of our Report.

Data

Adams County staff supplied data for retired, active and inactive members as of January 1, 2020. We did not audit this data, but we did apply a number of tests to the data, and we have concluded that the data is reasonable and consistent with the prior year's data. Adams County staff also supplied asset data as of January 1, 2020.



Financial Position

Due mostly to recognition of asset losses from prior years and larger than expected increases in payroll, the funded ratio on an actuarial value of assets basis declined from January 1, 2019 to January 1, 2020. The funded ratio on a market value basis improved.

Exhibit A.1 Funded Status Summary (\$ in millions)		
Valuation Date	January 1, 2020	January 1, 2019
Accrued Liability	\$529.98	\$505.34
Actuarial Value of Assets (smoothed)	<u>275.81</u>	<u>265.66</u>
Unfunded Accrued Liability	\$254.17	\$239.69
Funded Ratio (AVA basis)	52.0%	52.6%
Market Value of Assets	\$281.91	\$248.84
Unfunded Accrued Liability	\$248.07	\$256.50
Funded Ratio (MVA basis)	53.2%	49.2%
Market Value Rate of Return	15.6%	(3.1%)
Actuarial Value Rate of Return	5.9%	4.7%

The funded status alone is not appropriate for assessing the need for future contributions. The funded status is also not appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations.

Financial Position (continued)

Investment losses increased the Total Actuarially Determined Contribution by roughly 0.21%. Liability losses increased the Total Actuarially Determined Contribution by approximately 0.42%. The change in amortization method decreased the Total Actuarially Determined Contribution by approximately 2.84%. The Employer Net Actuarially Determined Contribution of 15.49% of pay for Fiscal Year 2019 and 12.14% of pay for Fiscal Year 2020 are based on contributions being made throughout the year, consistent with the funding policy of the Plan.

Exhibit A.2 Contribution Summary All Numbers Reported Middle of Year, Percent of Pay		
Fiscal Year Beginning	January 1, 2020	January 1, 2019
Total Normal Cost	9.93%	9.81%
Amortization of UAL	10.72%	14.09%
Assumed Expenses	0.49%	0.59%
Total Actuarially Determined Contribution	21.14%	24.49%
Estimated Member Contribution	9.00%	9.00%
Net Annual Required Contribution Mid-Year	12.14%	15.49%
Estimated County Contribution	9.50%	9.00%
Contribution Shortfall	2.64%	6.49%

Benefit changes were made as of January 1, 2014, which decrease the rate of benefits accrued for all service after January 1, 2014, both for current members and future members. The lower benefit accruals will have the effect of decreasing the normal cost rate over time.

Executive Summary

Exhibit A.3 Adams County Retirement Plan Executive Summary		
	January 1, 2020	January 1, 2019
1. Actuarially Determined Contribution		
a. Total	\$ 31,609,336	\$ 33,227,604
b. Net Employer Contribution	18,154,422	21,014,878
c. Net Employer %	12.14%	15.49%
2. Funded Status		
a. Actuarial Accrued Liability	\$ 529,979,010	\$ 505,342,712
b. Actuarial Value of Assets (AVA)	275,805,624	265,656,097
c. Unfunded Liability (AVA-basis)	254,173,386	239,686,615
d. Funded Ratio (AVA-basis)	52.0%	52.6%
e. Market Value of Assets (MVA)	\$ 281,913,703	\$ 248,844,713
f. Unfunded Liability (MVA-basis)	248,065,307	256,497,999
g. Funded Ratio (MVA-basis)	53.2%	49.2%
3. Summary of Census Data		
a. Actives		
i. Counts	2,230	2,127
ii. Total Annual Projected Compensation	\$ 149,499,049	\$ 135,696,959
iii. Average Projected Compensation	67,040	63,797
iv. Average Age	42.7	42.6
v. Average Service	7.5	7.7
b. Members with Refunds Due Counts	144	141
c. Deferred Vested Member Counts	216	200
d. Retired Member Counts	1,063	1,018
e. Beneficiary Counts	112	114
f. Disabled Retiree Counts	50	45
g. Total Members Included in Valuation	3,815	3,645



SECTION B

VALUATION RESULTS

Actuarial Accrued Liability

Exhibit B.1 Adams County Retirement Plan Actuarial Valuation Results Actuarial Accrued Liability		
	January 1, 2020	January 1, 2019
1. Active Members		
a. Retirement Benefits	\$ 188,605,930	\$ 185,844,763
b. Withdrawal Benefits	1,293,719	1,186,326
c. Refund Benefits	(5,617,692)	(5,103,304)
d. Disability Benefits	5,192,550	4,920,228
e. Death Benefits	2,724,767	2,593,712
f. Total	\$ 192,199,274	\$ 189,441,725
2. Members with Deferred Benefits	\$ 19,731,771	\$ 15,967,729
3. Members Receiving Benefits	\$ 318,047,965	\$ 299,933,258
4. Total	\$ 529,979,010	\$ 505,342,712
5. Actuarial Value of Assets	\$ 275,805,624	\$ 265,656,097
6. Unfunded Actuarial Accrued Liability	\$ 254,173,386	\$ 239,686,615

Normal Cost

Exhibit B.2 Adams County Retirement Plan Actuarial Valuation Results Normal Cost		
	January 1, 2020	January 1, 2019
1. Total Dollar Normal Cost		
a. Retirement Benefits	\$ 9,427,991	\$ 8,460,606
b. Withdrawal Benefits	4,673,426	4,201,322
c. Disability Benefits	469,427	401,454
d. Death Benefits	282,465	246,442
e. Total	\$ 14,853,309	\$ 13,309,824
2. Normal Cost as a Percentage of Pay	9.93%	9.81%
3. Normal Cost as a Percentage of Pay by Tier		
a. Tier 1	14.11%	13.58%
b. Tier 2	11.83%	11.20%
c. Tier 3	8.04%	7.76%

Present Value of Projected Benefits

Exhibit B.3 Adams County Retirement Plan Actuarial Valuation Results Present Value of Projected Benefits		
	January 1, 2020	January 1, 2019
1. Active Members		
a. Retirement Benefits	\$ 253,185,930	\$ 245,203,569
b. Withdrawal Benefits	31,502,680	28,895,441
c. Disability Benefits	8,365,024	7,702,212
d. Death Benefits	4,752,852	4,408,114
e. Total	\$ 297,806,486	\$ 286,209,336
2. Members with Deferred Benefits	\$ 19,731,771	\$ 15,967,729
3. Members Receiving Benefits	\$ 318,047,965	\$ 299,933,258
4. Total	\$ 635,586,222	\$ 602,110,323

Actuarially Determined Contribution

Exhibit B.4 Adams County Retirement Plan Development of the Actuarially Determined Contribution				
Fiscal Year Beginning	January 1, 2020		January 1, 2019	
	Dollar	Percent of Pay	Dollar	Percent of Pay
1. Total Normal Cost	\$ 14,853,310	9.93%	\$ 13,309,824	9.81%
2. Amortization of Unfunded Actuarial Accrued Liability Over 24 Years	16,024,026	10.72%	19,121,780	14.09%
3. Assumed Administrative Expenses	732,000	0.49%	796,000	0.59%
4. Actuarially Determined Contribution (ADC)	\$ 31,609,336	21.14%	\$ 33,227,604	24.49%
5. Estimated Member Contribution	13,454,914	9.00%	12,212,726	9.00%
6. Net ADC Mid-Year	\$ 18,154,422	12.14%	\$ 21,014,878	15.49%
7. Estimated County Contribution Mid-Year	14,202,410	9.50%	12,212,726	9.00%
8. Contribution Shortfall	\$ 3,952,012	2.64%	\$ 8,802,152	6.49%
9. Annual Projected Payroll	\$ 149,499,049		\$135,696,959	

