

A PUBLIC POLICY PRACTICE NOTE

Actuarial Section of the Comprehensive Annual Financial Report (CAFR) for a Public Pension Plan

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American Academy of Actuaries



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Practice Note: Actuarial Section of the Comprehensive Annual Financial Report (CAFR) for a Public Pension Plan

The purpose of practice notes is to provide information to actuaries on current or emerging practices in which their peers are engaged. They are intended to supplement the available actuarial literature, especially where the practices addressed are subject to evolving technology, recently adopted external requirements, or advances in actuarial science or other applicable disciplines (e.g., economics, statistics, or enterprise risk management). Practice notes are not interpretations of actuarial standards of practice nor are they meant to be a codification of generally accepted actuarial practice. Actuaries are not in any way bound to comply with practice notes or to conform their work to the practices described in practice notes

Introduction

A public pension plan's Comprehensive Annual Financial Report (CAFR) is normally prepared by the pension plan following guidance from the Government Finance Officers Association (GFOA). Governmental Accounting Standards Board Statement No. 67 (GASB 67) prescribes the financial reporting framework that appears in the Financial section of the CAFR. In addition, CAFRs for public pension systems typically have an Actuarial section that is completed by the actuary, including a signed certification letter.

Unlike valuation reports, which are the responsibility of the actuary, actuaries have typically viewed the CAFR as the responsibility of others. The GFOA has issued a checklist of the items to be included in the CAFR in order to be awarded its Certificate of Achievement for Excellence in Financial Reporting. Current practice is heavily influenced by the GFOA checklist, which includes the following for the Actuarial section:¹

- Certification letter signed by the actuary
- Summary of plan provisions
- Summary of actuarial methods and assumptions
- Schedule of active member valuation data
- Schedule of retirants and beneficiaries added to and removed from rolls
- Analysis of financial experience
- Schedule of funded liabilities by type
- Schedule of funding progress based on funding valuations
- Reference to 10-year schedule of actuarially determined contributions compared to actual contributions in the Required Supplementary Information

¹ These items can appear in other sections of the CAFR as long as the Actuarial Section contains a reference to it.

As the CAFR is a communication to a broad audience that is prepared by the actuary, the purpose of this practice note is to review current practices as well as emerging ideas for the completion of the actuarial section of the CAFR.

Purpose of Actuarial Section of the CAFR

The Actuarial section of the CAFR provides users of the financial statements with information related to the funding of the promised benefits. Information related to the accounting is shown in the Financial section. The funding information can help users understand the financial condition of the pension system and can also help them hold decision-makers accountable. The actuarial measures use an expected-return based discount rate to develop contribution and budget values. Also, by the nature of a CAFR, the information is primarily historical and generally does not include projections of contributions or funded status.

Certification Letter

The GFOA checklist calls for the actuary's certification letter to include the following:

1. The frequency of valuations
2. The date of the most recent valuation
3. The extent to which the actuary relied on information provided by the plan
4. The extent to which the actuary examined reasonableness of plan information
5. A list of the supporting schedules in the actuarial section prepared by the actuary
6. A statement that the assumptions and methods used for funding purposes meet the parameters set by the actuarial standards of practice (ASOPs), or, if not, a description of how they depart from those parameters

In addition, if the actuary is providing information for financial reporting (i.e., GASB 67 disclosures), the GFOA requires the letter to also include:

1. A statement that the assumptions and methods used for financial reporting purposes meet the parameters set by the ASOPs and generally accepted accounting principles (GAAP), or, if not, a description of how they depart from those parameters
2. A list of the supporting schedules that appear in the financial section that are prepared by the actuary

The GFOA checklist calls for the certification letter to be printed on the actuary's letterhead, to be signed and dated by the actuary, and to show the actuary's professional designations.

To ensure that the actuarial section of the CAFR meets the requirements for an actuarial communication, many letters include a reference to the full actuarial valuation report. If the actuarial valuation report is available on a public website, it may be useful to also include a link to that website.

Dashboard

One emerging idea is to collect the most important information for users of the CAFR for display in the first few pages of the actuarial section. The actuarial section is often relatively long, containing a series of historical tables and other information that has accumulated over the years. Because the CAFR is a communication to a broad audience beyond just the intended users of the actuary's valuation report, it can be useful to provide the most important information in a brief set of tables and graphs either immediately before or immediately following the actuary's certification letter. This collection of information can be thought of as a dashboard, providing the key gauges needed to monitor the progress of the plan.

Traditionally, information in the actuarial section of a CAFR has only been provided in tabular format. As a communication tool, it may also be helpful to include charts, particularly in the dashboard. The specific information that is most important can vary by plan, but the following information might be included for most plans:

- Historical contributions
- Historical funded status
- Historical changes in Unfunded Actuarial Accrued Liability (UAAL)
- Future amortization of UAAL
- Investment return information

Historical Contributions

GASB 67 requires the disclosure of a 10-year history comparing the actuarially determined contribution (ADC), if calculated, to actual contributions. This comparison can be a key metric in assessing whether or not the sponsors have responsibly funded the retirement system. Systems that have not consistently received the full ADC tend to be more poorly funded and more likely to be distressed than those systems that have consistently received the ADC.

This information, however, is very limited. Not all ADCs are calculated in the same manner, and there is no indication how much of the contribution is for normal cost and how much employees are contributing. To provide more comprehensive information, a 10-year history of the following components could be disclosed in the dashboard of the actuarial section of the CAFR:

1. Employer normal cost
2. Interest on the UAAL
3. Payment on UAAL principal
4. Total ADC
5. Actual employer contributions
6. Actual employee contributions

For purposes of this exhibit, employee contributions would be attributed to the total normal cost. The employer normal cost would be equal to the total normal cost, reduced by the employee contributions.

If employee contributions exceed the total normal cost, the employer normal cost contribution would be negative.

For plans that set contributions separately for different groups of employees (e.g., general vs. safety), it could be useful to show some or all of the information separately for each group.

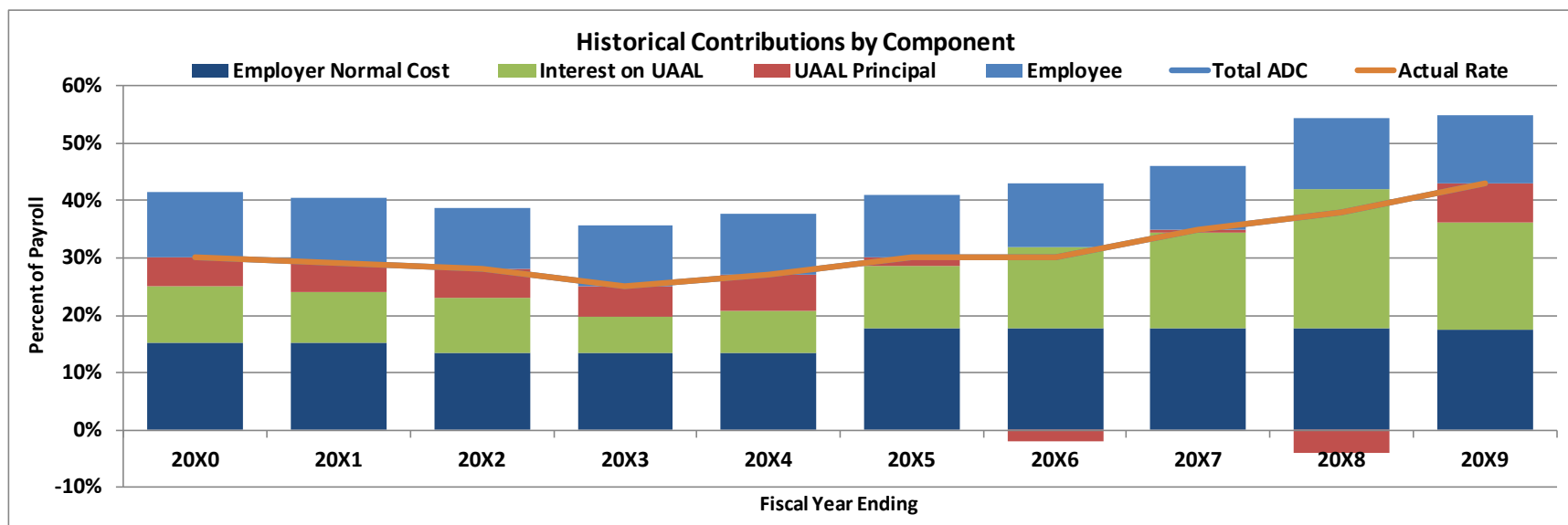
Sample Disclosure—Actual Contributions = ADC based on layered, fixed period amortization

