

Background Information on the Actuarial Value of Public Pension Plan Assets

Since the actuarial valuation procedure was initially codified for Minnesota defined benefit retirement plans in 1965, with the initial codification of public pension plan financial and actuarial reporting requirements, Minnesota public pension plans have utilized two different ways to establish the value of assets for determining the existence of and the size of unfunded actuarial accrued liabilities.

From 1965 to 1983, Minnesota Statutes, Sections 356.20 and 356.215, required that pension plan assets at book or cost value be used in making a comparison of plan assets with plan actuarial liabilities. Book value is the generally initial purchase price of the investment security or other marketable asset. For bonds (debt instruments), the investment value was at amortized cost. For stocks (equity investments), the investment value was at cost. For equipment, the investment was at cost less any accrued depreciation. For real estate, the statute was unclear.

In 1984, at the initiation of the Department of Finance, among various actuarial assumption and actuarial method changes, the actuarial value of assets determination procedure changed. The method defined the actuarial value of assets as the cost value of investments plus one-third of the difference between the cost value of investments and the market value of investments. The proposal for the actuarial value of assets determination procedure change was generated external to the Commission, and the rationale for the change is not well reflected in Commission office files for Laws 1984, Chapter 564. The change, however, clearly was an attempt to capture some of the stock and bond market appreciation that had occurred in the late 1970s and early 1980s and to have the actuarial value of assets more closely reflect market value than the prior book value definition of the actuarial value of assets.

In 2000 (Laws 2000, Ch. 461, Art. 1, Sec. 3), at the recommendation of the consulting actuarial firm retained by the Legislative Commission on Pensions and Retirement under Minnesota Statutes, Section 3.85, Milliman & Robertson, Inc., the actuarial value of assets determination procedure changed again. The actuarial value of assets, initially termed “current assets,” is the market value of assets as of the end of the fiscal year reduced by a percentage of the difference between the actuarial net return on the market value of assets and the asset return expected during the fiscal year based on the interest rate assumption determined at the close of each of four preceding fiscal years. The percentage reduction was 20% for the least recent applicable year, 40% for the next least recent applicable year, 60% for the year two years previous, and 80% for the immediate prior year. The recommendation from the Commission’s retained actuary, as represented by testimony from that actuary before the Commission, was intended to bring the value of assets closer to market value while using a smoothing device that would minimize or eliminate short-term market volatility.

In 2008 (Laws 2008, Ch. 349, Art. 10, Sec. 10), the term “current assets” was revised to “actuarial value of assets,” with the reduction in the difference between the actual net market value change and the expected market value increase under the pre-retirement interest rate assumption for the year occurring four years prior to the valuation year increased from 10% to 20%.

The following compares the pre-1984 asset valuation determination procedure, the post-1984/pre-2000 asset valuation determination procedure and the current asset valuation determination procedure for a representative statewide retirement plan, the Teachers Retirement Association (TRA), and a representative local retirement plan, the St. Paul Teachers Retirement Fund Association (SPTRFA), for the fiscal year ending on June 30, 2006, as examples:

Teachers Retirement Association (TRA)

	Pre-1984 Method	Post-1984/Pre-2000 Method	Current Method
Summary	Book or cost value of investment securities.	Cost value of investment securities plus one-third of the difference between the cost value and the market value of the investment securities.	Market Value, adjusted for amortization obligations receivable at the end of each fiscal year, less a percentage (20, 40, 60, or 80) of the Unrecognized Asset Return determined at the close of each of the four preceding fiscal years. Unrecognized Asset Return is the difference between actual net return on Market Value of Assets at the asset return expected during that fiscal year (based on the assumed interest rate employed in the July 1 Actuarial Valuation of the fiscal year).
Result	\$19,649,139,143	\$19,694,665,406	\$19,035,611,839

Teachers Retirement Association (TRA)