Plan Experience

Exhibit B.5 Adams County Retirement Plan Plan Experience for Fiscal Year 2019		
Liabilities		
1. Actuarial Accrued Liability at January 1, 2019		\$ 505,342,712
2. Normal Cost for Fiscal Year 2019		13,309,824
3. Benefit Payments during Fiscal Year 2019		32,044,194
4. Interest on Items 1-3 to End of Year		35,958,226
5. Change in Actuarial Accrued Liability Due to Assumption Changes		-
6. Change in Actuarial Accrued Liability Due to Provision Changes		-
7. Expected Actuarial Accrued Liability at January 1, 2020		522,566,568
8. Actual Actuarial Accrued Liability at January 1, 2020		529,979,010
9. Liability Gain/(Loss)		(7,412,442)
Assets		
10. Actuarial Value of Assets at January 1, 2019		\$ 265,656,097
11. Benefit Payments and Expenses during Fiscal Year 2019		32,691,937
12. Contributions during Fiscal Year 2019		27,410,136
13. Interest on Items 10-12 to End of Year		19,068,602
14. Expected Actuarial Value of Assets at January 1, 2020		279,442,898
15. Actual Actuarial Value of Assets at January 1, 2020		275,805,624
16. Asset Gain/(Loss)		(3,637,274)
Total		
17. Total Gain/(Loss)		\$ (11,049,716)

Plan Experience By Source

Exhibit B.6 Adams County Retirement Plan Plan Experience for Fiscal Year 2019 Gain/(Loss) by Source	
1. Asset Gain/(Loss)	\$ (3,637,274)
2. Liability Gain/(Loss)	
a. Salary Gain/(Loss)	\$ (2,182,573)
b. New Members and Rehire Gain/(Loss)	(1,145,268)
c. Withdrawal Gain/(Loss)	(1,845,586)
d. Disability Gain/(Loss)	(249,611)
e. Retirement Gain/(Loss)	(5,203)
f. Active Mortality Gain/(Loss)	(115,634)
g. Annuitant Mortality Gain/(Loss)	(51,361)
h. LTD to Disability Retirement	(1,336,996)
i. Other Demographic	(480,209)
j. Total	\$ (7,412,442)
3. Total Gain/(Loss)	\$ (11,049,716)

SECTION C

PLAN ASSETS

Statement of Plan Net Assets

Exhibit C.1 Adams County Retirement Plan Statement of Plan Net Assets		
	December 31, 2019	December 31, 2018
Assets		
Investments, at fair value:		
Cash	\$ 2,121,488	\$ 198,245
Money Market Funds	4,718,556	5,257,754
Public Equity	130,901,825	93,502,437
Private Equity	14,371,698	12,189,028
Floating Rate Debt	14,874,689	28,654,649
Fixed Rate Debt	41,124,806	29,677,270
Low Volatility	27,480,804	24,739,850
Real Estate Funds	46,287,296	43,957,475
Liquid Real Assets	-	10,818,017
Total cash and investments	\$ 281,881,162	\$ 248,994,725
Receivables:		
Dividends and Interest	177,575	33,973
Other Assets:		
Prepaid insurance for retirees	-	-
Total assets	\$ 282,058,737	\$ 249,028,698
Liabilities and net assets held in trust for benefits		
Accrued liabilities	145,034	183,985
Total payables	\$ 145,034	\$ 183,985
Net assets held in trust for pension benefits	\$ 281,913,703	\$ 248,844,713



Statement of Changes in Plan Net Assets

Exhibit C.2		
Adams County Retirement Plan		
Statement of Changes in Plan Net Assets		
	Year Ended December 31, 2019	Year Ended December 31, 2018
Additions to Net Assets Attributed to:		
Contributions:		
Employer contributions	\$ 12,685,915	\$ 11,634,301
Plan Members contributions	12,685,915	11,634,301
Plan Members for Purchase of service	25,696	228,548
Mill Levy Revenue	2,012,610	2,000,000
Total contributions	\$ 27,410,136	\$ 25,497,150
Investment Income:		
Net appreciation in fair value of investments	\$ 35,244,424	\$ (11,060,695)
Interest	725,729	1,284,039
Dividends	4,074,021	3,278,662
Other	14,669	316
Total Investment Income	\$ 40,058,843	\$ (6,497,678)
Less Investment expense	(1,708,052)	(1,638,856)
Net investment income	\$ 38,350,791	\$ (8,136,534)
Total additions	\$ 65,760,927	\$ 17,360,616
Deductions to Net Assets Attributed to:		
Benefit payments	\$ 29,377,350	\$ 27,017,192
Refunds	2,666,844	3,357,700
Administrative expenses	647,743	913,182
Total deductions	\$ 32,691,937	\$ 31,288,074
Change in net assets	33,068,990	(13,927,458)
Net assets held in trust for benefits:		
Beginning of year	248,844,713	262,772,171
End of year	\$ 281,913,703	\$ 248,844,713



Actuarial Value of Assets

Exhibit C.3 Adams County Retirement Plan Development of the Actuarial Value of Assets					
	Item	Year Ending December 31, 2019			
1.	Actuarial value of assets, at beginning of year (prior to corridor)	\$			265,656,097
2.	Market value of assets, at beginning of year	\$			248,844,713
3.	Net new investments				
	a. Contributions received for prior plan year	\$			27,410,136
	b. Benefits paid and administrative expenses				(32,691,937)
	c. Net	\$			(5,281,801)
4.	Market value of assets, at end of year	\$			281,913,703
5.	Net MVA earnings [(4) - (2) - (3c)]	\$			38,350,791
6.	Assumed investment return rate				7.25%
7.	Expected return [(6)*(2)+(6)*(3c)/2]	\$			17,849,776
8.	Excess return [(5) - (7)]	\$			20,501,015
9.	Expected actuarial value of assets as of December 31, 2019 [(1) + (3c) + (7)]	\$			278,224,072
10.	Deferred amounts for fiscal year ending December 31,				
			20% Recognized	Percent	
	Year	Gain/(Loss)	This Year	Deferred	Amount Deferred
	a. 2019	\$ 20,501,015	\$ 4,100,203	80%	\$ 16,400,812
	b. 2018	(26,977,595)	(5,395,519)	60%	(16,186,557)
	c. 2017	13,748,040	2,749,608	40%	5,499,216
	d. 2016	1,973,036	394,607	20%	394,608
	e. 2015	(21,336,739)	(4,267,347)	0%	-
	f. Total	\$ (12,092,243)	\$ (2,418,448)		\$ 6,108,079
11.	Asset gain/(loss) to be recognized as of December 31, 2019	\$			(2,418,448)
12.	80% of Market Value	\$			225,530,962
13.	120% of Market Value	\$			338,296,444
14.	Actuarial value of assets [(Item 9 + Item 11), but not more than Item 13 or less than Item 12]	\$			275,805,624

Annual Rates of Investment Return

Exhibit C.4 Average Annual Rates of Investment Return				
Fiscal Year Ended December 31,	Actuarial Value		Market Value	
	Annual	Cumulative	Annual	Cumulative
1995	12.1 %	10.7 %	22.9 %	10.1 %
1996	11.6	10.9	12.0	10.4
1997	13.0	11.3	17.0	11.5
1998	12.2	11.4	9.0	11.1
1999	12.0	11.5	4.0	10.2
2000	8.7	11.2	2.6	9.4
2001	6.2	10.7	(1.6)	8.2
2002	(4.5)	9.2	(10.9)	6.3
2003	9.7	9.2	22.4	7.6
2004	4.3	8.8	11.0	7.8
2005	4.4	8.5	6.2	7.7
2006	7.6	8.5	14.2	8.1
2007	11.1	8.6	8.2	8.1
2008	(7.9)	7.6	(26.2)	5.7
2009	11.6	7.8	12.5	6.1
2010	1.9	7.5	9.5	6.3
2011	(0.1)	7.1	(0.5)	5.9
2012	0.4	6.8	12.1	6.2
2013	9.3	6.9	14.1	6.6
2014	8.7	6.9	7.1	6.6
2015	6.4	6.8	(1.7)	6.1
2016	7.2	6.6	8.4	6.0
2017	7.8	6.5	13.4	6.6
2018	4.7	6.5	(3.1)	6.2
2019	5.9	6.4	15.6	6.6

SECTION D

SUMMARY OF BENEFIT PROVISIONS

Summary of Benefit Provisions

Based on the Plan Originally effective July 1, 1968 and amended and restated effective January 1, 2020

Participation

Membership in the Retirement Plan is automatic upon the first day of Covered Employment. You are in Covered Employment when you are (1) an elected or appointed County official or deputy, or staff of such person, (2) an employee of an Employer who is in a regular position regularly scheduled to work or budgeted for at least 30 hours each week, or (3) an employee of the Retirement Board who meets these requirements. Any employee of the Retirement Board who meets these requirements is considered an employee of the County for purposes of the Plan.