Below is a sample potential disclosure for a plan that has always contributed the ADC based on a layered, fixed-period amortization. This disclosure is designed to highlight the following information about contributions:

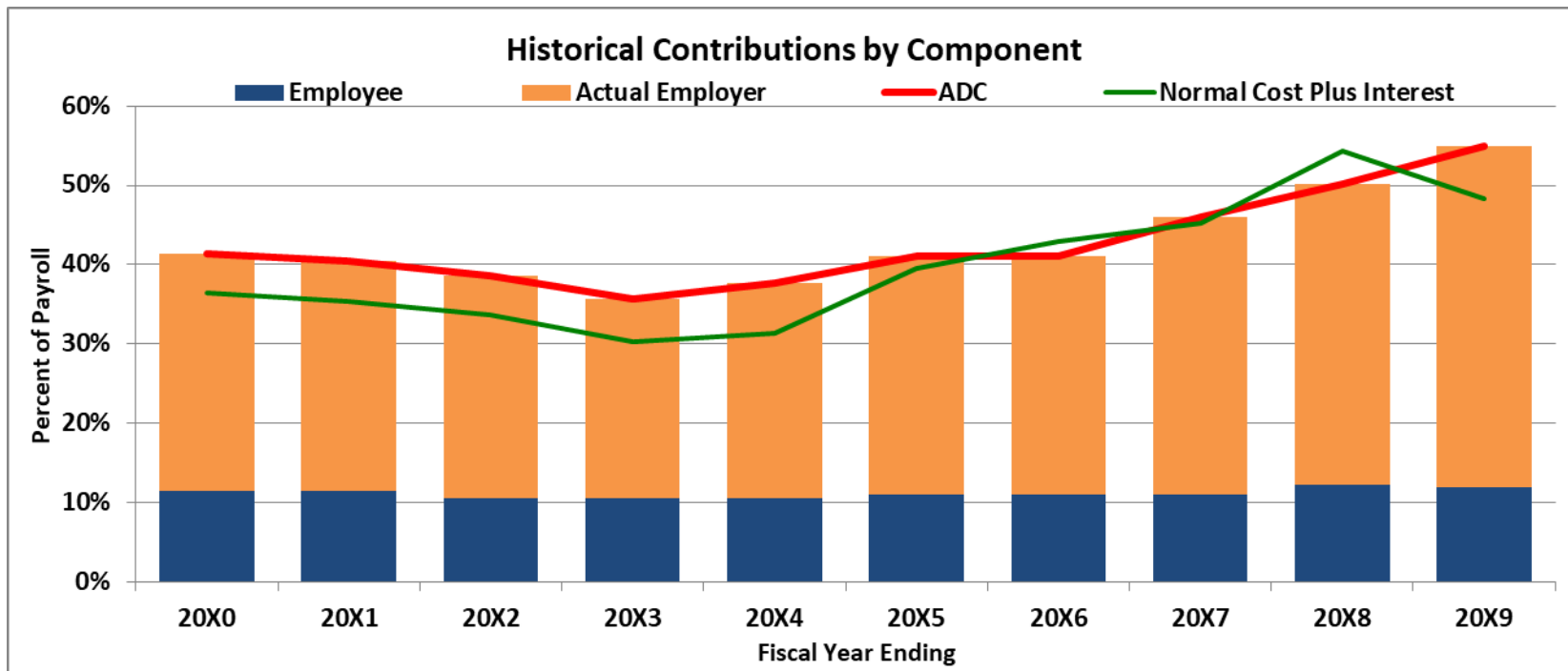
1. Because the actual employer contributions are equal to the ADC each and every year, the chart does not have separate lines for the ADC and actual contribution rates.
2. The ADC is generally greater than normal cost plus interest on the UAAL. The red bar in the chart shows the principal payment on the UAAL. It is greater than zero for all years except 20X6 and 20X8. Similarly, the UAL principal row in the table shows a positive percent of payroll contributed toward the UAL principal in all years except 20X6 and 20X8.
3. The components of the ADC are specified as percentages of payroll, including the division of the total normal cost between employees and employers.

Sample Disclosure – Actual Contributions = ADC based on layered, fixed period amortization

Actual Contribution Rates			Historical Actuarially Determined Contributions (ADC)										
	FYE 20X9	FYE 20X8	20X0	20X1	20X2	20X3	20X4	20X5	20X6	20X7	20X8	20X9	
Employer	43.0%	38.0%	Total Normal Cost	26.5%	26.5%	24.0%	24.0%	24.0%	28.6%	28.6%	28.6%	29.8%	29.5%
Employee	12.0%	12.2%	Employee Contributions	11.4%	11.4%	10.6%	10.6%	10.6%	11.0%	11.0%	11.0%	12.2%	12.0%
Total	55.0%	50.2%	Employer Normal Cost	15.1%	15.1%	13.4%	13.4%	13.4%	17.6%	17.6%	17.6%	17.6%	17.5%
			Interest on UAAL	9.9%	8.9%	9.6%	6.3%	7.4%	11.0%	14.3%	16.7%	24.5%	18.8%
			UAAL Principal	5.0%	5.0%	5.0%	5.3%	6.2%	1.4%	-1.9%	0.7%	-4.1%	6.7%
			Total ADC	30.0%	29.0%	28.0%	25.0%	27.0%	30.0%	30.0%	35.0%	38.0%	43.0%
Actual Payroll			\$ 570	\$ 600	\$ 650	\$ 676	\$ 700	\$ 700	\$ 690	\$ 680	\$ 650	\$ 700	
Expected ADC Amount			171	174	182	169	189	210	207	238	247	301	
Actual Employer Amount			171	174	182	169	189	210	207	238	247	301	
Shortfall or (Excess)			\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	



Alternate Graph



Sample Commentary:

- The total normal cost has increased over the prior 10 years to almost 30% of payroll and employees currently contribute 12% of pay toward the cost of the benefit. The normal cost is shown in the first row of the table and is represented by the blue bars in the chart (dark blue = employer-paid and light blue = employee-paid).
- The interest on the UAAL has nearly tripled as a percent of payroll since 20X3 to almost 19% of payroll as shown in the table. This increase is primarily due to actual investment returns and can be seen in the chart by the growth of the green bar. If this rate becomes too high, the plan could become unsustainable.
- In most years the ADC is greater than the employer normal cost plus interest on the UAAL. In the table, the UAAL Principal payment is positive for all years except 20X6 and 20X8. This indicates that the contributions are high enough to be expected to reduce the dollar amount of the UAAL. In fact, even as the interest on the UAAL has grown, the employer has made contributions (6.7% of pay in 20X9) to reduce the principal of the UAAL. The principal payment on the UAAL is shown in the red bar in the chart. Under the plan's layered amortization, the pattern of gains and losses recognized over time caused the temporary negative amortization in 20X6 and 20X8.
- Actual employer contributions equal the ADC every year, so the sponsor is maintaining discipline with respect to contributions.