	Pre-1984 Method		Post-1984/Pre-2000 Method		Current Method		
Calculation	Book Value	\$19,649,139,143	Market Val.	\$19,785,671,584	1. Market value of assets available for benefits	\$19,785,671,584	
			Book Value	<u>\$19,649,139,143</u>			% Not
			Difference	\$136,532,441			<u>Orig. Amt.</u> <u>Recognized</u>
			Difference	\$136,532,441	2. Calculation of unrecognized return		
			One-Third	<u>x .3333</u>	(a) Year ended 6/30/06	\$653,165,303	80%
			Market Adjust.	\$45,506,263	(b) Year ended 6/30/05	\$179,823,045	60%
			Book Value	\$19,649,159,143	(c) Year ended 6/30/04	\$499,642,191	40%
			Market Adjust	<u>\$45,506,263</u>	(d) Year ended 6/30/03	(\$401,116,000)	20%
			Actuar. Val.	\$19,694,665,406	(e) Year ended 6/30/02		\$750,059,745
					3. Actuarial value of assets: ((1) - (2e))		\$19,035,611,839
					("Current Assets")		
Funding Impact	Act. Liab.	\$20,679,110,879	Act. Liab.	\$20,679,110,879	Act. Liab.	\$20,679,110,879	
	Assets	<u>\$19,649,139,143</u>	Assets	<u>\$19,694,658,742</u>	Assets	<u>\$19,035,611,839</u>	
	UAL	\$1,029,971,736	UAL	\$984,452,137	UAL	\$1,643,499,040	
	Funding Ratio	95.02%	Funding Ratio	95.23%	Funding Ratio	92.05%	
	Normal Cost	\$349,678,399	Normal Cost	\$349,678,399	Normal Cost	\$349,678,399	
	Expenses	\$12,236,072	Expenses	\$12,236,072	Expenses	\$12,236,072	
	Amort.	<u>\$54,374,990</u>	Amort.	<u>\$51,971,886</u>	Amort.	<u>\$86,764,874</u>	
	Act. Req.	\$416,289,461	Act. Req.	\$413,886,357	Act. Req.	\$448,679,345	

St. Paul Teachers Retirement Fund Association (SPTRFA)

	Pre-1984 Method		Post-1984/Pre-2000 Method		Current Method		
Summary	Book or cost value of investment securities.		Cost value of investment securities plus one-third of the difference between the cost value and the market value of the investment securities.		Market Value, adjusted for amortization obligations receivable at the end of each fiscal year, less a percentage (20, 40, 60, or 80) of the Unrecognized Asset Return determined at the close of each of the four preceding fiscal years. Unrecognized Asset Return is the difference between actual net return on Market Value of Assets at the asset return expected during that fiscal year (based on the assumed interest rate employed in the July 1 Actuarial Valuation of the fiscal year).		
Result	\$740,961,588		\$829,213,976		\$938,919,005		
Calculation	Book Value	\$740,961,588	Market Val.	\$1,005,745,229	1. Market value of assets available for benefits	\$1,005,745,229	
			Book Value	<u>\$740,961,588</u>			% Not
			Difference	\$264,783,641			<u>Orig. Amt.</u> <u>Recognized</u>
			Difference	\$264,783,641	2. Calculation of unrecognized return		
			One-Third	<u>x .3333</u>	(a) Year ended 6/30/06		\$36,135,488
			Market Adjust.	\$88,252,388	(b) Year ended 6/30/05		\$26,860,009
			Book Value	\$740,961,588	(c) Year ended 6/30/04		\$82,512,072
			Market Adjust	<u>\$88,252,388</u>	(d) Year ended 6/30/03		(\$56,015,000)
			Actuar. Val.	\$829,213,976	(e) Year ended 6/30/02		
					3. Actuarial value of assets: ((1) - (2e))		\$938,919,005
					("Current Assets")		
Funding Impact	Act. Liab.	\$1,358,619,906	Act. Liab.	\$1,358,619,916	Act. Liab.	\$1,358,619,906	
	Assets	<u>\$740,961,588</u>	Assets	<u>\$829,252,388</u>	Assets	<u>\$938,919,005</u>	
	UAL	\$617,658,318	UAL	\$529,367,528	UAL	\$419,700,901	
	Funding Ratio	54.54%	Funding Ratio	61.04%	Funding Ratio	69.11%	
	Normal Cost	\$21,575,645	Normal Cost	\$21,575,645	Normal Cost	\$21,575,645	
	Expenses	\$608,955	Expenses	\$608,955	Expenses	\$608,955	
	Amort.	<u>\$53,598,227</u>	Amort.	<u>\$45,936,661</u>	Amort.	<u>\$36,420,175</u>	
	Act. Req.	\$75,782,827	Act. Req.	\$68,121,261	Act. Req.	\$58,604,775	