You are not eligible to participate in the Retirement Plan if you are (1) an employee in a position regularly scheduled to work or budgeted for less than 30 hours each week, (2) a leased employee, (3) an independent contractor, or (4) in a position that does not meet the criteria in the above paragraph, such as a position designated as temporary, seasonal, provisional, regular part-time scheduled to work less than 30 hours per week, project designated full-time, project designated part-time, or an election judge.

Member Contributions

Effective January 1, 2015, each member contributes 9.00% of compensation on a monthly basis. Interest on contributions is credited at a rate of 3.0% per annum compounded monthly.

Contribution Accumulation means the total of the member Pre-2014 Contribution Accumulation and Post-2013 Contribution Accumulation. The Pre-2014 Contribution Accumulation means the total of the member contributions to the retirement fund prior to January 1, 2014, plus interest. The Post-2013 Contribution Accumulation means the total of the member contributions to the retirement fund on or after January 1, 2014, plus interest. The Contribution Accumulation does not include any amounts paid to purchase previous service credit.

After December 31, 1983 member contributions are picked up and paid by the County as provided in Code Section 414(h).

County Contributions

The County will, on a monthly basis, is scheduled to make contributions equal to:

- 9.50% of compensation payroll for dates January 2020 through December 2020;
- 10.00% of compensation payroll for dates January 2021 through December 2021;
- 10.50% of compensation payroll for dates January 2022 through December 2022;
- 11.00% of compensation payroll for dates January 2023 through December 2023;
- 11.50% of compensation payroll for dates subsequent to December 31, 2023



Credited Service

All service completed during the elapsed time from the member's date of employment, excluding any breaks in service, to the member's date of termination on the basis of 1/365th year for each day of employment after January 1, 1965, provided an employee joined the plan on the first date eligible. Service prior to January 1, 1970 will be included (up to five years) provided the employee became a Member on the first date of eligibility.

Service is credited while a member is on long-term disability or is eligible for disability benefits from Social Security, even if the member does not receive disability benefits from Social Security because they are reduced to zero due to other disability benefits received. No credited service will be granted if the member chooses to receive a lump-sum payment from the Employer's LTD plan unless the member qualifies for disability benefits from Social Security (regardless of whether or not the member actually receives Social Security disability benefits).

Service Purchase

Eligible members may purchase additional years of service credit for any full-time, non-vested previous employment with any public or private employer in the United States, subject to certain restrictions.

Classification of Tiers

- *Tier 1* - Members hired prior to January 1, 2005
- *Tier 2* - Members hired on or after January 1, 2005 but before January 1, 2010
- *Tier 3* - Members hired on or after January 1, 2010

Compensation

Compensation is the total regular compensation paid to the member, reflecting the normal regular salary or hourly wage rate, before any payroll deductions for income tax, Social Security, group insurance, or any other purpose, excluding bonuses, extra pay, overtime pay, workers' compensation, single-sum payments received in lieu of accrued vacation and sick leave upon termination of employment or during the course of employment, required contributions by the County under this Plan, or for Social Security, group insurance, retainers' fees under contract, or the like, but including compensation deferred under Sections 125, 403(b), 414(h), or 457 of the Internal Revenue Code.



Final Average Monthly Compensation

- *Tier 1 - Members hired prior to January 1, 2005:*

Average of the highest 36 consecutive calendar months of compensation during the last 120 months of employment.

- *Tier 2 - Members hired on or after January 1, 2005 but before January 1, 2010:*

Average of the highest 60 consecutive calendar months of compensation during the last 120 months of employment.

Career Compensation

- *Tier 3 - Members hired on or after January 1, 2010:*

Pensionable Compensation from date of participation to retirement.

- *Tiers 1 & 2 - Members hired prior to January 1, 2010:*

Pensionable Compensation from January 1, 2014 to retirement.

Career Monthly Compensation

Career Compensation divided by Credited Service accrued during the period. If hired before January 1, 2010 and become disabled before January 1, 2014, special calculations apply. For members with a qualified military leave of absence, career compensation will include compensation credited at a rate that would have been in effect during the leave.

Accrued Benefit (Monthly)

Effective January 1, 2014, the accrued benefit for Tier 1 and Tier 2 members is composed of "Component A" benefit plus a "Component B" benefit. Component A shall mean the benefit attributable to service credit earned prior to January 1, 2014. Component B shall mean the benefit attributable to service credit earned on or after January 1, 2014.

Tiers 1 & 2 - Members hired prior to January 1, 2010:

- *Component A Benefit:*

2.5% of Final Average Monthly Compensation multiplied by Credited Service prior to January 1, 2014 including purchased service.

- *Component B Benefit:*

Greater of 1.75% of Career Compensation divided by 12, or 1.75% of Career Monthly Compensation times Credited Service earned on or after January 1, 2014.



Accrued Benefit (Monthly) (continued)

Tier 3 - Members hired on or after January 1, 2010:

- 1.75% of Career Compensation divided by 12 or 1.75% of Career Monthly Compensation times Credited Service, if greater.

The minimum monthly accrued benefit for all members is \$25 per month per year of Credited Service.

Vested Accrued Benefit

Eligibility:

Five years of Credited Service for all Tiers. Tier 3 formerly required ten years of Credited Service.

Benefit:

100% of the Accrued Benefit determined as of the date of termination. The benefit may be reduced if payment commences before the Normal Retirement Date or the Special Early Retirement Date.

Normal Retirement

Eligibility:

Attainment of age 65.

Benefit:

Accrued Benefit up to a maximum of 80% of the member's average monthly compensation during any consecutive 12-month period in which the member receives their highest average monthly compensation.



Regular Early Retirement

Eligibility:

- *Tier 1 - Members hired prior to January 1, 2005:*
Attainment of age 55 and 5 years of Credited Service.
- *Tiers 2 & 3 - Members hired on or after January 1, 2005:*
Attainment of age 55 and 10 years of Credited Service.

Benefit:

- *Tier 1 - Members hired prior to January 1, 2005:*
Vested Accrued Benefit determined as of the Early Retirement Date, reduced by 1/6 of 1% for each of the first 36 months and 1/4 of 1% for each additional month payments commence prior to the Normal Retirement Date.
- *Tiers 2 & 3 - Members hired on or after January 1, 2005:*
Vested Accrued Benefit determined as of the Early Retirement Date, reduced by 1/3 of 1% for each of the first 36 months and 5/12 of 1% for each additional month payments commence prior to the Normal Retirement Date.

Special Early Retirement

Eligibility:

- *Tier 1 - Members hired prior to January 1, 2005:*
Attainment of any age and age plus credited service equals 70 or more at termination.
- *Tier 2 - Members hired on or after January 1, 2005 and prior to January 1, 2010:*
Attainment of age 50 and age plus credited service equals 70 or more at termination.
- *Tier 3 - Members hired on or after January 1, 2010:*
Attainment of age 55 and age plus credited service equals 80 or more at termination.

Benefit:

Vested Accrued Benefit determined as of the Special Early Retirement Date, unreduced for early payment.



