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Comparing Public Pension Accounting and Funding Measures

By Paul Zorn¹

In June 2012, the Governmental Accounting Standards Board (GASB) made significant changes to the accounting and financial reporting standards for state and local government pension plans, as well as for their sponsoring governments.² Prior to the GASB's changes, a public pension plan's actuarial cost, accrued liability, and value of assets were essentially the same for both funding and accounting purposes.

However, under the GASB's new standards, the accounting and funding measures have been disconnected. Moreover, the new pension accounting measures will behave differently and be more volatile than the funding measures. As a result, government decision-makers will need to understand both the accounting and funding measures in order to properly assess their pension plan's financial status and required contributions.

Funding Measures

The vast majority of state and local governments use actuarial valuations to determine the contributions needed to fund their pension plans, or to assess the appropriateness of current contribution levels. These contributions are invested and the combined contributions and investment earnings are used to pay benefits. This is generally referred to as "funding" the plan. For funding purposes, the actuarially determined contribution generally consists of two parts: (1) the normal cost and (2) the amortization payment used to pay down the unfunded actuarial accrued liability (UAAL).³

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² For a detailed summary of the GASB's changes, see "The GASB's New Pension Accounting and Financial Reporting Standards," in the October 2012 issue of *GRS Insight*.

³ Some actuarial cost methods do not distinguish between the normal cost and the UAAL; however, the actuarial cost methods used by most state and local government plans make this distinction.

In This Issue

The GASB's changes to pension accounting standards for state and local governments disconnect the accounting measures from the measures used to fund public pension plans.

Moreover, the accounting measures will be more volatile than the funding measures, potentially resulting in substantial confusion regarding what the measures mean and how they should be used.

To make good decisions, public officials will need to understand both sets of measures and the differences between them. This issue of *GRS Insight* describes the measures and illustrates the key differences.

On page 4, the single discount rate of 7.82% was originally reported as 7.27%, but has been revised. The author apologizes for any inconvenience this may have caused.

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The normal cost is the actuarial cost of benefits earned for a given period of service, typically a year. The UAAL is the difference between the actuarial accrued liability (AAL) and the actuarial value of assets (AVA). The AAL equals the present value of pension benefits that have accrued to current plan members due to past service, and typically includes benefits related to projected salary and service, as well as automatic cost-of-living adjustments (COLAs). The present value is discounted using the plan's long-term expected investment return.

The AVA is the actuarial value of the plan's investments that are available to pay benefits. Often, it is determined in a way that averages investment gains and losses over time (typically 5 years), to lessen the impact of investment volatility on the actuarially determined contributions. The amortization payment is the annual cost of financing the UAAL over time, usually 20 to 30 years.

Accounting Measures

Prior to the GASB's changes, governmental accounting measures for pensions focused on the cost of pensions and closely mirrored the funding measures. The GASB's measure of pension expense was the "annual pension cost" (APC) which consisted largely of the employer's "annual required contribution" (ARC) plus certain adjustments. The ARC, in turn, consisted of the normal cost plus amortization of the UAAL over a period of not more than 30 years. The GASB's measure of pension liability was the accumulated difference between the APC and the actual contributions made by the employer.

In the new standards, the GASB has shifted the pension accounting focus from the pension cost to the pension liability. This was prompted, in part, by the GASB's conclusion that governmental employers retain responsibility for paying pension benefits that are not ultimately paid by the pension plan. Consequently, to the extent there is an unfunded pension obligation, the GASB decided that it should be recognized in the employer's government-wide financial statements.⁴

⁴ State and local governments provide several sets of financial statements, including: (1) government-wide financial statements, and (2) governmental fund financial statements. Governmental fund financial statements use the modified basis of accounting. The GASB's changes affect the government-wide financial statements, but may not significantly change the governmental fund financial statements.

The GASB's new measure of the pension liability is called the "net pension liability" (NPL), and is the difference between the "total pension liability" (TPL) and the plan's "fiduciary net position" (FNP). The FNP is the fair (market) value of the plan's assets that are available to pay benefits. The TPL is the present value of pension benefits that are allocated to current members due to past service by the entry age normal actuarial cost method. The TPL includes benefits related to projected salary and service, and automatic COLAs. In addition, ad hoc COLAs are also included in the TPL to the extent they are substantively automatic.

In many ways, the GASB's total pension liability (TPL) is similar to the actuarial accrued liability (AAL). However, a key difference between the TPL and the AAL is the GASB's new discount rate, referred to as the "single discount rate." For accounting purposes, the GASB's single discount rate is based on: (1) the plan's expected long-term investment return to the extent the plan's projected fiduciary net position is sufficient to pay benefits; and (2) a tax-exempt, general obligation municipal bond yield or index rate, to the extent the plan's projected fiduciary net position is not sufficient.⁵

Consequently, if current assets and projected future contributions and earnings are not sufficient to cover the projected future pension payments to current plan members, the single discount rate would include a portion based on the municipal bond rate. At times when the municipal bond rate is lower than the long-term expected investment return (as is currently the case), the single discount rate for accounting purposes would be lower than the discount rate used for funding purposes. As a result, the TPL would be higher than the AAL.⁶

Another important difference between the accounting and funding measures is that the fair (market) value of assets (rather than the smoothed value of assets) is used to determine the net pension liability (NPL) for accounting purposes, making it more volatile than the unfunded actuarial accrued liability (UAAL).

⁵ A detailed discussion of the process for determining the single discount rate is provided in the October 2012 issue of *GRS Insight*.

⁶ However, at times when the municipal bond rate is higher than expected returns (e.g., the mid-1980s), including the municipal bond rate in the single discount rate would raise it above the expected return. As a result, the TPL would be lower than the AAL.

In addition, while governmental plans typically amortize the UAAL over 20 to 30 years to determine the contributions for funding purposes, the GASB's pension expense for accounting purposes uses much shorter deferral periods (e.g., 5-10 years). This adds volatility to the measure of pension expense, as discussed further on pages 5 and 6.

Table 1 summarizes the underlying differences between the pension accounting and funding measures.

Comparing the Funding and Accounting Measures of Pension Liability

To illustrate the differences between the funding and accounting measures, a

simplified pension plan was developed, based on a state-wide plan covering general employees. Although the simplified plan is modeled using historical data, changes have been made to improve year-to-year consistency.