Using an actuarial value of assets rather than the market value of assets for a pension plan apparently is not uncommon among public pension plans and complies with generally accepted accounting principles under Government Accounting Standards Board (GASB) pronouncements. Using a smoothing method that disregards short-term market volatility is particularly advantageous from a policy perspective if the pension plan funding procedures immediately translate actuarial results into modified employer contribution amounts in the following year, where short-term value changes would produce highly variable contribution levels year to year. In Minnesota, this was a consideration only for the Minneapolis Employees Retirement Fund (MERF) and for the five remaining local police and paid firefighter relief associations. The use of a smoothing mechanism may be sensible policy where the smoothing period reflects the actual pattern of market volatility, which tends to be either less than one year or longer than five years based on long-term stock market return data from Ibbotson Associates. Even if the smoothing

period matches market cycles, an actuarial value of pension assets definition does nothing more than delay the recognition of actual market changes.

The following compares the actuarial value of assets and the market value of assets for the various statewide and major local retirement plans as of June 30, 2007, the high point in recent investment markets, and June 30, 2010, after the recent investment market crash:

Plan	6/30/2007			6/30/2010		
	Actuarial Value of Assets	Market Value of Assets	Act. Val. as % of Market Value	Actuarial Value of Assets	Market Value of Assets	Act. Val. as % of Market Value
MSRS-Gen.	\$8,904,516,772	\$9,507,005,127	93.66%	\$8,960,391,000	\$7,692,531,000	116.48%
MSRS-Corr.	\$559,851,700	\$595,057,508	94.08%	\$603,863,000	\$525,245,000	114.97%
Judges	\$153,561,828	\$159,363,300	96.36%	\$144,728,000	\$126,201,000	114.68%
State Patrol	\$617,900,887	\$649,181,278	95.18%	\$567,211,000	\$488,870,000	116.02%
PERA-Gen.	\$12,985,324,048	\$13,718,459,059	94.66%	\$13,126,993,000	\$11,338,582,000	115.77%
PERA-Corr.	\$5,198,921,940	\$5,529,662,776	94.02%	\$5,188,339,000	\$4,453,737,000	116.49%
PERA-P&F	\$159,547,801	\$174,280,940	91.55%	\$242,019,000	\$211,368,000	114.50%
TRA	\$1,383,741,762	\$1,398,395,188	98.95%			
DTRFA	\$18,794,389,076	\$19,938,881,872	94.26%	\$17,323,146,000	\$14,917,240,000	116.13%
SPTRFA	\$288,264,749	\$318,973,530	90.37%	\$255,308,913	\$192,402,546	132.70%
MERF	\$1,015,722,034	\$1,156,017,206	87.86%	\$1,001,444,000	\$815,307,000	122.83%
Total	\$50,061,742,597	\$53,145,277,784	94.20%	\$47,413,442,913	\$40,761,483,546	116.32%

The valuation of both pension liabilities and pension assets is problematic because they are estimates of potential real life occurrences in advance of experiencing the occurrences.

In valuing pension liabilities, the time separation from the estimation of the magnitude of the liability and the actual discharge of the liability can be considerable and the only “real” or “accurate” determination of a pension plan’s ultimate pension liabilities occurs when all of the pension plan’s obligations have been paid and the pension plan is terminated.

In valuing pension assets, time is not the primary problem, but the primary problem is an assumption that the final market price of an investment sold by someone else on a given date by a market reporting mechanism could also be obtained by the pension plan if the plan sold all of its investments on that same date, even though an increase in the supply of investments for sale by that action should have a dampening effect on the available price. The problem of valuing pension plan assets is compounded by the considerable variability in market values from day to day, which makes the comparison of asset values on a predetermined date with the low variability of pension plan liabilities on a given date less reliable. In a recognition of the problematic nature of using a market value smoothing technique in determining the actuarial value of assets, as Minnesota Statutes, Section 356.215, does, a number of retirement plans utilize a “corridor” modification to the calculated actuarial valuation of assets, where the computed asset value is not permitted to exceed a percentage minimum or maximum of the market value of assets. The June 30, 2007, and June 30, 2010, comparative values above provide some sense of the potential differential between the two values without a “corridor” limitation.