Disability Retirement

Eligibility:

Total and permanent disability. Member qualifies for disability under the County's long-term disability plan or under Title II of the Social Security Act.

Benefit:

Normal Retirement Benefit considering annual rate of compensation at disability and Credited Service that would have accumulated if employment had continued uninterrupted to the later of the Normal Retirement Date, or the date that the County's long-term disability benefits end. The Component A Benefit will be based on Credited Service attributable to the period ending on December 31, 2013 (including any period through December 31, 2013 while the member was disabled), and the Average Monthly Compensation when the member became disabled. The Component B Benefit will be based on Credited Service attributable to the period beginning on January 1, 2014 and ending on retirement or the date payments under the Employer's LTD plan end, whichever is later (including the period on or after January 1, 2014 while the member was disabled), and the Career Monthly Compensation when the member became disabled.

Benefits commence at Normal Retirement Date, or if later, the first day of the month after payments cease under the County's long-term disability insurance contract.

Termination Benefit

Eligibility:

Members with less than five years of Credited Service receive a refund of the member's contributions. Members who have completed at least five years of Credited Service are eligible to receive their Vested Accrued Benefit payable at Normal Retirement Date.

Benefit:

Vested Accrued Benefit determined as of the date of termination but not less than the actuarial equivalent value, determined as of the benefit commencement date, of the Accumulated Contributions as of the Normal Retirement Date.



Refund of Accumulated Contributions

Upon termination prior to any type of retirement, in lieu of a monthly pension benefit, the member may elect to receive a refund of a percentage of the Pre-2014 accumulated contributions (excluding service purchase contributions) according to the following schedule, plus 100% of the Post-2013 accumulated contributions:

Completed Years of Service	Percent Vested of Pre-2014 Contributions Accumulated At Termination		
	Hired Prior to 1/1/2005	Hired 2005-2010	Hired on or after January 1, 2010
Less Than 5	100%	100%	100%
5	110%	100%	100%
6	125%	110%	100%
7	140%	120%	100%
8	155%	130%	100%
9	170%	140%	100%
10	185%	150%	100%
11	200%	160%	100%
12	200%	170%	100%
13	200%	180%	100%
14	200%	190%	100%
15 or more	200%	200%	100%

Pre-Retirement Death Benefit

- *Member is single:*

Beneficiary receives two times member’s accumulated contributions at date of death (excluding service purchase contributions).

- *Member is married:*

Spouse receives two times member’s accumulated contributions at date of death (excluding service purchase contributions); or

A monthly benefit equal to 60% of the member’s vested accrued benefit, commencing the first day of the month after the member’s death or age 50 (55 for Terminated Vested Members) whichever is later.



Normal Form

- *Tier 1* - 10-year certain and life
- *Tier 2* - 10-year certain and life
- *Tier 3* - Single life annuity

Optional Forms

- 100% joint and survivor annuity
- 50% joint and survivor annuity
- 66-2/3% last survivor annuity
- 100% joint and survivor annuity with pop up
- 50% joint and survivor annuity with pop up
- For members in Tier 1 and Tier 2 only: Single life annuity
- For members in Tier 3 only: 10-year certain and life

Optional Form Conversion Factors

Optional annuity forms are actuarially equivalent based on 7.25% interest and the 1983 Group Annuity Mortality table blended 50% male and 50% female.

Payment Date

Benefits are paid on the first day of the month following eligibility for receipt.

Rehires

Effective January 1, 2017, any employee who terminates employment and is reemployed and was otherwise entitled to the Rule of 70 (with or without a minimum age of 50), and who is reemployed on or after January 1, 2017, shall be eligible for a Special Early Retirement (a) with respect to the portion of such employee's accrued benefit attributable to Credited Service earned prior to the period of reemployment when the sum of his age plus service (including purchase of service) equals 70 or more and he is not employed by any Employer as an employee, and (b) with respect to the portion of such employee's accrued benefit attributable to Credited Service earned after the period of reemployment when the sum of his age plus service (including purchase of service) equals 80 or more and he is not employed by any Employer as an employee, if the Rule of 80 date is not earlier than the date the employee would have been eligible for a Special Early Retirement if the employee had remained in-service since December 31, 2016.



SECTION E

SUMMARY OF PARTICIPANT DATA

Summary of Census Data

Exhibit E.1 Adams County Retirement Plan Summary of Census Data		
	January 1, 2020	January 1, 2019
1. Active Members		
a. Counts		
Tier 1	393	443
Tier 2	293	306
Tier 3	1,544	1,378
Total	2,230	2,127
b. Annual Projected Compensation	\$ 149,499,049	\$ 135,696,959
c. Average Annual Compensation	\$ 67,040	\$ 63,797
d. Average Age	42.7	42.6
e. Average Service	7.5	7.7
f. Accumulated Member Contributions with Interest	\$ 86,622,881	\$ 81,450,418
2. NonVested Members with Refunds Due		
a. Counts	144	141
b. Amount of Refunds Due	\$ 769,699	\$ 983,194
3. Deferred Vested Members*		
a. Counts	216	200
b. Annual Deferred Benefits	\$ 3,483,170	\$ 2,704,329
c. Average Benefit	\$ 16,126	\$ 13,522
4. Retired Members		
a. Counts	1,063	1,018
b. Annual Benefits	\$ 27,354,275	\$ 25,675,296
c. Average Benefit	\$ 25,733	\$ 25,221
5. Beneficiaries		
a. Counts	112	114
b. Annual Benefits	\$ 1,780,971	\$ 1,737,652
c. Average Benefit	\$ 15,902	\$ 15,243
6. Disabled Retirees		
a. Counts	50	45
b. Annual Benefits	\$ 842,627	\$ 736,510
c. Average Benefit	\$ 16,853	\$ 16,367
7. Total Members Included in Valuation	3,815	3,645

*Includes 32 deferred disabled members in 2020 and 25 deferred disabled members in 2019.



Summary of Changes in Participant Status

Exhibit E.2 Summary of Changes in Participant Status During Fiscal Year 2019							
	Active Members	With Deferred Benefits ¹	With Refunds Due	Retirees	Disabled Retirees	Beneficiaries	Total
As of January 1, 2019	2,127	200	141	1,018	45	114	3,645
Age retirements	(56)	(9)		65			0
Disability retirements		(6)			6		0
Deferred disability	(14)	14					0
Deaths	(3)			(17)	(1)	(4)	(25)
Vested terminations	(31)	31					0
Rehires	8	(2)	(3)	(3)			0
Cashouts	(94)	(12)	(86)				(192)
Expiration of benefits						(4)	(4)
Terminated nonvested with refunds due	(97)		97				0
New beneficiary or Alternate Payee						6	6
New entrants during the year ²	390						390
Data correction			(5)				(5)
Net change	103	16	3	45	5	(2)	170
As of January 1, 2020	2,230	216	144	1,063	50	112	3,815

¹ Includes 32 deferred disabled members at January 1, 2020

² Includes 35 members hired and terminated in 2019 with refunds due.