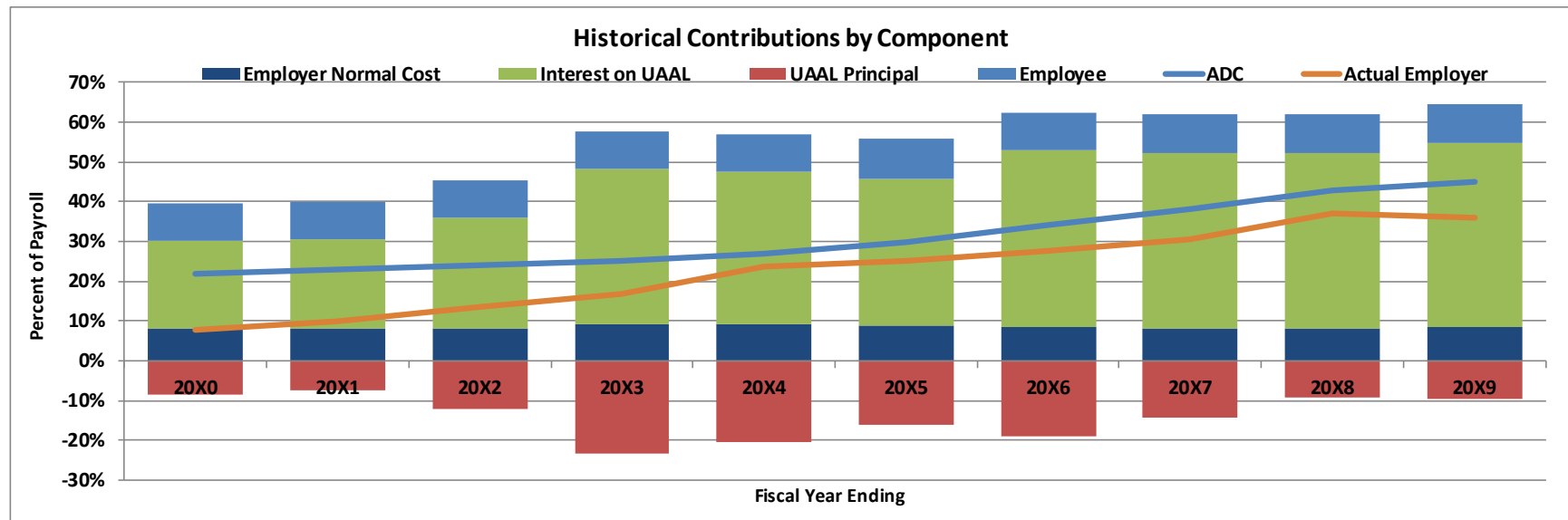
Sample Disclosure—Actual Contributions < ADC < Normal Cost + Interest on UAAL

In contrast to the sample above, below is a potential disclosure for a plan that contributes an amount less than the ADC and the ADC itself is consistently less than normal cost plus interest on the UAAL. This disclosure is designed to highlight the following information about contributions:

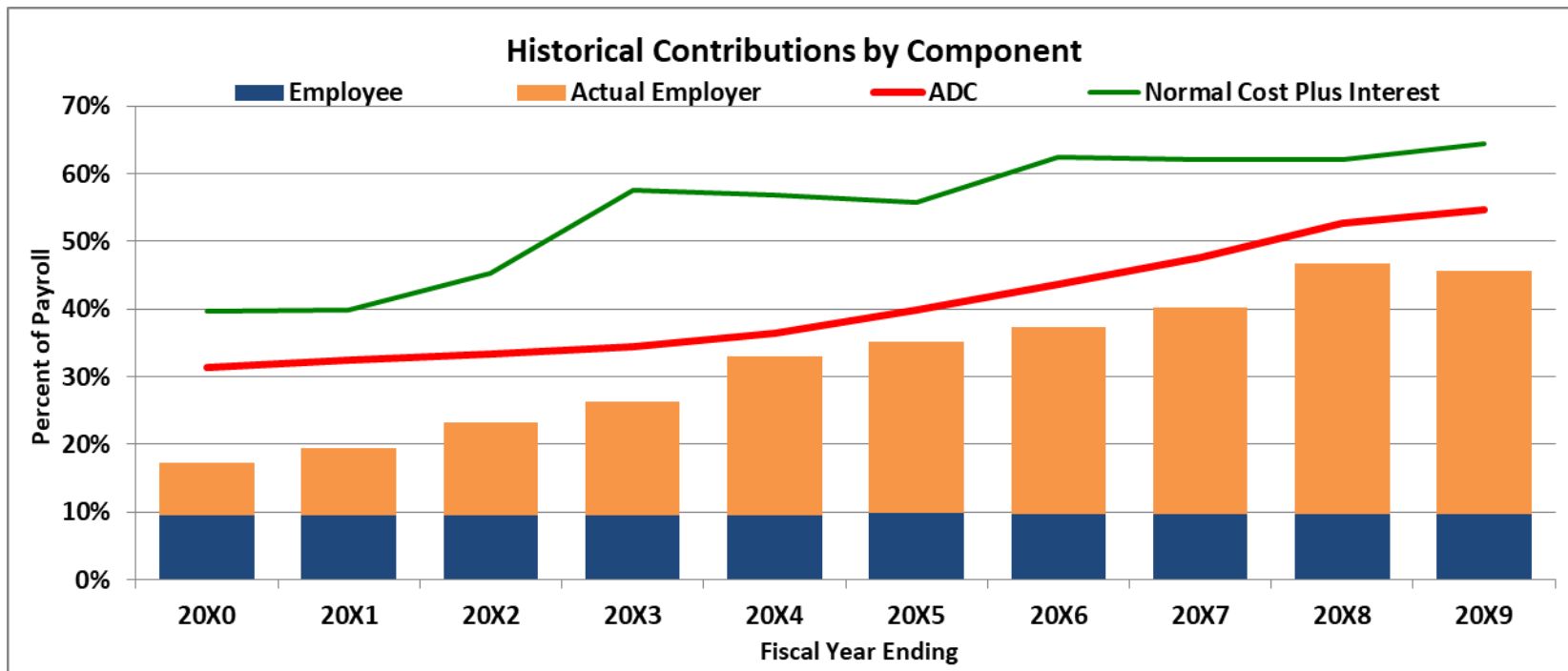
1. The actual employer contributions have been less than the ADC. The amount of the shortfall is shown in the table and is represented on the chart as the difference between the two lines.
2. The ADC used by this plan has been less than normal cost plus interest on the UAAL. The red bar in the chart shows the principal payment on the UAAL, and it is negative for all years. Similarly, the UAL principal row in the table shows a negative percent of payroll contributed toward the UAL principal in all years. This shortfall is effectively added to the UAAL in the following year.
3. The components of the ADC are specified as percentages of payroll, including the division of the total normal cost between employees and employers.

Sample Disclosure – Actual Contributions < ADC < Normal Cost + Interest on UAAL

Actual Contribution Rates			Historical Actuarially Determined Contributions (ADC)									
	FYE 20X9	FYE 20X8	20X0	20X1	20X2	20X3	20X4	20X5	20X6	20X7	20X8	20X9
Employer	1.5%	1.6%	Total Normal Cost	17.7%	17.6%	17.6%	18.7%	18.6%	18.6%	18.2%	18.0%	18.1%
State	34.5%	35.4%	Employee Contributions	9.4%	9.4%	9.4%	9.4%	9.4%	9.8%	9.7%	9.7%	9.7%
Subtotal	36.0%	37.0%	Employer Normal Cost	8.3%	8.2%	8.2%	9.3%	9.2%	8.8%	8.5%	8.3%	8.4%
Employee	9.7%	9.7%	Interest on UAAL	22.0%	22.2%	27.7%	38.9%	38.3%	37.1%	44.3%	44.1%	46.3%
Total	45.7%	46.7%	UAAL Principal	-8.3%	-7.4%	-11.9%	-23.2%	-20.5%	-15.9%	-18.8%	-14.4%	-9.7%
			ADC	22.0%	23.0%	24.0%	25.0%	27.0%	30.0%	34.0%	38.0%	45.0%
			Actual Payroll	\$ 7,700	\$ 8,200	\$ 8,500	\$ 8,900	\$ 9,300	\$ 9,200	\$ 9,300	\$ 9,400	\$ 9,600
			Expected ADC Amount	1,694	1,886	2,040	2,225	2,511	2,760	3,162	3,572	4,085
			Actual Employer Amount	600	820	1,170	1,500	2,200	2,325	2,560	2,860	3,456
			Shortfall or (Excess)	\$ 1,094	\$ 1,066	\$ 870	\$ 725	\$ 311	\$ 435	\$ 602	\$ 712	\$ 570