For example, while the plan's actual period for amortizing the unfunded actuarial accrued liability (UAAL) varied somewhat from year-to-year, it was set to a 25-year open period for the simplified plan.⁷ The improved consistency helps to highlight the differences between the funding and accounting measures. However, because the results are based on a simplified plan, they should be viewed as illustrative rather than definitive, and may not be representative of the reader's plan.

⁷ The 25-year open amortization period, while generally consistent with amortization periods used by governmental plans, prolongs amortization well into the future. The resulting contributions would, therefore, be significantly higher than those for a 10-year closed amortization period.

	Funding Approach	Accounting Approach	Implications
Included	Generally, benefits accrued to members based on past service, but typically including projected future service, future salary, and automatic COLAs.	Similar to funding; however, the TPL must also include ad hoc COLAs to the extent they are substantively automatic.	Including ad hoc COLAs could lead to a somewhat higher measure of the TPL.
Discount Rate	Long-term expected investment return.	Long-term expected return to the extent the plan has sufficient projected assets to pay future benefits; otherwise, a portion of the discount rate will also reflect the rate on tax-exempt municipal bonds.	Including the tax-exempt municipal bond rate in the discount rate could substantially increase the TPL and the related normal cost.
Asset Valuation	Typically, the market value of assets is smoothed over a period of 5 years, although longer periods are used by some plans.	Fair (market) value.	Using the market value of assets will make the NPL more volatile than the UAAL.
Amortization/Deferrals	Typically, public plans seek to amortize their UAAL over a period between 20-30 years.	Investment gains/losses are deferred and recognized in the pension expense over a 5-year period. Experience gains/losses and assumption changes are recognized in expense over the average expected remaining service lives of plan members (e.g., 7 years).	The shorter expense recognition period will increase the volatility of the pension expense.

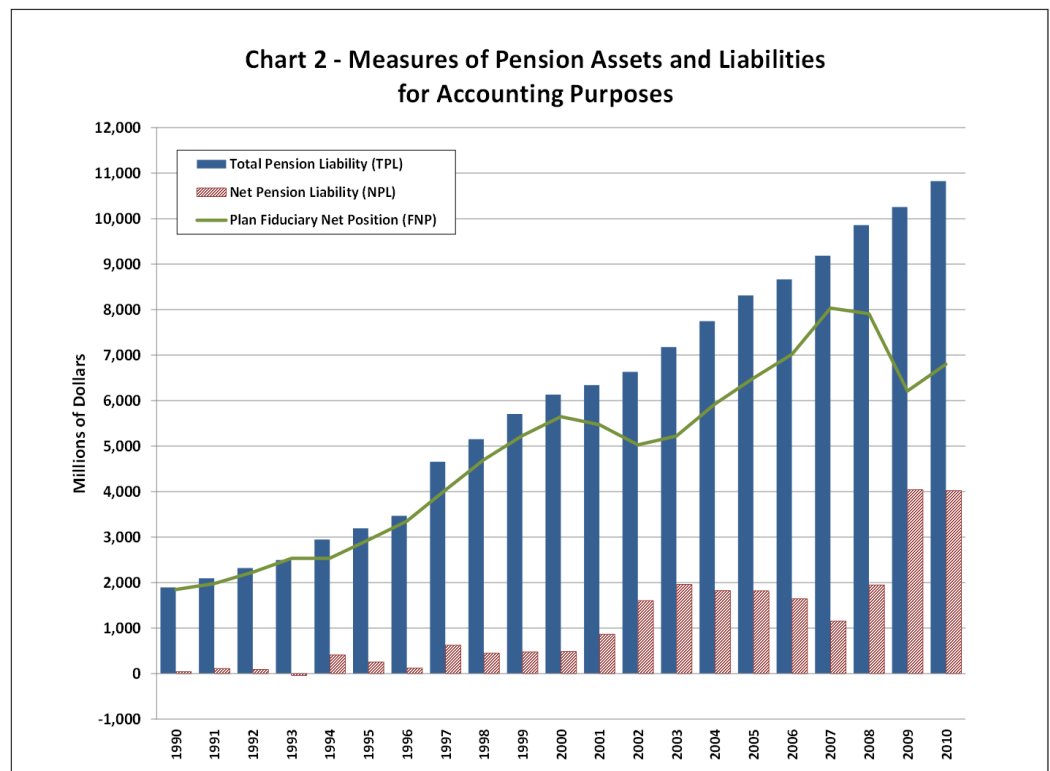
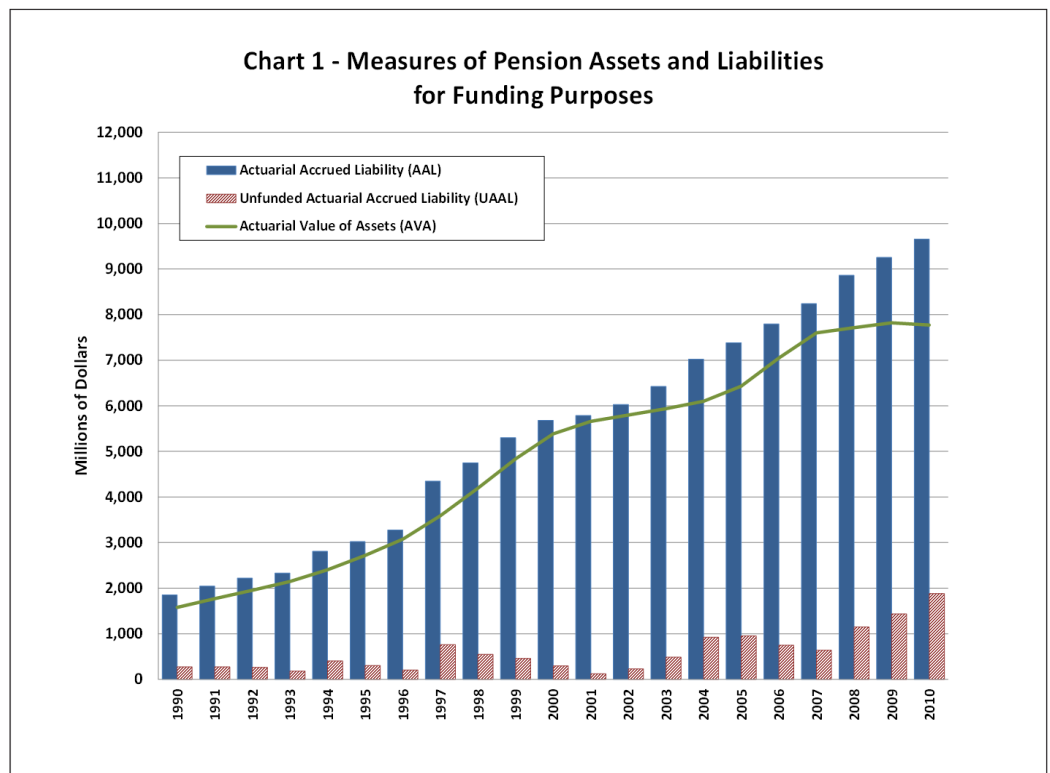
Chart 1 on the next page presents the pension funding measures for the simplified plan over the period from 1990 to 2010. During the period, the actuarial accrued liability (AAL) increased steadily from \$1.85 billion in 1990 to \$9.65 billion in 2010. The actuarial value of assets (AVA) grew from \$1.58 billion in 1990 to \$7.77 billion in 2010. Due to 5-year asset smoothing, the investment downturns in 2001-2002 and 2008-2009 were gradually recognized in the actuarial value of assets. The unfunded actuarial accrued liability (UAAL) varied over time, growing from \$274 million in 1990 to \$760 million in 1997, then tapering down to \$125 million in 2001, and growing to \$1.88 billion in 2010.