Active Member Counts by Age and Service

Exhibit E.3								
Active Member Counts by Age and Service								
as of January 1, 2020								
Age	Service							Total
	0-4	5-9	10-14	15-19	20-24	25-29	Over 30	
Under 20	4	0	0	0	0	0	0	4
20-24	76	1	0	0	0	0	0	77
25-29	253	19	1	0	0	0	0	273
30-34	250	70	16	0	0	0	0	336
35-39	152	77	57	20	0	0	0	306
40-44	109	57	59	56	10	0	0	291
45-49	107	55	47	59	30	5	0	303
50-54	90	48	37	52	25	7	4	263
55-59	81	29	34	31	15	12	8	210
60-64	29	22	22	17	13	7	11	121
65-69	6	8	8	5	6	1	1	35
Over 70	1	4	2	1	1	1	1	11
Total	1,158	390	283	241	100	33	25	2,230

Active Member Average Salary by Age and Service

Exhibit E.4								
Active Member Average Salary at Valuation Date by Age and Service ¹								
as of January 1, 2020								
Age	Service							
	0-4	5-9	10-14	15-19	20-24	25-29	Over 30	Total
Under 20								
20-24	\$43,590							\$43,603
25-29	51,994	\$60,523						52,635
30-34	52,172	65,758	\$71,638					55,929
35-39	57,775	71,939	75,470	\$70,561				65,471
40-44	56,465	74,841	89,448	82,269	\$88,244			72,810
45-49	56,312	67,309	71,950	79,779	80,516	\$98,383		68,394
50-54	52,371	70,628	70,795	81,091	87,305	\$83,101		68,573
55-59	58,857	73,689	69,486	70,220	76,757	78,643	76,973	67,403
60-64	56,483	70,614	58,559	65,928	70,398	65,594	89,119	65,746
65-69	48,529	51,123	66,024	91,025	79,665			65,455
Over 70								67,964
Total	\$53,662	\$69,260	\$74,751	\$77,792	\$80,776	\$79,378	\$83,198	\$63,602

¹ Average Salary not shown if group contains less than five members



Exhibit E.5			
10-Year Projected Benefit Payments (Closed Group)			
Fiscal Year Ended December 31,	Actives	Inactives	Total
2020	\$ 2,202,610	\$30,289,793	\$ 32,492,403
2021	4,020,775	30,109,650	34,130,425
2022	5,749,332	30,044,798	35,794,130
2023	7,277,843	29,855,346	37,133,189
2024	8,755,500	29,605,633	38,361,133
2025	10,763,272	29,330,047	40,093,319
2026	12,825,209	28,975,127	41,800,336
2027	14,912,055	28,616,876	43,528,931
2028	17,003,846	28,223,467	45,227,313
2029	19,092,433	27,795,069	46,887,502

Exhibit E.6	
History of Refunds	
Fiscal Year Ended December 31,	Refund Amount
2006	\$ 1,225,048
2007	1,187,708
2008	1,220,911
2009	1,043,307
2010	910,161
2011	1,761,213
2012	1,870,042
2013	2,029,377
2014	3,253,473
2015	3,086,203
2016	2,989,507
2017	2,328,219
2018	3,357,700
2019	2,666,844



SECTION F

HISTORICAL SCHEDULES

Schedule of Funding Progress

Exhibit F.1 Adams County Retirement Plan Schedule of Funding Progress						
Actuarial Valuation Date	Actuarial Value of Assets	Actuarial Accrued Liability (AAL)	Unfunded AAL (UAAL)	Funded Ratio	Covered Payroll	UAAL as a Percentage of Covered Payroll
(1)	(2)	(3)	(4)=(3)-(2)	(5)=(2)/(3)	(6)	(7)=(4)/(6)
1/1/2011	204,666,912	356,275,436	151,608,524	57.4%	95,737,553	158.4%
1/1/2012	201,712,397	371,702,160	169,785,105	54.3%	94,160,223	180.3%
1/1/2013	199,076,191	386,835,357	187,759,166	51.5%	96,443,158	194.7%
1/1/2014	214,140,815	379,802,962	165,662,147	56.4%	102,088,234	162.3%
1/1/2015	227,350,888	398,075,505	170,724,617	57.1%	107,861,819	158.3%
1/1/2016	235,725,998	419,358,970	183,632,972	56.2%	113,995,220	161.1%
1/1/2017	246,434,159	440,035,366	193,601,207	56.0%	120,573,734	160.6%
1/1/2018	259,301,061	484,193,980	224,892,919	53.6%	127,273,779	176.7%
1/1/2019	265,656,097	505,342,712	239,686,615	52.6%	135,696,959	176.6%
1/1/2020	275,805,624	529,979,010	254,173,386	52.0%	149,499,049	170.0%



Schedule of Employer Contributions

Exhibit F.2 Adams County Retirement Plan Schedule of Employer Contributions			
Fiscal Year Ended December 31,	Actuarially Determined Contribution	Actual County Contribution *	Percentage Contributed
2006	\$ 10,110,243	\$ 5,175,320	51.2%
2007	11,320,501	5,740,166	50.7%
2008	11,542,116	6,445,284	55.8%
2009	16,237,097	7,048,276	43.4%
2010	16,856,144	7,153,366	42.4%
2011	17,559,138	7,235,764	41.2%
2012	18,762,499	7,533,395	40.2%
2013	19,659,013	8,289,767	42.2%
2014	15,406,279	8,964,812	58.2%
2015	15,254,244	9,709,230	63.6%
2016	15,858,211	10,316,491	65.1%
2017	16,276,851	10,954,633	67.3%
2018	19,360,970	13,634,301	70.4%
2019	21,014,878	14,698,525	69.9%
2020	18,154,422	TBD	TBD

*County Contribution includes \$2,000,000 in mill levy revenue for fiscal year 2018 and \$2,012,610 in mill levy revenue for fiscal year 2019.

Supplementary Information

Exhibit F.3 Adams County Retirement Plan Supplementary Information	
Valuation Date	January 1, 2020
Actuarial Cost Method	Entry Age Normal
Amortization Method	Level Percent of Payroll Closed
Remaining Amortization Period	24 Years
Asset Valuation Method	5-Year Smoothed Market
Actuarial Assumptions:	
Investment Rate of Return	7.25%
Projected Salary Increases	Service-based increases from 3.5% to 6.10%
Inflation	2.50%
Cost of Living Adjustments	N/A

SECTION G

ACTUARIAL ASSUMPTIONS AND METHODS

Summary of Actuarial Methods and Assumptions

I. Valuation Date

The valuation date is January 1st of each plan year. This is the date as of which the actuarial present value of future benefits and the actuarial value of assets are determined.

II. Actuarial Cost Method

The actuarial valuation uses the Entry Age Normal actuarial cost method. Under this method, the employer contribution rate is the sum of (i) the employer normal cost rate, and (ii) a rate that will amortize the unfunded actuarial liability.

1. The valuation is prepared on the projected benefit basis. The present value of each participant's expected benefit payable at retirement or termination is determined, based on age, service, sex, compensation, and the interest rate assumed to be earned in the future (7.25%). The calculations take into account the probability of a participant's death or termination of employment prior to becoming eligible for a benefit, as well as the possibility of terminating with a service benefit. Future salary increases are also anticipated. The present value of the expected benefits payable on account of the active participants is added to the present value of the expected future payments to retired participants and beneficiaries to obtain the present value of all expected benefits payable from the Plan on account of the present group of participants and beneficiaries.
2. The employer contributions required to support the benefits of the Plan are determined following a level percent funding approach, and consist of a normal cost contribution and an accrued liability contribution.
3. The normal contribution is determined using the Entry Age Normal cost method. Under this method, a calculation is made to determine the average uniform and constant percentage rate of employer contribution which, if applied to the compensation of each new participant during the entire period of anticipated covered service, would be required in addition to the contributions of the participant to meet the cost of all benefits payable on their behalf.
4. The unfunded accrued liability contributions are determined by subtracting the actuarial value of assets from the actuarial accrued liability and amortizing the result over 24 years from the valuation date as a level percentage of payroll. It is assumed that payments are made throughout the year.

III. Actuarial Value of Assets

The actuarial value of assets is based on recognizing gains and losses over a five-year period where gains and losses are determined by comparing the projected market value of assets (based on the prior year's market value of assets, cash flows during the year and expected investment returns on those amounts) to the current year's market value of assets. The actuarial value of assets must be between 80% and 120% of market value.

IV. Actuarial Assumptions

A. Economic Assumptions

1. Investment return: 7.25% per annum, compounded annually, composed of an assumed 2.50% inflation rate and a 4.75% real rate of return. This rate represents the assumed return, net of all investment expenses.
2. Salary increase rate: Inflation rate of 2.50%, plus productivity component of 1.00%, plus step-rate/ promotional component as shown (adopted May 2018).