Alternate Graph



Sample Commentary:

- The total normal cost has remained relatively constant over the past 10 years at approximately 18% of payroll and employees currently pay 9.7% of pay toward the cost of the benefit. The normal cost is shown in the first row of the table and is represented by the blue bars in the chart (dark blue = employer-paid and light blue = employee-paid).
- The interest on the UAAL has more than doubled as a percent of payroll over the period, steadily increasing from 22% of pay in 20X0 to over 46% of pay in 20X9. This growth can be seen in the chart by the growth of the green bar. The size of the green bars compared to the blue bars also illustrates how significant the interest on the UAAL is compared to the accrual of benefits represented by the normal cost. Given the cost of interest on the UAAL, funding this plan will likely remain a significant burden on the employer for years to come.
- The ADC used by this plan is consistently less than the employer normal cost plus interest on the UAAL. In the table, the UAAL principal payment, which is shown in the red bars, is negative each year and has been as low as -22.8% of payroll. This trend implies that if contributions were equal the ADC, the UAAL would still be expected to grow even if all assumptions were met. It has also contributed significantly to the growth in the interest on the UAAL.
- In each year of the disclosure, the actual employer contribution was less than the ADC, so there is a consistent shortfall shown in the table and the Total ADC line and Actual Rate line in the chart are separated. The actual contribution rates shown in the upper left table show a total employer contribution rate of 36.0% of pay for FYE 20X9, which is over 10% of pay less than the interest on the UAAL and 19% of pay less than normal cost plus interest on the UAAL. The interest on the UAAL is likely to grow even larger given the actual contribution rate.

Historical Funded Status

The GFOA checklist for the actuarial section of the CAFR includes the disclosure of the schedule of funding progress that compares the actuarial liability determined for funding purposes to the actuarial value of assets. The usefulness of these disclosures could be enhanced by supplementing this schedule of funding progress with similar information based on the market value of assets,² disclosing the ratio of the actuarial value of assets to the market value of assets, and disclosing the ratios of market value of assets and actuarial liability to payroll. Finally, a graphical representation of the information can be helpful in communicating the trends.

² The required supplementary information under GASB 67 includes a similar disclosure comparing the Total Pension Liability to the market value of assets. The Total Pension Liability, however, might differ from the actuarial liability as of the same date for a variety of reasons, including potential differences in discount rate and projections to the measurement date under GASB 67.

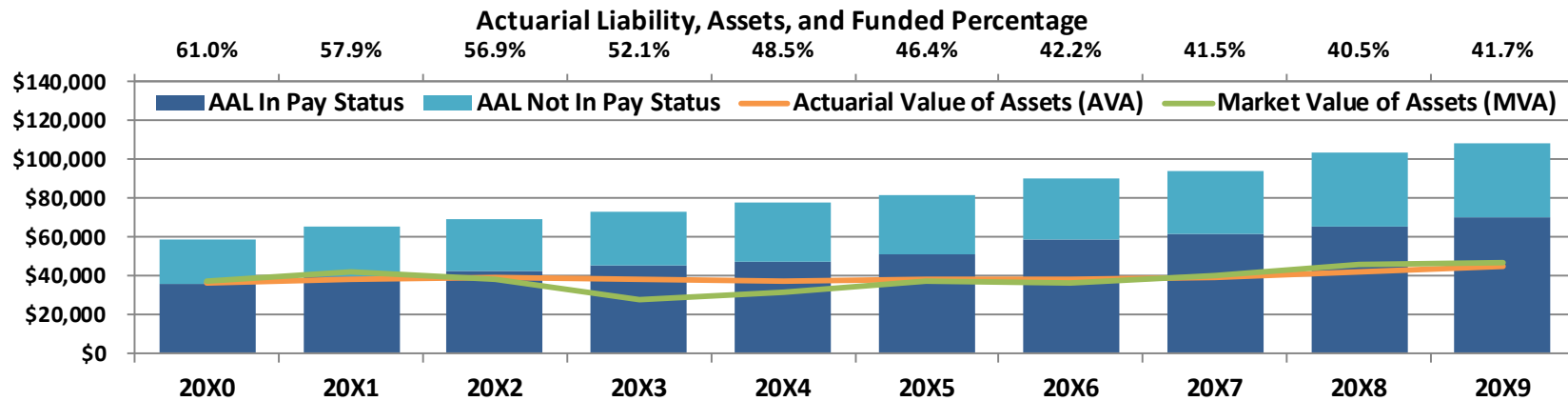
Sample Disclosure—Actual Contributions < ADC < Normal Cost + Interest on UAAL

Below is a sample potential disclosure for a plan that contributes an amount less than the ADC and the ADC itself is consistently less than normal cost plus interest on the UAAL. This disclosure is designed to highlight the following information about the funding of the plan:

1. The maturity of the plan is shown in the volatility ratios ($MVA \div \text{payroll}$ and $AAL \div \text{payroll}$) and the proportion of the AAL attributable to members in pay status.
2. The effect of the asset smoothing method over time is shown in the comparison of the actuarial value to the market value of assets. The graph illustrates the degree of deviation and in some cases might provide insight into whether there is a bias inherent in the method.
3. The progression of the funding ratio is shown along with the size of the UAAL compared to payroll.
4. For plans that set contributions separately for different groups of employees (e.g., general vs. safety), it could be useful to show some or all of the information separately for each group.

Sample Disclosure – Actual Contributions < ADC < Normal Cost + Interest on UAAL

Valuation Date	6/30/20X0	6/30/20X1	6/30/20X2	6/30/20X3	6/30/20X4	6/30/20X5	6/30/20X6	6/30/20X7	6/30/20X8	6/30/20X9
Actuarial Accrued Liability (AAL)										
In Pay Status	\$ 35,300	\$ 39,800	\$ 41,900	\$ 45,000	\$ 47,500	\$ 50,500	\$ 58,750	\$ 61,250	\$ 65,500	\$ 70,500
Not In Pay Status	23,700	25,800	26,700	28,000	29,750	30,800	31,250	32,650	38,250	37,500
Total AAL	\$ 59,000	\$ 65,600	\$ 68,600	\$ 73,000	\$ 77,250	\$ 81,300	\$ 90,000	\$ 93,900	\$ 103,750	\$ 108,000
Expected Payroll	\$ 7,750	\$ 8,150	\$ 8,500	\$ 8,900	\$ 9,250	\$ 9,200	\$ 9,300	\$ 9,400	\$ 9,500	\$ 9,600
Actuarial Value of Assets Measures										
Actuarial Value of Assets (AVA)	\$ 36,000	\$ 38,000	\$ 39,000	\$ 38,000	\$ 37,500	\$ 37,750	\$ 38,000	\$ 39,000	\$ 42,000	\$ 45,000
Unfunded AAL	\$ 23,000	\$ 27,600	\$ 29,600	\$ 35,000	\$ 39,750	\$ 43,550	\$ 52,000	\$ 54,900	\$ 61,750	\$ 63,000
Funded Percentage	61.0%	57.9%	56.9%	52.1%	48.5%	46.4%	42.2%	41.5%	40.5%	41.7%
Unfunded AAL as % of Payroll	297%	339%	348%	393%	430%	473%	559%	584%	650%	656%
Market Value of Assets Measures										
Market Value of Assets (MVA)	\$ 37,000	\$ 42,000	\$ 38,000	\$ 28,000	\$ 31,000	\$ 37,000	\$ 36,500	\$ 40,000	\$ 46,000	\$ 46,500
Unfunded AAL	\$ 22,000	\$ 23,600	\$ 30,600	\$ 45,000	\$ 46,250	\$ 44,300	\$ 53,500	\$ 53,900	\$ 57,750	\$ 61,500
Funded Percentage	62.7%	64.0%	55.4%	38.4%	40.1%	45.5%	40.6%	42.6%	44.3%	43.1%
Unfunded AAL as % of Payroll	284%	290%	360%	506%	500%	482%	575%	573%	608%	641%
Ratio of AVA to MVA	97.3%	90.5%	102.6%	135.7%	121.0%	102.0%	104.1%	97.5%	91.3%	96.8%
Volatility Ratios										
MVA Volatility Ratio (MVA ÷ Payroll)	4.8	5.2	4.5	3.1	3.4	4.0	3.9	4.3	4.8	4.8
AAL Volatility Ratio (AAL ÷ Payroll)	7.6	8.0	8.1	8.2	8.4	8.8	9.7	10.0	10.9	11.3