Chart 2 on the next page presents the accounting measures for the same plan as if the GASB's new standards had been effective in 1990. For study purposes, it was assumed that the plan's single discount rate included a portion based on the municipal bond rate, resulting

in a single discount rate of 7.82% in 1990 which fell over time to 7.47% in 2010. This, in turn, resulted in a TPL of \$1.89 billion in 1990 (102% of the 1990 AAL) which grew to \$10.82 billion in 2012 (112% of the 2010 AAL), as shown by the blue bars in Chart 2. This increase in the TPL over the AAL was largely due to declining municipal bond rates over the study period.

In addition, because the plan's fiduciary net position (FNP) is based on the market value of assets, it would have been more volatile than the actuarial value of assets (AVA), especially between 2001-2002 and 2008-2009, as shown by the green line in Chart 2. This, in turn, would have made the net pension liability (NPL) much larger and more volatile than the UAAL during the last half of the period studied, as shown by the red striped bars.

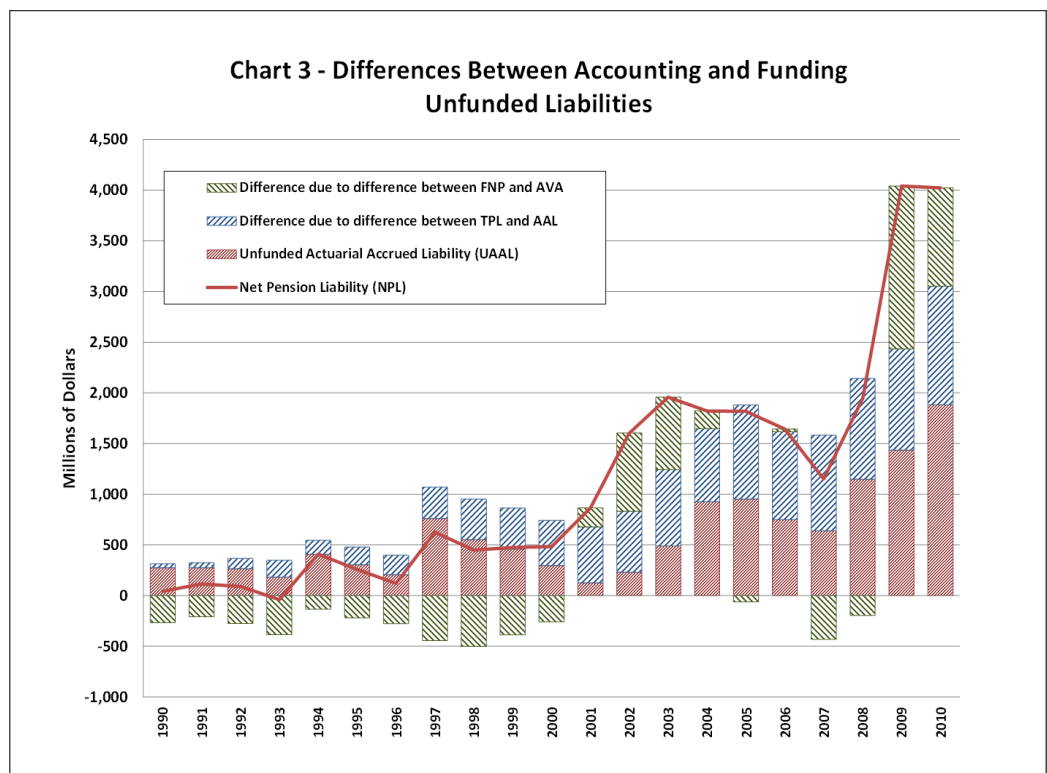
Since the NPL will be shown as the sponsoring government's pension liability in its government-wide financial statements, it is useful to understand the key factors that make the NPL different from the UAAL. On the next page, Chart 3 shows the NPL as the red line and the UAAL as the red bars.



One of the key factors that makes the NPL different from the UAAL is the difference between the total pension liability (TPL) and the actuarial accrued liability (AAL). As discussed on page 2, if current assets and projected future contributions and earnings are not sufficient to

cover all of the projected future pension payments to current plan members, the single discount rate would include a portion based a municipal bond rate. Moreover, in the current interest rate environment, this would increase the TPL over the AAL.

Chart 3 shows a positive difference between the TPL and the AAL for all years. The use of the single discount rate would have added \$38 million to the TPL and NPL in 1990, \$447 million in 2000, and \$1.17 billion in 2010. However, if current assets and projected future contributions and earnings were sufficient to cover all of the projected future pension payments to current plan members, the discount rate would have been the same as the expected investment return and there would be little, if any, difference between the TPL and AAL.



The other key difference between the NPL and the UAAL is the difference between the plan's fiduciary net position (FNP) and the actuarial value of assets (AVA) (i.e., the green striped bars). During the 1990s, when investment returns were high, the FNP was generally higher than the AVA, because the market value of assets was generally higher than the smoothed value of assets. This would have reduced the NPL between 1990 and 2000, as shown in Chart 3. However, during periods of investment market declines (as in 2001-2002 and 2008-2009), investment losses in the FNP would have added significantly to the NPL. For example, the difference between the FNP and AVA would have added \$1.6 billion to the NPL in 2009.