Completed Years of Service	Percentage Increase in Salary		
	Merit	Wage Inflation	Total
0	2.60 %	3.50 %	6.10 %
5	2.30	3.50	5.80
10	2.00	3.50	5.50
15	1.50	3.50	5.00
20	0.20	3.50	3.70
25	0.15	3.50	3.65
30	0.00	3.50	3.50
35	0.00	3.50	3.50
40	0.00	3.50	3.50

3. Wage inflation: 3.50%
4. Payroll growth: 3.50%

B. Demographic Assumptions

1. Mortality rates (pre- and post-retirement) – The valuation assumes fully generational mortality. The base mortality table used is the RP-2014 Blue Collar Healthy Annuitant Generational Mortality Table. Future mortality improvements are assumed each year using the Ultimate MP Scale. The following are sample rates for 2020 (adopted May 2018):

Sample Attained Ages	Probability of Death Pre-Retirement	
	Men	Women
20	0.05 %	0.02 %
25	0.06	0.02
30	0.06	0.02
35	0.06	0.03
40	0.08	0.04
45	0.12	0.07
50	0.21	0.12
55	0.34	0.18
60	0.57	0.26
65	1.01	0.39
70	1.63	0.66
75	2.63	1.11
80	4.24	1.86
85	7.93	4.72
90	13.99	10.16

Sample Attained Ages	Probability of Death Post-Retirement	
	Men	Women
20	0.05 %	0.02 %
25	0.07	0.02
30	0.09	0.04
35	0.12	0.07
40	0.18	0.11
45	0.26	0.18
50	0.38	0.27
55	0.56	0.38
60	0.80	0.54
65	1.19	0.82
70	1.85	1.31
75	2.97	2.16
80	4.88	3.59
85	8.18	6.12
90	13.84	10.58

2. Mortality rates (post-disablement) – RP-2014 Disabled Male and Female No Collar Mortality Table. Future mortality improvements are assumed each year using the Ultimate MP Scale. Sample rates for 2020 shown below (adopted May 2018):

Sample Attained Ages	Probability of Death Post-Disability	
	Men	Women
20	0.05 %	0.02 %
25	0.20	0.09
30	0.49	0.23
35	0.85	0.42
40	1.26	0.65
45	1.66	0.91
50	2.00	1.17
55	2.29	1.42
60	2.59	1.65
65	3.09	2.01
70	3.93	2.69
75	5.29	3.92
80	7.46	5.83
85	11.04	8.63
90	16.85	12.67

3. Disability rates. Sample rates shown below (adopted May 2018):

Sample Attained Ages	Probability of Disablement Next Year	
	Men	Women
25	0.02 %	0.02 %
30	0.03	0.03
35	0.05	0.05
40	0.08	0.08
45	0.13	0.13
50	0.22	0.22
55	0.42	0.42
60	0.60	0.60

4. Termination rates (for causes other than death, disability or retirement): Termination rates are based on service. Termination rates are not applied after a member becomes eligible for a retirement benefit. Rates at selected ages are shown (adopted May 2018):

Completed Years of Service	Probability of Termination Next Year	
	Men	Women
0	12.00 %	12.00 %
5	9.00	9.00
10	6.00	6.00
15	4.00	4.00
20	2.00	2.00
25	1.00	1.00
30	1.00	1.00
35	1.00	1.00

5. Retirement rates (adopted May 2018).

Age	Tier 1		Tier 2		Tier 3	
	Age-based	Rule-based	Age-based	Rule-based	Age-based	Rule-based
< 46	12.00%	12.00%				
46	12.00%	12.00%				
47	12.00%	12.00%				
48	12.00%	12.00%				
49	12.00%	12.00%				
50	15.00%	15.00%		20.00%		
51	15.00%	15.00%		15.00%		
52	15.00%	15.00%		15.00%		
53	15.00%	15.00%		15.00%		
54	15.00%	15.00%		15.00%		
55	15.00%	15.00%	15.00%	15.00%	15.00%	25.00%
56	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%
57	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%
58	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%
59	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%
60	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%
61	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%
62	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%
63	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%
64	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%
65	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%
66	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%
67	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%
68	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%
69	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%
70	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%
71	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%
72	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%
73	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%
74	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%
75	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

C. Expense Loading. Based on the prior three year average, rounded to the nearest \$1,000.

Year	Noninvestment Expenses
2017	\$636,159
2018	913,182
2019	647,743
	\$2,197,084
	÷ 3 = \$732,361
Average	\$732,361
Loading	\$732,000



D. Other Assumptions

1. Percent married: 85% of employees are assumed to be married.
2. Age difference: Male members are assumed to be three years older than their spouses, and female members are assumed to be three years younger than their spouses.
3. Cost of living adjustment: None.
4. Optional forms: Members are assumed to elect the normal form of benefit.
5. Vested terminating members are assumed to elect a refund or a deferred benefit, whichever is more valuable at the time of termination.
6. Current and future deferred vested participants are assumed to retire at the earlier of age 55 or the age they meet special early retirement eligibility. Deferred disabled participants are assumed to commence benefits at age 60.
7. Pay increase timing: Middle of year.
8. Decrement timing: Decrements of all types are assumed to occur mid-year.
9. Eligibility testing: Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur.
10. Decrement relativity: Decrement rates are used directly, without adjustment for multiple decrement table effects.
11. Incidence of Contributions: Contributions are assumed to be received continuously throughout the year based upon the computed percent of payroll shown in this report, and the actual payroll payable at the time contributions are made.

SECTION H

RISKS ASSOCIATED WITH MEASURING THE ACCRUED LIABILITY

Risks Associated with Measuring the Accrued Liability and Actuarially Determined Contribution

The determination of the accrued liability and the actuarially determined contribution requires the use of assumptions regarding future economic and demographic experience. Risk measures, as illustrated in this report, are intended to aid in the understanding of the effects of future experience differing from the assumptions used in the course of the actuarial valuation. Risk measures may also help with illustrating the potential volatility in the accrued liability and the actuarially determined contribution that result from the differences between actual experience and the actuarial assumptions.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions due to changing conditions; 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. The scope of an actuarial valuation does not include an analysis of the potential range of such future measurements.

Examples of risk that may reasonably be anticipated to significantly affect the plan's future financial condition include:

1. Investment risk – actual investment returns may differ from the expected returns;
2. Asset/Liability mismatch – changes in asset values may not match changes in liabilities, thereby altering the gap between the accrued liability and assets and consequently altering the funded status and contribution requirements;
3. Contribution risk – actual contributions may differ from expected future contributions. For example, actual contributions may not be made in accordance with the plan's funding policy or material changes may occur in the anticipated number of covered employees, covered payroll, or other relevant contribution base;
4. Salary and Payroll risk – actual salaries and total payroll may differ from expected, resulting in actual future accrued liability and contributions differing from expected;
5. Longevity risk – members may live longer or shorter than expected and receive pensions for a period of time other than assumed;
6. Other demographic risks – members may terminate, retire or become disabled at times or with benefits other than assumed resulting in actual future accrued liability and contributions differing from expected.

The effects of certain trends in experience can generally be anticipated. For example if the investment return since the most recent actuarial valuation is less (or more) than the assumed rate, the cost of the plan can be expected to increase (or decrease). Likewise if longevity is improving (or worsening), increases (or decreases) in cost can be anticipated.



Risks Associated with Measuring the Accrued Liability and Actuarially Determined Contribution

The computed contribution rate shown on Exhibit B.4 may be considered as a minimum contribution rate that complies with the Board’s policy. Actual contributions are set by statute. The timely receipt of the contributions is critical to support the financial health of the plan. Users of this report should be aware that contributions made at the statutory rate do not necessarily guarantee benefit security.