Sample Commentary:

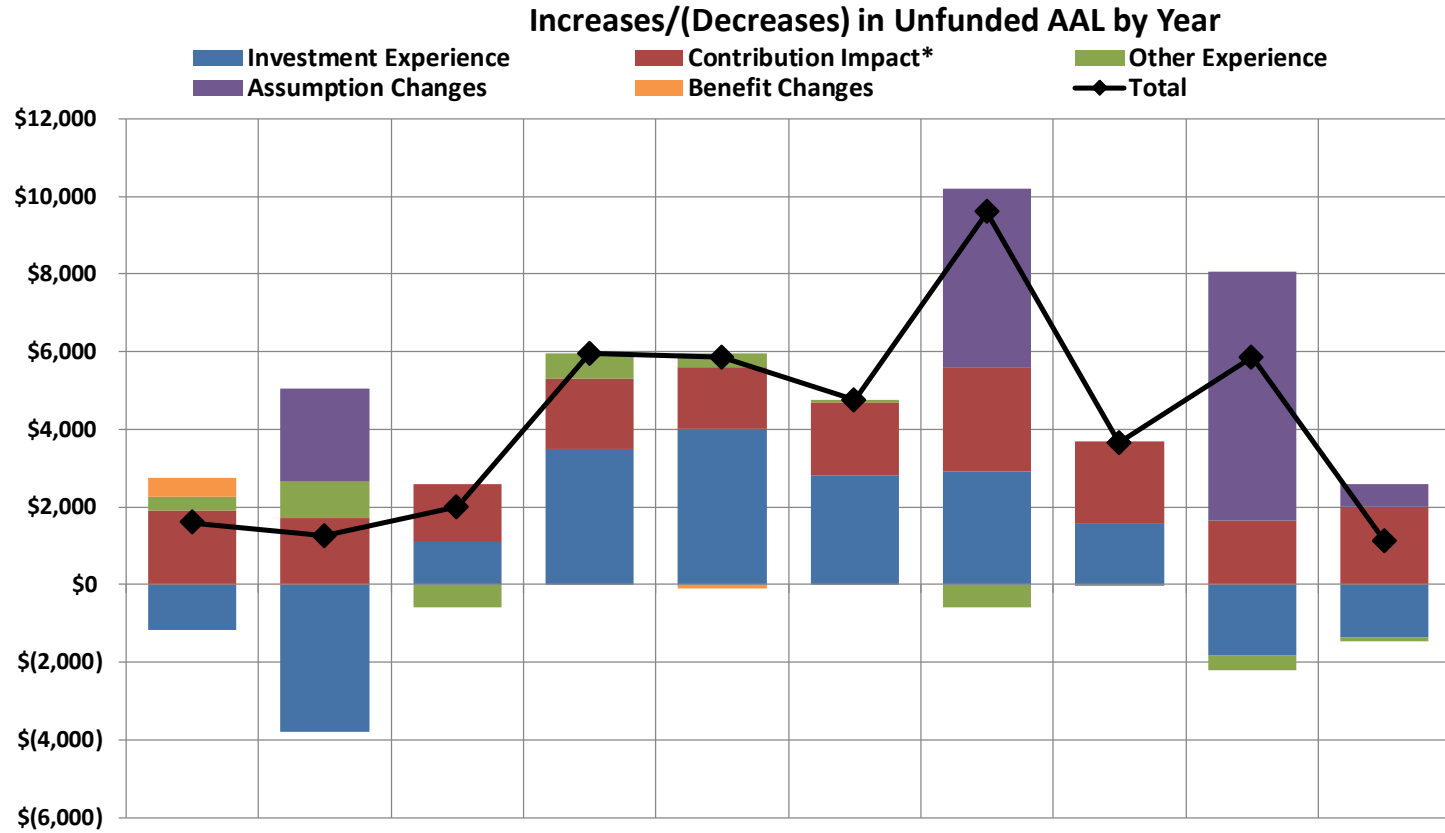
- The actuarial accrued liability has grown steadily while assets have remained fairly level. The actuarial liability is shown at the top of the table growing from \$59 billion to \$108 billion over the 10-year period. At the same time, the market value of the assets only grew from \$37.0 billion to \$46.5 billion, resulting in a UAAL of \$61.5 billion as of June 30, 20X9. In fact, the current assets are not even sufficient to pay the benefits of members currently receiving benefits if all assumptions are met.
- The actuarial value and market value of assets were similar until 20X3, when the market value declined by \$10 billion. The asset smoothing held the actuarial value of assets relatively level and significantly higher than the market value for a few years. This dynamic subsequently reversed itself and the market value is now greater than the actuarial value.
- The UAAL has also grown significantly in proportion to payroll, increasing from 284% of payroll to 641% of payroll. Based on a discount rate of 7.0%, a contribution of approximately 45% of payroll is needed just to pay the interest on the UAAL.
- The volatility ratios shown at the bottom of the table indicate how sensitive the plan is to changes. For example, a 10% investment loss compared to expectations would represent a loss equal to 48% of payroll in 20X9 (10% times MVA volatility ratio of 4.8). If the plan were fully funded, the same 10% investment loss would represent a loss equal to 113% of payroll (10% times AAL volatility ratio of 11.3). The larger the loss as a percent of payroll, the more the contribution rate will need to increase to recover from the loss.

Historical Changes in UAAL

The GFOA checklist calls for an analysis of financial experience but does not specify a format. There is a wide range of formats used in practice with varying levels of detail. While the appropriate level of detail can depend on the reader, there are five categories of changes that are likely to be important for most readers to understand:

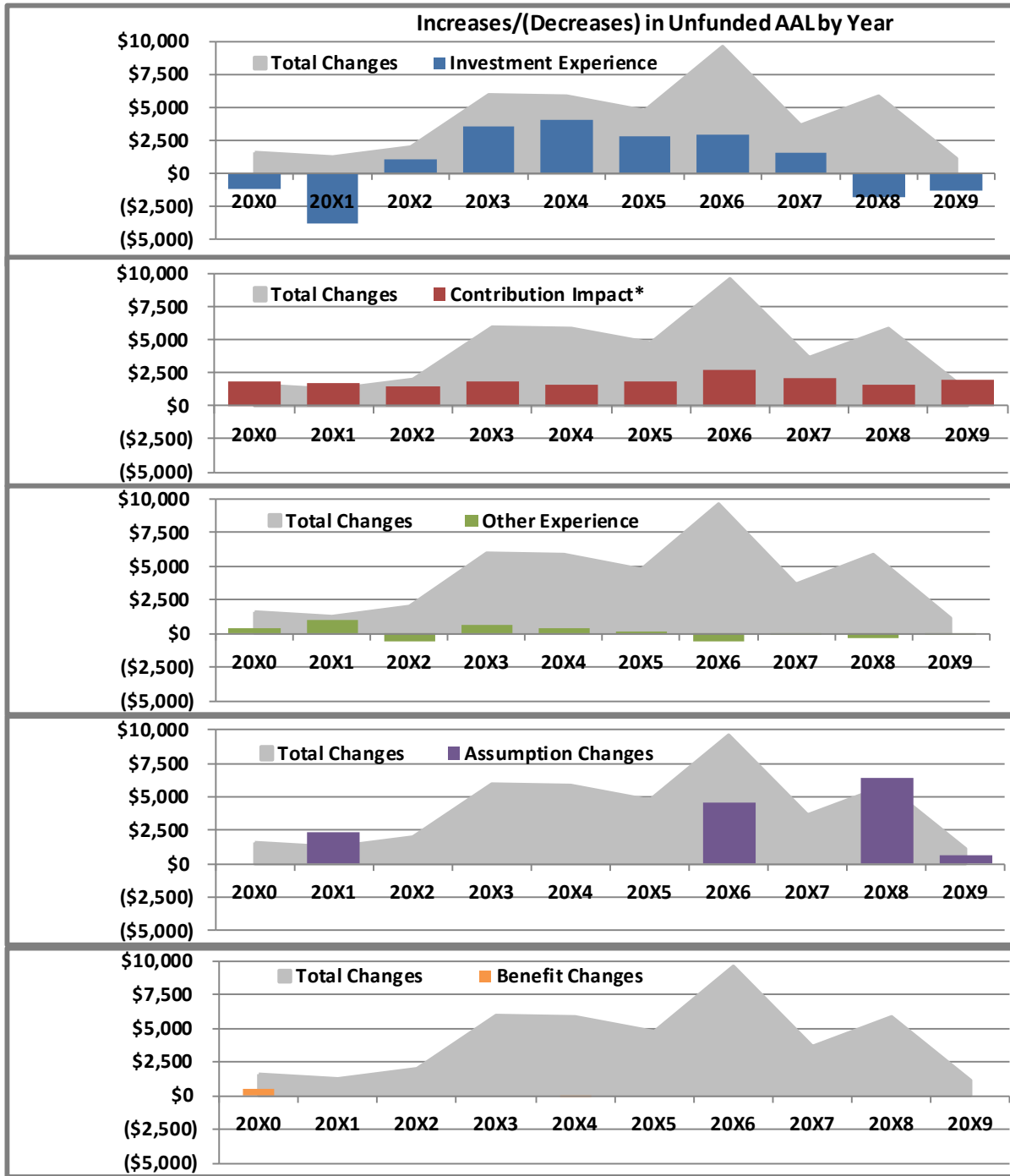
1. Contributions compared to normal cost plus interest on the UAAL
2. Investment returns on the actuarial value of assets compared to assumed returns
3. Other experience that differs from what was expected
4. Assumption and method changes
5. Benefit changes

Consistent increases in UAAL from the first category indicate a possible issue with the contribution policy, while consistent gains or losses in the next two categories indicate a potential need to make assumption changes. The final two categories are not directly the result of experience, but are policy decisions made by the board or sponsor. The tables and charts below illustrate potential disclosures of changes in the UAAL.



Valuation Date	20X0	20X1	20X2	20X3	20X4	20X5	20X6	20X7	20X8	20X9
Investment Experience	\$ (1,160)	\$ (3,800)	\$ 1,100	\$ 3,500	\$ 4,000	\$ 2,800	\$ 2,900	\$ 1,600	\$ (1,800)	\$ (1,350)
Contribution Impact*	1,900	1,700	1,500	1,800	1,600	1,900	2,700	2,100	1,650	2,000
Other Experience	350	950	(600)	650	350	50	(600)	(50)	(400)	(125)
Assumption Changes	0	2,400	0	0	0	0	4,600	0	6,400	600
Benefit Changes	500	0	0	0	(100)	0	0	0	0	0
Total Changes	<u>\$ 1,590</u>	<u>\$ 1,250</u>	<u>\$ 2,000</u>	<u>\$ 5,950</u>	<u>\$ 5,850</u>	<u>\$ 4,750</u>	<u>\$ 9,600</u>	<u>\$ 3,650</u>	<u>\$ 5,850</u>	<u>\$ 1,125</u>

* Contribution impact is normal cost plus interest on the UAAL less actual contributions



Valuation Date	20X0	20X1	20X2	20X3	20X4	20X5	20X6	20X7	20X8	20X9
Investment Experience	\$(1,160)	\$(3,800)	\$1,100	\$3,500	\$4,000	\$2,800	\$2,900	\$1,600	\$(1,800)	\$(1,350)
Contribution Impact*	1,900	1,700	1,500	1,800	1,600	1,900	2,700	2,100	1,650	2,000
Other Experience	350	950	(600)	650	350	50	(600)	(50)	(400)	(125)
Assumption Changes	0	2,400	0	0	0	0	4,600	0	6,400	600
Benefit Changes	500	0	0	0	(100)	0	0	0	0	0
Total Changes	\$ 1,590	\$ 1,250	\$ 2,000	\$ 5,950	\$ 5,850	\$ 4,750	\$ 9,600	\$ 3,650	\$ 5,850	\$ 1,125

* Contribution impact is normal cost plus interest on the UAAL less actual contributions

The impact of each change is shown as of the valuation date in which it is first reflected. Over time, the impact accumulates with interest and any associated change to the normal cost, so the cumulative impact of a type of change (e.g., assumptions) cannot be captured by simply adding up the impact for each year.

Sample Commentary:

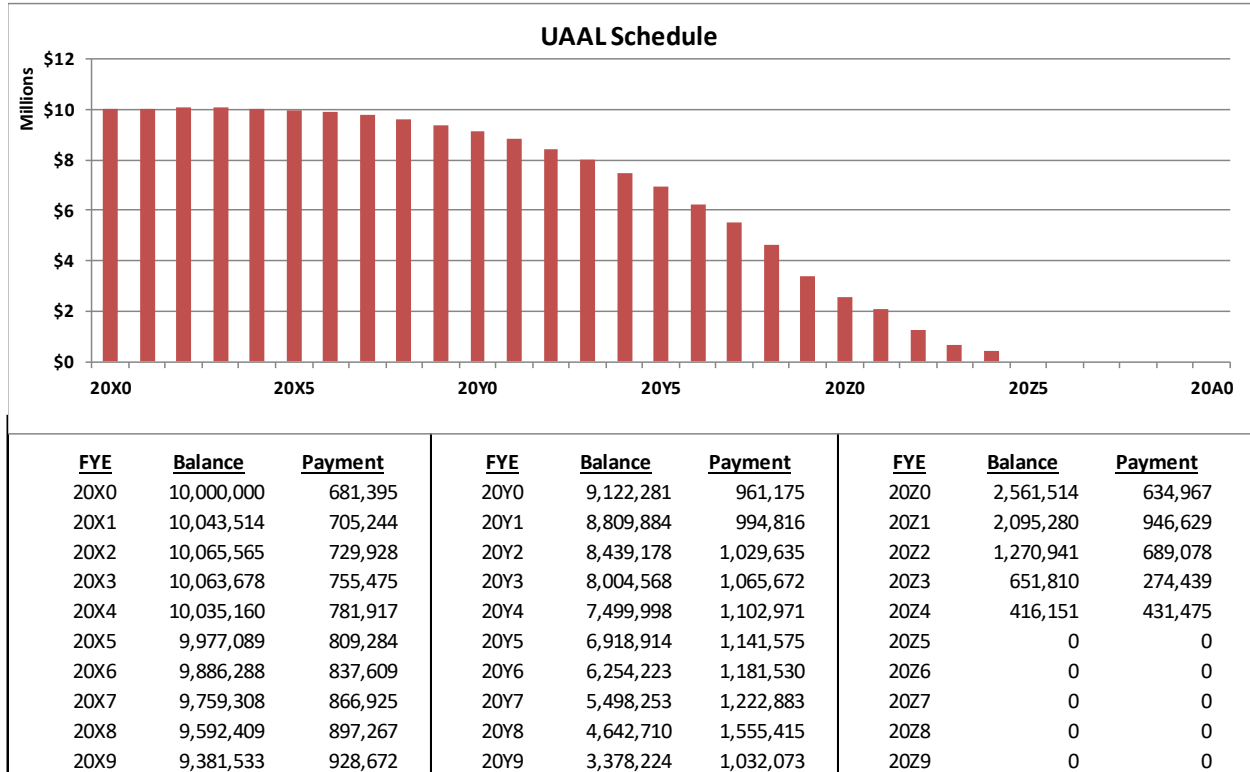
- The most significant factor affecting changes in the UAAL from year to year is investment experience. To dampen the short-term volatility of actuarially determined contributions, an asset smoothing method is used, which recognizes investment gains and losses over a five-year period.
- Actual contributions have consistently been less than normal cost plus interest on the UAAL, contributing to the increase in the UAAL over the last decade.
- Gains and losses on other experience have been relatively small compared to other items with a balance between gains and losses, suggesting that at a high level the assumptions appear to have been reasonable.
- Assumptions and/or methods have been changed four times in the past 10 years. All of the changes have increased the UAAL. It should be noted, however, that these are changes in expected future experience that increase the expected long-term costs of the plan. Actual long-term costs will be determined by actual experience and do not change just because an assumption changes.
- The last benefit increase was 10 years ago. More recently cost-of-living adjustment (COLA) provisions were curtailed, reducing the UAAL.