Comparing the Funding and Accounting Measures of Pension Expense

As discussed at the beginning of this report, the GASB's prior measure of the pension expense was the "annual pension cost" (APC) which reflected the long-term actuarially determined contributions needed to fund the benefits. However, under the GASB's new standards, the pension expense largely represents the annual change in the net pension liability, with provisions for deferring the recognition of certain items. Under the new stan-

dards, the following items are immediately recognized in the pension expense:

- Service cost (i.e., the traditional entry age normal cost determined using the single discount rate);
- Interest on the total pension liability (additive);
- Projected investment earnings (subtractive);
- Actual member contributions, if any (subtractive);
- Actual administrative costs (additive); and
- Changes in the total pension liability due to changes in benefits (additive or subtractive).

Other changes in the net pension liability are treated as "deferred outflows of resources" or "deferred inflows of resources" and are recognized in the pension expense over time. These include:

- Changes in the plan's FNP due to differences between the projected investment earnings and the actual investment earnings. These are

deferred and recognized in the pension expense over a closed 5-year period, beginning with the current period.

- Changes in the TPL due to: (1) changes in actuarial assumptions and (2) differences between expected actuarial experience and actual experience. These are deferred and recognized in the pension expense over a closed period reflecting the average remaining service lives of all current employees and retirees (e.g., 7 years), beginning with the current period.

The Appendix starting on page 8 provides a more detailed explanation of deferred outflows and deferred inflows of resources.

Chart 4 shows the difference between the accounting pension expense and the actuarially determined contribution under the funding approach. The total actuarially determined contribution (i.e., the green bars) grew from \$97 million in 1990 to \$312 million in 2010. Chart 4 also shows the pension expense (i.e., the purple line) which illustrates the extreme volatility of this measure. To provide a better sense of why this is the case, Chart 5 on the next page shows the underlying components of the pension expense. However, because it is difficult to show all of the components of the pension expense on one graph, Chart 5 combines related components to make the chart somewhat easier to read.

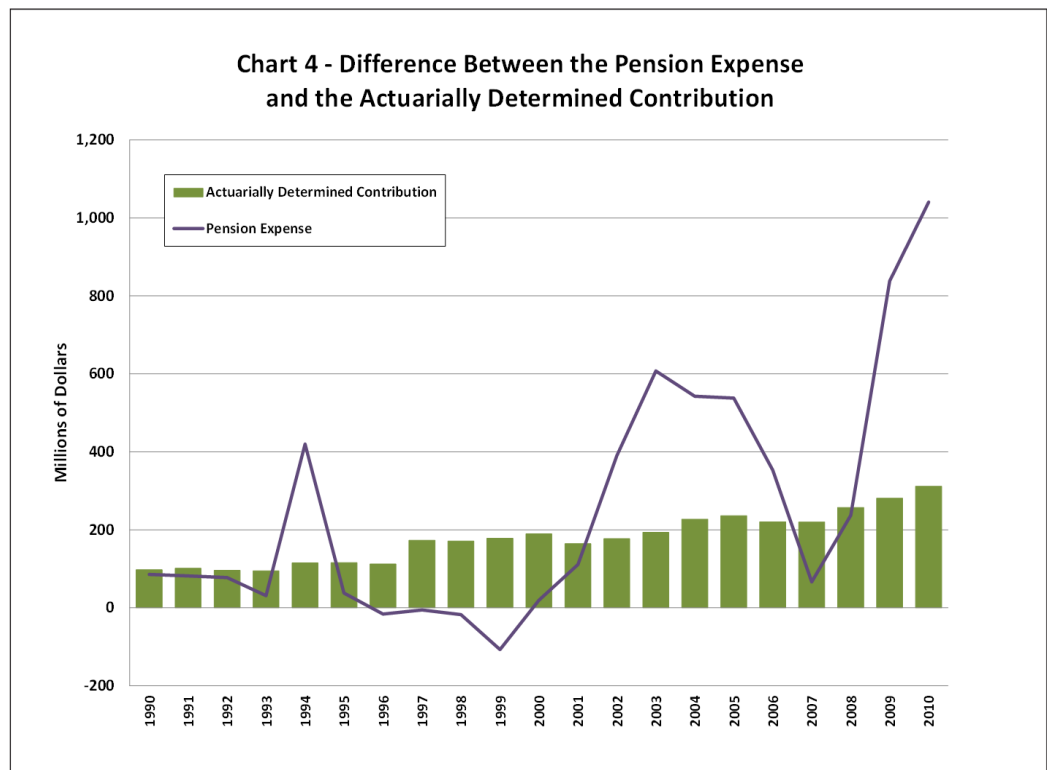
For example, rather than showing the portions of the pension expense due to interest on the TPL and projected investment earnings separately, they are combined in Chart 5 as the “Portion due to Interest on TPL Minus Projected Investment Earnings.” Similarly, rather than showing the portion of the annual pension expense due to the recognition of the deferred outflows of resources separately from

the deferred inflows of resources, these are grouped together as the “Portion due to Net Difference between Deferred Outflows and Deferred Inflows.”

Components of the Pension Expense

In Chart 5, the pension expense (i.e., the purple line) is the same as in Chart 4 and equals the sum of the components shown by the bars. The service cost component of the pension expense (i.e., the solid blue bars) is relatively stable and grew slowly over the study period. (Note that the administrative expense is also grouped with service costs, but constitutes a relatively small portion of expenses.) The other components of the pension expense were more erratic.

For example, under the new GASB accounting standards, the change in the TPL due to a change in benefit terms (i.e., the blue checkered bars) must be fully recognized in the pension expense in the year the change is effective. In our simplified plan, a benefit improvement was provided in 1994 that increased the TPL by \$378 million. This would have been immediately recognized in the 1994 pension expense, which explains the large spike in pension expense for that year. A smaller benefit increase was made in 2000, but its impact on the pension