Plan Maturity Measures

Risks facing a pension plan evolve over time. A young plan with virtually no investments and paying few benefits may experience little investment risk. An older plan with a large number of members in pay status and a significant trust may be much more exposed to investment risk. Generally accepted plan maturity measures include the following:

	<u>January 1, 2020</u>	<u>January 1, 2019</u>
Ratio of the market value of assets to total payroll	1.9	1.8
Ratio of actuarial accrued liability to payroll	3.5	3.7
Ratio of actives to retirees and beneficiaries	1.8	1.8
Ratio of net cash flows to market value of assets	-2%	-2%
Duration of the actuarial accrued liability	11.5	11.7

Ratio of Market Value of Assets to Payroll

The relationship between assets and payroll is a useful indicator of the potential volatility of contributions. For example, if the market value of assets is 4.0 times the payroll, a return on assets 5% different than assumed would equal 20% of payroll. A higher (lower) or increasing (decreasing) level of this maturity measure generally indicates a higher (lower) or increasing (decreasing) volatility in plan sponsor contributions as a percentage of payroll.

Ratio of Actuarial Accrued Liability to Payroll

The relationship between actuarial accrued liability and payroll is a useful indicator of the potential volatility of contributions for a fully funded plan. A funding policy that targets a funded ratio of 100% is expected to result in the ratio of assets to payroll and the ratio of liability to payroll converging over time.

The ratio of liability to payroll may also be used as a measure of sensitivity of the liability itself. For example, if the actuarial accrued liability is 5.5 times the payroll, a change in liability 2% other than assumed would equal 11% of payroll. A higher (lower) or increasing (decreasing) level of this maturity measure generally indicates a higher (lower) or increasing (decreasing) volatility in liability (and also plan sponsor contributions) as a percentage of payroll.

Risks Associated with Measuring the Accrued Liability and Actuarially Determined Contribution

Ratio of Actives to Retirees and Beneficiaries

A young plan with many active members and few retirees will have a high ratio of active to retirees. A mature open plan may have close to the same number of actives to retirees resulting in a ratio near 1.0. A super-mature or closed plan may have significantly more retirees than actives resulting in a ratio below 1.0.

Ratio of Net Cash Flow to Market Value of Assets

A positive net cash flow means contributions exceed benefits and expenses. A negative cash flow means existing funds are being used to make payments. A certain amount of negative net cash flow is generally expected to occur when benefits are prefunded through a qualified trust. Large negative net cash flows as a percent of assets may indicate a super-mature plan or a need for additional contributions.

Duration of Actuarial Accrued Liability

The duration of the actuarial accrued liability may be used to approximate the sensitivity to a 1% change in the assumed rate of return. For example, duration of 10 indicates that the liability would increase approximately 10% if the assumed rate of return were lowered 1%.

Additional Risk Assessment

Additional risk assessment is outside the scope of the annual actuarial valuation. Additional assessment may include scenario tests, sensitivity tests, stochastic modeling, stress tests, and a comparison of the present value of accrued benefits at low-risk discount rates with the actuarial accrued liability

SECTION I

DETERMINISTIC PROJECTIONS

Deterministic Projections

Projections are a vital part of the annual valuation process for the Adams County Retirement Plan. The Adams County Retirement Plan is funded on a fixed rate basis meaning the contributions made to the plan do not automatically change as a result of experience, good or bad. As a result, long term projected outcomes can change significantly year to year due to fluctuations in investment returns.

Included in this section are two sets of deterministic projection. The first assumes the County continues to increase contributions each year until an ultimate rate of 11.50% is met. The second set assumes the County continues to contribute at the current contribution level. This analysis is meant to demonstrate the positive impact on the Plan of increased County contributions. Please note that both projection sets assume an annual rate of return on assets of exactly 7.25%.

Deterministic Projections

Set One – Assumes County Contribution Increase Until and Ultimate Rate of 11.5% is Met

Adams County Retirement Plan
Projection Results Based on January 1, 2020 Actuarial Valuation
Discount Rate: 7.25%

Valuation as of January 1, (1)	Actuarial Accrued Liability (AAL, in thousands) (2)	Actuarial Value of Assets (AVA, in thousands) (3)	Actuarial Accrued Liability (UAAL, in thousands) (4)	Funded Ratio (5)	Employer ADC (6)	Employer Normal Cost and Admin (7)	Amortization Payment (8)	Market Return for FY Beginning on Valuation Date (9)	Contribution Rate for Fiscal Year Following Valuation Date		Projected Payroll - (in thousands) (12)	Employee Contributions (in thousands) (13)	Employer Contributions (in thousands) (14)	Mill Levy Revenue (in thousands) (15)
									Employee (10)	Employer (11)				
2020	\$529,979	\$275,806	\$254,173	52.0%	12.14%	1.42%	10.72%	7.25%	9.00%	9.50%	\$149,499	\$13,455	\$14,202	\$2,013
2021	550,343	294,441	255,903	53.5%	11.39%	0.72%	10.67%	7.25%	9.00%	10.00%	155,373	13,984	15,537	2,038
2022	569,666	314,016	255,650	55.1%	11.08%	0.51%	10.57%	7.25%	9.00%	10.50%	161,277	14,515	16,934	2,063
2023	588,637	332,182	256,455	56.4%	10.86%	0.32%	10.54%	7.25%	9.00%	11.00%	167,348	15,061	18,408	2,089
2024	607,470	357,495	249,975	58.8%	10.39%	0.15%	10.24%	7.25%	9.00%	11.50%	173,505	15,615	19,953	2,115
2025	626,251	380,742	245,509	60.8%	10.05%	-0.01%	10.06%	7.25%	9.00%	11.50%	179,822	16,184	20,679	2,142
2026	644,837	405,175	239,662	62.8%	9.69%	-0.15%	9.84%	7.25%	9.00%	11.50%	186,375	16,774	21,433	2,168
2027	663,252	430,943	232,309	65.0%	9.32%	-0.28%	9.60%	7.25%	9.00%	11.50%	193,121	17,381	22,209	2,195
2028	681,471	458,152	223,319	67.2%	8.92%	-0.40%	9.31%	7.25%	9.00%	11.50%	199,986	17,999	22,998	2,223
2029	699,522	486,952	212,570	69.6%	8.48%	-0.50%	8.98%	7.25%	9.00%	11.50%	207,148	18,643	23,822	2,251
2030	717,448	517,537	199,911	72.1%	8.01%	-0.59%	8.60%	7.25%	9.00%	11.50%	214,610	19,315	24,680	2,279
2031	735,499	550,320	185,180	74.8%	7.48%	-0.67%	8.14%	7.25%	9.00%	11.50%	222,349	20,011	25,570	2,307
2032	753,841	585,639	168,202	77.7%	6.87%	-0.73%	7.60%	7.25%	9.00%	11.50%	230,426	20,738	26,499	2,336
2033	772,646	623,865	148,781	80.7%	6.17%	-0.80%	6.96%	7.25%	9.00%	11.50%	238,790	21,491	27,461	-
2034	792,013	662,852	129,162	83.7%	5.47%	-0.85%	6.31%	7.25%	9.00%	11.50%	247,430	22,269	28,454	-
2035	812,087	705,198	106,889	86.8%	4.61%	-0.89%	5.51%	7.25%	9.00%	11.50%	256,427	23,078	29,489	-
2036	833,054	751,326	81,728	90.2%	3.56%	-0.93%	4.50%	7.25%	9.00%	11.50%	265,656	23,909	30,550	-
2037	855,104	801,655	53,449	93.7%	2.22%	-0.97%	3.19%	7.25%	9.00%	11.50%	275,230	24,771	31,651	-
2038	878,352	856,563	21,790	97.5%	0.44%	-0.99%	1.44%	7.25%	9.00%	11.50%	285,114	25,660	32,788	-
2039	902,966	916,488	(13,522)	101.5%	0.00%	1.02%	-1.02%	7.25%	9.00%	11.50%	295,365	26,583	33,967	-
2040	929,007	981,817	(52,810)	105.7%	0.00%	4.71%	-4.71%	7.25%	9.00%	11.50%	305,763	27,519	35,163	-
2041	956,549	1,052,906	(96,357)	110.1%	0.00%	10.88%	-10.88%	7.25%	9.00%	11.50%	316,597	28,494	36,409	-
2042	985,727	1,130,265	(144,538)	114.7%	0.00%	23.25%	-23.25%	7.25%	9.00%	11.50%	327,673	29,491	37,682	-
2043	1,016,536	1,214,240	(197,704)	119.4%	0.00%	60.37%	-60.37%	7.25%	9.00%	11.50%	339,148	30,523	39,002	-
2044	1,049,050	1,305,315	(256,264)	124.4%	0.00%	75.61%	-75.61%	7.25%	9.00%	11.50%	350,990	31,589	40,364	-
2045	1,083,292	1,403,945	(320,653)	129.6%	0.00%	91.42%	-91.42%	7.25%	9.00%	11.50%	363,243	32,692	41,773	-
2046	1,119,217	1,510,563	(391,346)	135.0%	0.00%	107.84%	-107.84%	7.25%	9.00%	11.50%	375,817	33,824	43,219	-
2047	1,156,802	1,625,636	(468,834)	140.5%	0.00%	124.91%	-124.91%	7.25%	9.00%	11.50%	388,709	34,984	44,702	-
2048	1,196,041	1,749,680	(553,639)	146.3%	0.00%	142.58%	-142.58%	7.25%	9.00%	11.50%	402,123	36,191	46,244	-
2049	1,237,014	1,883,367	(646,353)	152.3%	0.00%	160.90%	-160.90%	7.25%	9.00%	11.50%	416,016	37,441	47,842	-
2050	1,279,742	2,027,359	(747,617)	158.4%	0.00%	179.91%	-179.91%	7.25%	9.00%	11.50%	430,347	38,731	49,490	-