Future Amortization of UAAL

One of the key pieces of information that is often overlooked is how and when the UAAL is expected to be paid off. Even if the contribution allocation procedure is thoroughly described, it might not be clear from that description exactly what is expected to happen to the UAAL, particularly if the contribution allocation procedure is a statutory rate of pay.

To provide the reader with a more complete understanding of the anticipated financial condition of the plan, a projection of the UAAL assuming all assumptions are met can be provided. Such a projection would show whether or not there is any negative amortization expected and whether such negative amortization is temporary or expected to be permanent. For example, the following chart shows a case using layered amortization where there is some small temporary negative amortization, but ultimately the UAAL is expected to be paid off within 25 years.

Sample Disclosure—Layered, Fixed Period Amortization

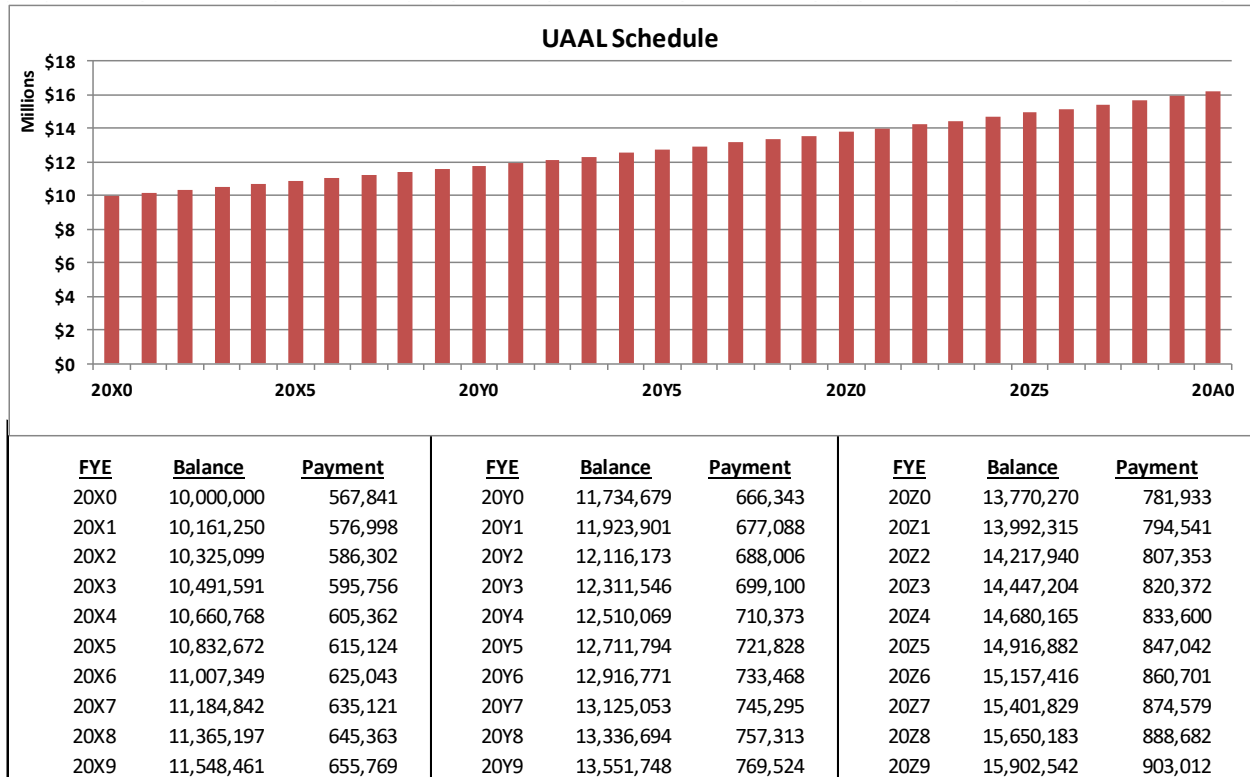


Sample Commentary:

- The plan uses a layered, fixed period amortization method with an initial amortization period of 25 years. This method was established eight years ago, so there are now eight separate layers to the amortization, some representing gains and some representing losses or assumption changes.
- The UAAL is expected to remain relatively constant over the next five years as contributions are approximately equal to the interest on the UAAL. Then, the UAAL is scheduled to decline and ultimately be paid off by 2025.
- This illustration shows how the UAAL is expected to be paid off if the plan experience matches current expectations. Note that in this projection the returns on the actuarial value of assets are assumed to be equal to the assumed rate of return, which is not the same scenario as if the market value of assets were to always produce returns at this rate.
- In the future, the plan will experience gains and losses that are not included on this schedule. Each year another layer will be added with a 25-year amortization period.
- In addition to the scheduled amortization payments, the employer and employees are assumed to make contributions each year equal to the normal cost.

In contrast, the following chart shows the same UAAL with a 30-year rolling amortization. In this case, the UAAL is not only not expected to be paid off, but is expected to grow.

Sample Disclosure—Rolling 30-Year Amortization



Sample Commentary:

- The plan uses a rolling 30-year amortization method such that each year, the payment on the UAAL is equal to the first-year payment in a 30-year level percentage of payroll amortization schedule.
- Because the initial resulting payment is less than the interest on the UAAL and the amortization period is reset each year, the UAAL is expected to grow indefinitely.
- In the future, the plan will experience gains and losses that are not included on this schedule. Each year those gains or losses will be added to the remaining UAAL. If there are gains, the UAAL can be reduced.
- In addition to the scheduled amortization payments, the employer and employees are assumed to make contributions each year equal to the normal cost.