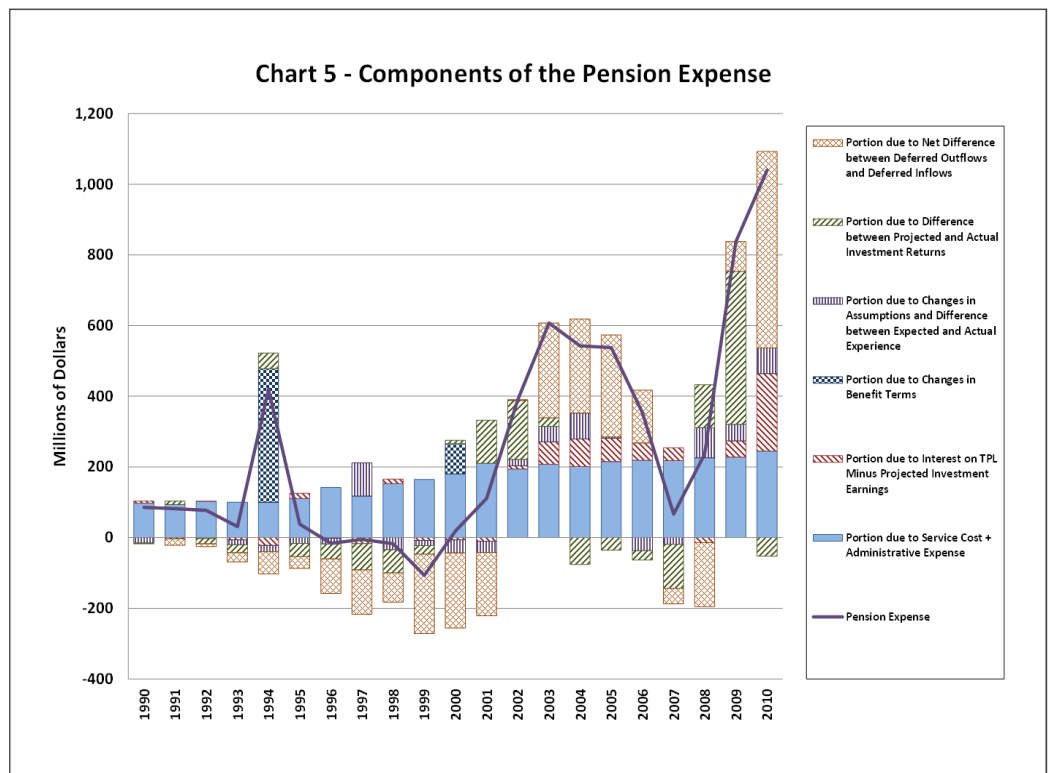
expense was offset by changes in other components.

Another component that adds volatility to the pension expense is the difference between projected investment earnings and actual investment returns (i.e., the green striped bars). Under the GASB's standards, one-fifth of the difference between projected and actual investment earnings is recognized as expense in the current period, with the remainder deferred and recognized in the pension expense over the next four years. To the extent actual investment returns are greater than projected earnings, they reduce the pension expense, as happened throughout most

of the 1990s. However, to the extent actual investment returns are less than projected earnings, they increase the pension expense. This would have been the case in 2001-2002 and especially in 2009.

As noted on page 6, two components of the pension expense (i.e., the interest on the TPL and projected investment earnings) are combined in Chart 5 and shown as the red striped bars. Interest is credited on the TPL using the GASB's single discount rate while projected investment earnings are based on long-term expected returns. Generally, the combined effect of these two components increases the pension expense when the TPL is greater than the FNP. For the simplified plan, the TPL was greater than the FNP for 12 years in the study period, and so the combined effect of these components added to the pension expense in most years.

Changes in the TPL due to changes in assumptions and differences between expected experience and actual experience (i.e., the purple vertical striped bars) play a relatively minor role in the pension expense. In 1997, the plan made changes to its actuarial assumptions that markedly increased the TPL and pension expense. However, in most years, the differences between expected and actual experience had a relatively minor impact



on the pension expense. This is because assumption changes do not occur each year and the year-to-year experience gains and losses due to liabilities are generally significantly less than the volatility of the investment experience.

The net recognition of the pension expense related to deferred outflows and deferred inflows of resources is shown in Chart 5 as the "Portion due to Net Difference between Deferred Outflows and Deferred Inflows" (i.e., the orange hatched bars). Since a substantial portion of the deferred outflows and deferred inflows is related to investment earnings, most of this component of pension expense is driven by investment market cycles. During times when actual investment returns were higher than projected returns (such as in the 1990s), the recognition of these deferrals would have significantly lowered the pension expense. During times when actual investment returns fell below expected returns, the net deferrals would have added to the pension expense.

It is also interesting to note that between 1996 and 1999, the pension expense would have been below zero. In other words, the employer would have recognized "pension income" at the same time it had a net pension liability.

Conclusion

To make sound decisions, public officials will need to understand both the accounting and funding measures and the differences between them. A key lesson is that the accounting measures will be more volatile than the funding measures, due largely to: (1) the single discount rate; (2) market value of assets; and (3) shorter amorti-

zation periods. It is also important to realize that the changes in accounting standards do not change the actuarial standards of practice used to fund the plans. However, the differences between the accounting and funding measures invite questions about why the numbers are different. This reinforces the need to have a formal funding policy, which explains the methods used to fund the plan and the related reasoning.

Deferred Outflows of Resources and Deferred Inflows of Resources

Under GASB Statement 68, many of the changes in the employer’s net pension liability (NPL) during the year are immediately recognized in the pension expense, including: service cost, interest on the total pension liability (TPL), projected investment earnings, active member contributions, administrative expenses, and benefit changes. To the extent the change increases the NPL, it is added to the pension expense (PE). To the extent it decreases the NPL, it is subtracted from the PE. However, certain changes in the employer’s NPL are subject to deferred recognition in the pension expense, starting in the current year:

- 1) Differences between projected and actual earnings on plan investments are recognized in the pension expense over a 5-year period;
- 2) Changes in the TPL due to differences between the plan’s expected actuarial experience and actual experience are recognized in expense over the average expected remaining service lives of plan members; and
- 3) Changes in the TPL due to changes in actuarial assumptions are also recognized in expense over the average expected remaining service lives of plan members.

To the extent these amounts are not immediately recognized in the current pension expense, they are treated as “deferred outflows of resources” (DOR) or “deferred inflows of resources” (DIR) and are recognized in the pension expense in future periods. Deferred outflows and deferred inflows are relatively new governmental accounting items, having first been defined in GASB Concepts Statement 4 and formalized in GASB Statement 63, issued in June 2011.

Deferred outflows of resources (DOR) are considered a “consumption of net assets” applicable to a future reporting period. As such, they have a positive effect on the government’s net position, since the deferral lengthens the time over which the liability is recognized in the pension expense, rather than being recognized immediately. Deferred outflows result from the deferral of:

- Investment losses (i.e., projected investment earnings that are greater than actual earnings);
- Actuarial experience losses (i.e., an expected TPL based on the plan’s assumptions that is less than the TPL based on the plan’s actual experience); and
- Actuarial assumption changes that increase the expected TPL.