Deterministic Projections

Set Two – Assumes County Contribution Remain at Current Level

Adams County Retirement Plan
 Projection Results Based on January 1, 2020 Actuarial Valuation
 Discount Rate: 7.25%

Valuation as of January 1,	Actuarial Accrued Liability (AAL, in thousands)	Actuarial Value of Assets (AVA, in thousands)	Actuarial Accrued Liability (UAAL, in thousands)	Funded Ratio	Employer ADC	Employer Normal Cost and Admin	Amortization Payment	Market Return for FY Beginning on Valuation Date	Contribution Rate for Fiscal Year Following Valuation Date		Projected Payroll - (in thousands)	Employee Contributions (in thousands)	Employer Contributions (in thousands)	Mill Levy Revenue (in thousands)
									Employee	Employer				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
2020	\$529,979	\$275,806	\$254,173	52.0%	12.14%	1.42%	10.72%	7.25%	9.00%	9.50%	\$149,499	\$13,455	\$14,202	\$2,013
2021	550,343	294,441	255,903	53.5%	11.39%	0.72%	10.67%	7.25%	9.00%	9.50%	155,373	13,984	14,760	2,038
2022	569,666	313,212	256,454	55.0%	11.12%	0.51%	10.60%	7.25%	9.00%	9.50%	161,277	14,515	15,321	2,063
2023	588,637	329,649	258,988	56.0%	10.96%	0.32%	10.65%	7.25%	9.00%	9.50%	167,348	15,061	15,898	2,089
2024	607,470	352,179	255,291	58.0%	10.61%	0.15%	10.46%	7.25%	9.00%	9.50%	173,505	15,615	16,483	2,115
2025	626,251	371,447	254,805	59.3%	10.43%	-0.01%	10.44%	7.25%	9.00%	9.50%	179,822	16,184	17,083	2,142
2026	644,837	391,481	253,356	60.7%	10.26%	-0.15%	10.41%	7.25%	9.00%	9.50%	186,375	16,774	17,706	2,168
2027	663,252	412,396	250,856	62.2%	10.08%	-0.28%	10.36%	7.25%	9.00%	9.50%	193,121	17,381	18,346	2,195
2028	681,471	434,261	247,211	63.7%	9.91%	-0.40%	10.31%	7.25%	9.00%	9.50%	199,986	17,999	18,999	2,223
2029	699,522	457,186	242,336	65.4%	9.74%	-0.50%	10.24%	7.25%	9.00%	9.50%	207,148	18,643	19,679	2,251
2030	717,448	481,323	236,125	67.1%	9.57%	-0.59%	10.15%	7.25%	9.00%	9.50%	214,610	19,315	20,388	2,279
2031	735,499	507,035	228,465	68.9%	9.38%	-0.67%	10.04%	7.25%	9.00%	9.50%	222,349	20,011	21,123	2,307
2032	753,841	534,610	219,231	70.9%	9.18%	-0.73%	9.91%	7.25%	9.00%	9.50%	230,426	20,738	21,890	2,336
2033	772,646	564,364	208,282	73.0%	8.95%	-0.80%	9.75%	7.25%	9.00%	9.50%	238,790	21,491	22,685	2,365
2034	792,013	596,541	195,473	75.3%	8.71%	-0.85%	9.55%	7.25%	9.00%	9.50%	247,430	22,269	23,506	2,395
2035	812,087	631,435	180,652	77.8%	8.41%	-0.89%	9.31%	7.25%	9.00%	9.50%	256,427	23,078	24,361	2,425
2036	833,054	669,415	163,639	80.4%	8.07%	-0.93%	9.00%	7.25%	9.00%	9.50%	265,656	23,909	25,237	-
2037	855,104	708,303	146,800	82.8%	7.79%	-0.97%	8.76%	7.25%	9.00%	9.50%	275,230	24,771	26,147	-
2038	878,352	750,742	127,610	85.5%	7.43%	-0.99%	8.43%	7.25%	9.00%	9.50%	285,114	25,660	27,086	-
2039	902,966	797,090	105,876	88.3%	6.94%	-1.02%	7.96%	7.25%	9.00%	9.50%	295,365	26,583	28,060	-
2040	929,007	847,645	81,362	91.2%	6.22%	-1.04%	7.26%	7.25%	9.00%	9.50%	305,763	27,519	29,047	-
2041	956,549	902,674	53,875	94.4%	5.02%	-1.06%	6.08%	7.25%	9.00%	9.50%	316,597	28,494	30,077	-
2042	985,727	962,583	23,143	97.7%	2.64%	-1.08%	3.72%	7.25%	9.00%	9.50%	327,673	29,491	31,129	-
2043	1,016,536	1,027,614	(11,078)	101.1%	0.00%	3.38%	-3.38%	7.25%	9.00%	9.50%	339,148	30,523	32,219	-
2044	1,049,050	1,098,135	(49,084)	104.7%	0.00%	14.48%	-14.48%	7.25%	9.00%	9.50%	350,990	31,589	33,344	-
2045	1,083,292	1,174,474	(91,183)	108.4%	0.00%	26.00%	-26.00%	7.25%	9.00%	9.50%	363,243	32,692	34,508	-
2046	1,119,217	1,256,932	(137,715)	112.3%	0.00%	37.95%	-37.95%	7.25%	9.00%	9.50%	375,817	33,824	35,703	-
2047	1,156,802	1,345,833	(189,031)	116.3%	0.00%	50.36%	-50.36%	7.25%	9.00%	9.50%	388,709	34,984	36,927	-
2048	1,196,041	1,441,540	(245,499)	120.5%	0.00%	63.23%	-63.23%	7.25%	9.00%	9.50%	402,123	36,191	38,202	-
2049	1,237,014	1,544,558	(307,544)	124.9%	0.00%	76.56%	-76.56%	7.25%	9.00%	9.50%	416,016	37,441	39,522	-
2050	1,279,742	1,655,369	(375,627)	129.4%	0.00%	90.39%	-90.39%	7.25%	9.00%	9.50%	430,347	38,731	40,883	-