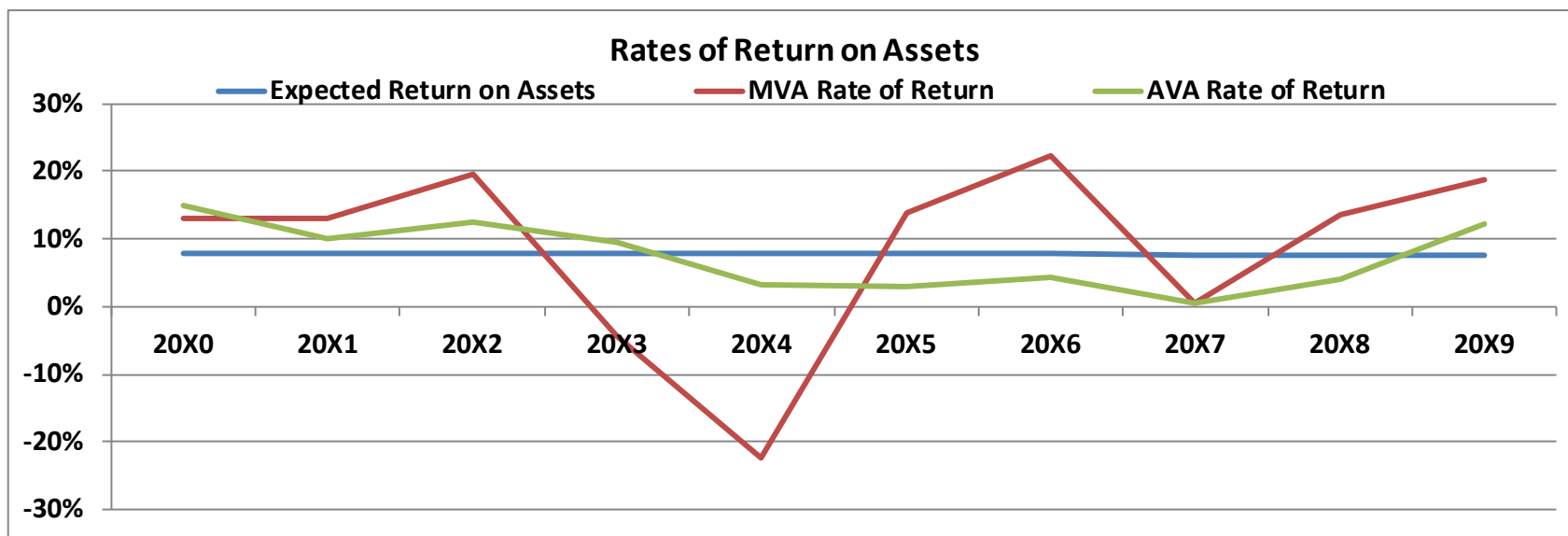
Investment Return Information

Historical rates of return on both the market and actuarial values of assets compared to the assumed rate of return can provide valuable information to understand the current position of the plan. The return on the market value illustrates the volatility of the historical returns, and the return on the

actuarial value illustrates how the asset smoothing method mitigates that volatility for the development of contribution rates.

Sample Disclosure – Investment Return Information

Valuation Date	<u>20X0</u>	<u>20X1</u>	<u>20X2</u>	<u>20X3</u>	<u>20X4</u>	<u>20X5</u>	<u>20X6</u>	<u>20X7</u>	<u>20X8</u>	<u>20X9</u>
Expected Return on Assets	8.00%	8.00%	8.00%	7.75%	7.75%	7.75%	7.75%	7.50%	7.50%	7.50%
MVA Rate of Return	13.1%	12.9%	19.5%	-4.4%	-22.3%	13.8%	22.3%	0.5%	13.7%	18.8%
AVA Rate of Return	15.0%	10.0%	12.5%	9.5%	3.2%	3.0%	4.2%	0.6%	3.9%	12.2%



Sample Commentary:

- Over the past 10 years, the return on the market value of assets has ranged from positive 22% to negative 22%. The average return for the period was 7.9%.
- Using a five-year smoothing method, the return on the actuarial value of assets is much less volatile, ranging from a low of 0.6% to a high of 15%. The average return for the period was 7.3%.
- The expected return on assets has been gradually reduced over the period from 8.0% to 7.5%.

Risk Disclosures

Traditionally, there have been limited or no disclosures or discussions of potential future risks in the actuarial section of the CAFR. Under ASOP No. 51, [Assessment and Disclosure of Risk Associated with Measuring Pension Obligations and Determining Pension Plan Contributions](#), there are required risk disclosures when a funding or pricing valuation is performed. While the CAFR is not a funding or pricing valuation, it is an important communication to stakeholders about the financial status of the plan. Consequently, it might be useful to provide some of the ASOP No. 51 disclosures in the CAFR and also refer to the actuarial valuation report containing the full set of risk disclosures. CAFR information is primarily historical and generally does not include projections of contributions or funded status. There are, however, a number of risk disclosures that do not involve projections that could be included in the CAFR. Some possible items to include in the CAFR are:

- *Identification of Risks*—ASOP No. 51 requires the actuary to identify the risks that “may reasonably be anticipated to significantly affect the plan’s future financial condition.” The risks identified in the funding valuation report could be disclosed in the CAFR as well.
- *Discussion of Risk Assessments*—A discussion of the identified risks to the plan and the results of any assessment could be included in the CAFR.
- *Plan Maturity Measures*—ASOP No. 51 requires the actuary to disclose plan maturity measures that are significant to understanding the risks associated with the plan. The key measures selected by the actuary could also be disclosed in the CAFR along with an explanation of what the measures represent and how they are significant in assessing the risks to the plan. For many public plans, two of the most significant maturity measures are:
 - *Asset Volatility Ratio*—The asset volatility ratio is the market value of assets divided by the covered payroll, and it shows the sensitivity of the funding requirements of the plan to changes in actual investment return.
 - *Liability Volatility Ratio*—The liability volatility ratio shows the sensitivity of the funding requirements assuming the plan is fully funded, and also shows the sensitivity to assumption changes and demographic experience.
- *Expected Changes as Actuarial Value of Assets Returns to Market Value*—For measures based on the actuarial value of assets, including the ADC, there could be a built-in bias toward gains or losses depending on whether there are currently unrecognized asset gains or losses in the smoothing calculation. It might be useful to quantify the expected changes to the extent they aren’t already shown. This can be done by showing a projection of contribution rates beyond the end of the asset smoothing period, assuming the returns on the market value of assets are equal to the assumed rate. Alternately, the ADC calculated based on the market value of assets could be disclosed.
- *Impact of One-Year Investment Return on UAAL and Interest on UAAL as a Percent of Payroll*—One measure to easily quantify the investment risk being taken is to show the increase or decrease in the UAAL based on the market value of assets for a one-year investment return of plus or minus one standard deviation from the expected return. Alternatively, the interest on the UAAL as a percent of payroll can provide the reader with a sense of the affordability of the

investment risk. If the standard deviation is not known, the differences could also be shown at a 0% return and 2 times the expected return. This method provides a sense of the range of potential contribution rates, but it does not capture the impact of alternative investment strategies that would have higher or lower expected returns and standard deviations.

- *Theoretical Price to Eliminate Investment Risk*—The theoretical price to eliminate investment risk could be estimated as the price of investing in a low-risk or cash-flow-matching portfolio. The difference between this estimate and the Actuarial Accrued Liability based on expected returns represents the additional amount theoretically needed to eliminate investment risk. Alternatively, it represents the savings the plan anticipates from taking investment risk in its portfolio. Note that this difference does not quantify the potential consequences of the investment risks being taken by the plan. It just indicates what it would cost to eliminate those risks. Other disclosures, such as the one discussed above, are needed to quantify the potential consequences of the investment risks.
- *Disclosure of Any Detailed Risk Assessment Performed*—If a detailed risk analysis has been performed or there are regular metrics the board uses to manage the risks of the plan, a brief discussion could be included in the certification letter along with references to any other report containing the risk analysis. The letter could also disclose if no detailed risk analysis has been performed.

Additional Detailed Disclosures

Contribution Allocation Procedure and Funding Policy

The contribution allocation procedure generally consists of an actuarial cost method, an asset smoothing method, and an amortization method. It could also include other direct rate smoothing techniques to produce an ADC. All of these methods and procedures could be disclosed and an effective disclosure could also include a description of the practical effect of the method or procedure to inform a nontechnical reader. For example, if the plan uses the entry age actuarial cost method, the disclosure might include a statement that the intent of the method is to spread the cost of each individual's benefits as a level percent of the individual's pay over his or her career.

The plan's funding policy is the basis on which actual contributions are made. It can be the ADC, a fixed statutory rate, or some other basis. Disclosing this basis could provide valuable information to many readers, particularly if the accompanying description includes the practical effect of the method or procedure on a nontechnical level. If actual contributions are not actuarially determined, the disclosure might compare the actual rate to an ADC rate and might describe any policy for changing or recommending changes to the actual contribution rate, particularly if it is a fixed rate set in statute.