Deferred inflows of resources (DIR) are considered an “acquisition of net assets” applicable to a future reporting period. They have a negative effect on the government’s net position, since the deferral lengthens the time over which the asset is recognized in the pension expense, rather than being recognized immediately. Deferred inflows result from the deferral of:

- Investment gains (i.e., projected investment earnings that are less than actual earnings);
- Actuarial experience gains (i.e., an expected TPL that is greater than the actual TPL); and
- Actuarial assumption changes that decrease the expected TPL.

To better explain how deferred outflows and deferred inflows are recognized in the pension expense, the following example illustrates: (1) the components of pension expense; (2) how the deferrals are treated; and (3) how the related deferred outflows of resources and deferred inflows of resources accumulate and are included in future pension expenses. The example assumes the employer is in a single-employer plan and discusses the first two years of implementing GASB Statement 68. For each year, the explanations are followed by exhibits that illustrate and comment on the calculations.

“Pension Expense” and “Deferred Outflows of Resources”

Pension Expense. Assume that in the first year, the employer’s service cost is \$90, interest on the TPL is \$160, no changes are made to benefit terms, projected earnings on plan investments are \$140 (which are subtracted since they reduce the pension expense), member contributions are \$30 (also subtracted), and administrative expenses are \$8. These would be immediately recognized in the pension expense. In addition, assume the employer also has deferrals as a result of: (1) differences between expected and actual plan experience; (2) changes in assumptions; and (3) differences between projected and actual investment returns.

Experience Loss. In the first year, assume the employer’s expected TPL (based on plan assumptions) is \$2,026, but the TPL based on actual experience is \$2,048. Since the expected TPL is less than the actual TPL, there is an experience loss of \$22. In other words, the actual TPL is \$22 higher than the expected TPL. Since the actual TPL is higher, the NPL would be higher as well. As provided under GASB Statement 68, this difference would be added into the pension expense over the average remaining service lives of plan members. Assuming this average equals 7 years, the employer would add \$3.1 (i.e., \$22 / 7 years with rounding) to the pension expense in the current year. The remaining \$18.9 would be added to deferred outflows of resources. In addition, over the next six years, \$3.1 per year would be added to the pension expense and subtracted from deferred outflows of resources.

Treatment of Changes in Assumptions. Also in the first year, assume changes made to plan assumptions lowered the expected TPL by \$30. Since this reduces the TPL (and NPL), it would be subtracted from the pension expense over the average expected remaining service lives of plan members. Consequently, \$4.3 (i.e., \$30 / 7 years with rounding) would be subtracted from the pension expense in the current year. The remaining \$25.7 would be added to deferred inflows of resources. Over the next six years, \$4.3 per year would be subtracted from the pension expense and subtracted from the deferred inflows of resources.

Investment Gain. Assume projected investment earnings in the first year are \$139, while actual earnings are \$151, resulting in an investment gain of \$12. Since the investment gain reduces the NPL, it is subtracted from the pension expense over a 5-year period. Consequently, \$2.4 (i.e., \$12 / 5 years) would be subtracted from pension expense in the current year. The remaining \$9.6 would be added to deferred inflows of resources. Over the next four years, \$2.4 per year would be subtracted from pension expense and subtracted from deferred inflows of resources.

GASB Statement 68 also requires that the balances of the deferred outflows and deferred inflows be shown in the notes to the employer’s financial statements by type of deferral, and that the balances of deferred outflows and deferred inflows be reported in the employer’s statement of net position, along with the net pension liability. For the purpose of this example, it is assumed that there are no beginning balances of deferred outflows of resources and deferred inflows of resources. Consequently, the ending balance of deferred outflows of resources would be \$18.9 as a result of the deferred difference between expected and actual experience. The ending balance of deferred inflows would be \$35.3 (i.e., \$25.7 as a result of changes in assumptions and \$9.6 as a result of the difference between projected and actual investment earnings).

Total Pension Expense. When the amounts recognized in Year 1 for the differences between expected and actual plan experience (+\$3.1), changes in assumptions (-\$4.3), and differences between projected and actual investment

returns (-\$2.4) are added to the amounts immediately recognized, the Year 1 pension expense totals \$84.4. Exhibit 1 below shows the calculations for Year 1 along with related comments.

Exhibit 1 - Example Calculation of Pension Expense, Deferred Outflows of Resources (DOR) and Deferred Inflows of Resources (DIR) for Year 1		
Pension Expense (PE)	Year 1	Comments on Year 1 Amounts
Service Cost	\$ 90.0	Immediately added to Year 1 PE
Interest on Total Pension Liability (TPL)	\$ 160.0	Immediately added to Year 1 PE
Changes in Benefit Terms	\$ -	Immediately added to Year 1 PE if change increases TPL, subtracted otherwise
Projected Earnings on Plan Investments	\$ (140.0)	Immediately subtracted from Year 1 PE
Member Contributions	\$ (30.0)	Immediately subtracted from Year 1 PE
Administrative Expense	\$ 8.0	Immediately added to Year 1 PE
Other	\$ -	Immediately added to Year 1 PE (if any)
Expensed Current Period Difference Between Expected and Actual Experience	\$ 3.1	See Treatment of Difference between Expected and Actual Experience
Expensed Current Period Changes in Assumptions	\$ (4.3)	See Treatment of Changes in Assumptions
Expensed Current Period Difference Between Projected & Actual Investment Earnings	\$ (2.4)	See Treatment of Difference between Projected and Actual Investment Earnings
Beginning Deferred Outflows of Resources (DOR) Recognized as Pension Expense	\$ -	DOR beginning balance in Year 1 is assumed to be 0
Beginning Deferred Inflows of Resources (DIR) Recognized as Pension Expense	\$ -	DIR beginning balance in Year 1 is assumed to be 0
Pension Expense	\$ 84.4	Total of above
Treatment of Difference between Expected and Actual Experience		
TPL based on Expected (Assumed) Experience	\$ 2,026.0	Expected TPL
TPL based on Actual Experience	\$ 2,048.0	Actual TPL
Difference between Expected and Actual Experience	\$ (22.0)	Year 1 expected TPL is less than actual TPL and so increases the NPL
Expensed Portion for Current Period (Difference / 7 year avg. remaining service life)	\$ (3.1)	The difference increases the NPL and so the Year 1 expensed portion is added to PE
Portion Added to Deferred Outflows of Resources	\$ 18.9	The deferred increase in NPL that is not expensed in Year 1 is added to DOR balance
Portion Added to Deferred Inflows of Resources	\$ -	None
Treatment of Changes in Assumptions		
Change in TPL Resulting from Changes in Assumptions	\$ (30.0)	Year 1 change in assumption decreases the NPL
Expensed Portion for Current Period (Change / 7 year avg. remaining service life)	\$ (4.3)	The change decreases the NPL and so the Year 1 expensed portion is subtracted from PE
Portion Added to Deferred Outflows of Resources	\$ -	None
Portion Added to Deferred Inflows of Resources	\$ 25.7	The deferred decrease in NPL that is not expensed in Year 1 is added to DIR balance
Treatment of Difference between Projected and Actual Investment Earnings		
Projected Investment Earnings	\$ 139.0	Projected investment earnings
Actual Investment Earnings	\$ 151.0	Actual investment earnings
Difference between Projected and Actual Investment Earnings	\$ (12.0)	Year 1 projected earnings are less than actual earnings and so reduce the NPL
Expensed Portion for Current Period (Difference / 5 years)	\$ (2.4)	The difference decreases the NPL and so the Year 1 expensed portion is subtracted from the PE
Portion Added to Deferred Outflows of Resources	\$ -	None
Portion Added to Deferred Inflows of Resources	\$ 9.6	The deferred decrease in NPL that is not expensed in Year 1 is added to DIR balance
Deferred Outflows of Resources		
Beginning Balance of Deferred Outflows of Resources	\$ -	Year 1 beginning balance of DOR is assumed to be 0
Beginning Balance Recognized in Pension Expense	\$ -	Year 1 beginning balance of DOR recognized in Year 1 PE is 0
Beginning Balance after Recognition in Pension Expense	\$ -	Year 1 beginning balance of DOR after recognition in PE is 0
Differences between Expected and Actual Experience	\$ 18.9	Year 1 deferred increase in NPL due to difference between expected and actual experience
Changes in Assumptions	\$ -	No Year 1 deferred increase in NPL due to changes in assumptions
Difference between Projected and Actual Investment Earnings	\$ -	No Year 1 deferred increase in NPL due to difference between projected and actual earnings
Ending Balance of Deferred Outflows of Resources	\$ 18.9	Year 1 ending balance of DOR
Deferred Inflows of Resources		
Beginning Balance of Deferred Inflows of Resources	\$ -	Year 1 beginning balance of DIR is assumed to be 0
Beginning Balance Recognized in Pension Expense	\$ -	Year 1 beginning balance of DIR recognized in Year 1 PE is 0
Beginning Balance after Recognition in Pension Expense	\$ -	Year 1 beginning balance of DIR after recognition in PE is 0
Differences between Expected and Actual Experience	\$ -	No Year 1 deferred decrease in NPL due to difference between expected and actual experience
Changes in Assumptions	\$ 25.7	Year 1 deferred decrease in NPL due to changes in assumptions
Difference between Projected and Actual Investment Earnings	\$ 9.6	Year 1 deferred decrease in NPL due to difference between projected and actual earnings
Ending Balance of Deferred Inflows of Resources	\$ 35.3	Year 1 ending balance of DIR

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Pension Expense. In the second year, assume the employer’s service cost is \$94, interest on the TPL is \$168, no changes are made to benefit terms, projected investment earnings are \$156, member contributions are \$34, and the administrative expense is \$8. Exhibit 2 on the next page shows the calculations for Year 2 along with related comments.

‘ μ ° ±. 2° ¶ ± μ ± ¶ ¶ Y. ° ± ± ~ » 3 ¶ . S ± S ¶ . ¶ , ¶ ~ » 3 ¶ μ ± ¶ ¶ Assume that the expected TPL in Year 2 is \$2,289 while the actual TPL is \$2,261. Consequently, the difference in the TPL due to the difference between expected and actual experience is \$28. This means there has been an actuarial gain which, in turn, decreases the TPL (and NPL). As a result, \$4.0 (i.e., \$28 / 7 years) would be subtracted from the pension expense in the current year and the remaining \$24.0 would be added to deferred inflows of resources, since it represents a deferred decrease in the NPL. Over the next six years, \$4.0 per year would be subtracted from the pension expense and subtracted from deferred inflows of resources.

Treatment of Changes in Assumptions. In addition, assume that changes made to plan assumptions in Year 2 increased the TPL by \$47. Consequently, \$6.7 (i.e., \$47 / 7 years with rounding) would be added to the pension expense in the current year, and the remaining \$40.3 would be added to deferred outflows of resources. Over the next six years, \$6.7 per year would be added to the pension expense and subtracted from deferred outflows of resources.

Finally, assume that the plan's projected investment earnings in Year 2 are \$156, while actual investment earnings are \$105, resulting in an investment loss of \$51. Since the investment loss increases the NPL, \$10.2 (i.e., \$51 / 5 years) would be added to pension expense in the current year, with the remaining \$40.8 added to deferred outflows of resources. Over the next four years, \$10.2 per year would be added to the pension expense and subtracted from deferred outflows of resources.

With regard to deferred outflows of resources, the \$18.9 ending balance from Year 1 would be carried over as the beginning balance to Year 2, but would also be reduced by the \$3.1 added to the pension expense in Year 2 as a result of the Year 1 deferral of the difference between expected and actual experience. When the remaining \$15.8 is added to the \$40.3 increase in Year 2 deferred out-

Exhibit 2 - Example Calculation of Pension Expense, Deferred Outflows of Resources (DOR) and Deferred Inflows of Resources (DIR) for Year 2			
Pension Expense (PE)	Year 1	Year 2	Comments on Year 2 Amounts
Service Cost	\$ 90.0	\$ 94.0	Immediately added to Year 2 PE
Interest on Total Pension Liability (TPL)	\$ 160.0	\$ 168.0	Immediately added to Year 2 PE
Changes in Benefit Terms	\$ -	\$ -	Immediately added to Year 2 PE if change increases TPL, subtracted otherwise
Projected Earnings on Plan Investments	\$ (140.0)	\$ (156.0)	Immediately subtracted from Year 2 PE
Member Contributions	\$ (30.0)	\$ (34.0)	Immediately subtracted from Year 2 PE
Administrative Expense	\$ 8.0	\$ 8.0	Immediately added to Year 2 PE
Other	\$ -	\$ -	Immediately added to Year 2 PE (if any)
Expensed Current Period Difference Between Expected and Actual Experience	\$ 3.1	\$ (4.0)	See Treatment of Difference between Expected and Actual Experience
Expensed Current Period Changes in Assumptions	\$ (4.3)	\$ 6.7	See Treatment of Changes in Assumptions
Expensed Current Period Difference Between Projected & Actual Investment Earnings	\$ (2.4)	\$ 10.2	See Treatment of Difference between Projected and Actual Investment Earnings
Beginning Deferred Outflows of Resources (DOR) Recognized as Pension Expense	\$ -	\$ 3.1	Portion of DOR beginning balance recognized in Year 2 PE (increases PE)
Beginning Deferred Inflows of Resources (DIR) Recognized as Pension Expense	\$ -	\$ (6.7)	Portion of DIR beginning balance recognized in Year 2 PE (decreases PE)
Pension Expense	\$ 84.4	\$ 89.3	Total of above
Treatment of Difference between Expected and Actual Experience			
TPL based on Expected (Assumed) Experience	\$ 2,026.0	\$ 2,289.0	Expected TPL
TPL based on Actual Experience	\$ 2,048.0	\$ 2,261.0	Actual TPL
Difference between Expected and Actual Experience	\$ (22.0)	\$ 28.0	Year 2 expected TPL is greater than actual TPL and so decreases the NPL
Expensed Portion for Current Period (Difference / 7 year avg. remaining service life)	\$ (3.1)	\$ 4.0	The difference decreases the NPL and so Year 2 expensed portion is subtracted from PE
Portion Added to Deferred Outflows of Resources	\$ 18.9	\$ -	None
Portion Added to Deferred Inflows of Resources	\$ -	\$ 24.0	The deferred decrease in NPL that is not expensed in Year 2 is added to DIR balance
Treatment of Changes in Assumptions			
Change in TPL Resulting from Changes in Assumptions	\$ (30.0)	\$ 47.0	Year 2 change in assumption increases the NPL
Expensed Portion for Current Period (Change / 7 year avg. remaining service life)	\$ (4.3)	\$ 6.7	Since the change increases the NPL, the Year 2 expensed portion is added to PE
Portion Added to Deferred Outflows of Resources	\$ -	\$ 40.3	The deferred increase in NPL that is not expensed in Year 2 is added to DOR balance
Portion Added to Deferred Inflows of Resources	\$ 25.7	\$ -	None
Treatment of Difference between Projected and Actual Investment Earnings			
Projected Investment Earnings	\$ 139.0	\$ 156.0	Projected investment earnings
Actual Investment Earnings	\$ 151.0	\$ 105.0	Actual investment earnings
Difference between Projected and Actual Investment Earnings	\$ (12.0)	\$ 51.0	Year 2 projected earnings are greater than actual and so increase the NPL
Expensed Portion for Current Period (Difference / 5 years)	\$ (2.4)	\$ 10.2	The difference increases the NPL and so the Year 2 expensed portion is added to the PE
Portion Added to Deferred Outflows of Resources	\$ -	\$ 40.8	The deferred increase in NPL that is not expensed in Year 2 is added to DOR balance
Portion Added to Deferred Inflows of Resources	\$ 9.6	\$ -	None
Deferred Outflows of Resources			
Beginning Balance of Deferred Outflows of Resources	\$ -	\$ 18.9	Year 2 beginning balance of DOR (from first year ending balance)
Beginning Balance Recognized in Pension Expense	\$ -	\$ (3.1)	Year 2 beginning balance of DOR recognized in Year 2 PE
Beginning Balance after Recognition in Pension Expense	\$ -	\$ 15.8	Year 2 remaining beginning balance of DOR after recognition in PE
Differences between Expected and Actual Experience	\$ 18.9	\$ -	Year 2 deferred increase in NPL due to difference between expected and actual experience
Changes in Assumptions	\$ -	\$ 40.3	Year 2 deferred increase in NPL due to changes in assumptions
Difference between Projected and Actual Investment Earnings	\$ -	\$ 40.8	Year 2 deferred increase in NPL due to difference between projected and actual earnings
Ending Balance of Deferred Outflows of Resources	\$ 18.9	\$ 96.9	Ending balance of DOR in Year 2
Deferred Inflows of Resources			
Beginning Balance of Deferred Inflows of Resources	\$ -	\$ 35.3	Year 2 beginning balance of DIR (from first year ending balance)
Beginning Balance Recognized in Pension Expense	\$ -	\$ (6.7)	Year 2 beginning balance of DIR recognized in Year 2 PE
Beginning Balance after Recognition in Pension Expense	\$ -	\$ 28.6	Year 2 remaining beginning balance of DIR after recognition in PE
Differences between Expected and Actual Experience	\$ -	\$ 24.0	Year 2 deferred decrease in NPL due to difference between expected and actual experience
Changes in Assumptions	\$ 25.7	\$ -	Year 2 deferred decrease in NPL due to changes in assumptions
Difference between Projected and Actual Investment Earnings	\$ 9.6	\$ -	Year 2 deferred decrease in NPL due to difference between projected and actual earnings
Ending Balance of Deferred Inflows of Resources	\$ 35.3	\$ 52.6	Ending balance of DIR in Year 2

flows due to changes in assumptions and the \$40.8 increase due to Year 2 investment losses, the Year 2 ending balance for deferred outflows of resources is \$96.9.

Similarly, with regard to deferred inflows of resources, the \$35.3 ending balance from Year 1 is carried over to Year 2 and reduced by the \$6.7 subtracted from the pension expense due to Year 1 investment gains (-\$2.4) and changes in assumptions (-\$4.3). When the remaining \$28.6 is added to the \$24.0 increase in Year 2 deferred inflows resulting from the difference between expected and actual experience, the Year 2 ending balance for deferred inflows of resources is \$52.6.

Note that deferred outflows of resources and deferred inflows of resources must be maintained for each year of experience. In other words, a deferred inflow created by an investment gain cannot be used directly to offset or eliminate an existing deferred outflow attributable to an investment loss that occurred in a prior year. However, as a practical matter, the two experiences would offset each other in the calculation of the pension expense.

Total Pension Expense. When the amounts recognized in Year 2 for the differences between expected and actual plan experience (-\$4.0), changes in assumptions (+\$6.7), differences between projected and actual investment returns (+\$10.2), deferred outflows recognized as pension expense (+\$3.1) and deferred inflows recognized as pension expense (-\$6.7) are added to the amounts immediately recognized in Year 2, the pension expense totals \$89.3.

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