



PERA FALLS OFF A CLIFF

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EXECUTIVE SUMMARY

The Public Employees Retirement System (PERA) in Colorado is experiencing a funding crisis. The recent collapse of financial markets has resulted in a significant decrease in the value of the PERA portfolio. But the funding crisis in PERA is not just the result of problems in financial markets. The problems in this defined benefit pension plan have emerged over several decades, and are symptomatic of the poor incentive structure guiding the governance of many defined benefit public pension plans. The financial market turmoil has exacerbated these problems, but PERA is facing a long-run deterioration in its funding status.

The Public Employees Retirement System (PERA) in Colorado is experiencing a funding crisis.

The Colorado Legislature has enacted several reforms over the past decade to address funding problems. These reforms have included changes in benefits, increased contribution rates, and administrative changes. Unfortunately, these reforms have failed to address the fundamentally flawed incentive structure built into the PERA defined benefit plan.

This study explores current and past funding shortfalls in PERA and the inherent challenges associated with the governance of defined-benefit pension plans. The study examines different measures of the magnitude of the funding shortfalls.

Some of the key facts and issues are:

- A sharp decrease in the value of assets in the PERA system last year caused the funding ratio to fall to 52 percent. Unfunded liabilities in the system about doubled to \$28 billion
- Assuming an 8.5 percent return on assets, employers would have to significantly increase contribution rates to bring the PERA system into actuarial balance. This would be difficult for the state because of the current revenue shortfall
- PERA is bankrupt under current operating assumptions. Using a more realistic assumption regarding the expected rate of return on assets, it

is highly unlikely that the PERA system will achieve actuarial balance over the amortization period

- The solution to the funding crisis in PERA will require fundamental reform. Everything should be on the table, including changes in benefits and increased employee contribution rates, as well as increased employer contribution rates. Colorado should explore a complete shift to a defined contribution arrangement, similar to the one used by the state university system and by most private employers.

UNFUNDED ACTUARIAL LIABILITIES (UAL)

The Government Accounting Standards Board (GASB) sets standards for reporting pension and other post employment benefit (OPEB) plans offered by state and local governments.

Unfunded liabilities in pension and OPEB plans must be reported as debt in financial statements of state and local jurisdictions. Further, these standards require that state and local governments show progress toward eliminating unfunded liabilities over a 30-year amortization period. If pension and OPEB plans fail to meet these standards, actuaries must report that the plans are not in actuarial balance. Bond rating agencies, such as Standard and Poors, take this information into account in rating the bonds issued by state and local government.

GASB standards require that pension funds report two schedules of information regarding the funding status of the plans: (1) The Schedule of Funding Progress and (2) The Actuarial Contribution Rate.

PERA uses an assets smoothing methodology to smooth the effects of market fluctuations. The smoothing methodology is used to determine the actuarial value of assets. The actuarial value of assets calculates the value of assets by spreading market gains and losses over four years. Table I shows the unfunded liabilities and funded ratio using actual market value and actuarial value of assets on December 31, 2008.

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Table 1. Unfunded liabilities and Funded Ratio Using Market and Actuarial Value of Assets, December 31, 2008.

	Market Value of Assets	Actuarial Value of Assets
Actuarial accrued liability	\$57.0 billion	\$57.0 billion
Assets held to pay those liabilities	29.5 billion	39.1 billion
Unfunded actuarial accrued liability	27.5 billion	17.9 billion
Funding Ratio	51.8%	68.5%

Source: Colorado Public Employees Retirement Association¹

The market value of assets is \$29.5 billion, or \$9.6 billion less than the actuarial value of assets calculated by actuaries based on the spreading of gains and losses over four years rather than the year in which they occurred. The funding ratio of PERA fell to 51.8 percent based on the market value of assets, compared to 68.5 percent based on the actuarial value of assets.

Using the actuarial value rather than the market value shows less deterioration in the funded status of the system over the past year. However, asset smoothing impacts only the timing of when the actual market experience of assets is recognized. This means that about \$9.6 billion in unfunded liabilities is not recognized in these financial statements and will only be recognized in financial statements in future years

The asset smoothing methodology determines the timing when actual market experience is recognized in the financial statements. Unfunded liabilities not recognized in the current period will be recognized in financial statements in future years. Since employer contribution rates are set based on the actuarial value of assets in the current accounting period, some of the losses in the current accounting period are deferred to future years.

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A major flaw in the design of the PERA system is to assume a rate of return on assets of 8.5 percent. Actuaries generally recommend an assumed rate of return on assets substantially below that amount. For example,

the Employees Retirement Income Security Act (ERISA) recommends that private employers assume a 6.1 percent return on assets in private pension plans.

Because PERA assumes an 8.5 percent return on assets it must invest in a diversified portfolio of assets, including equities as well as fixed income assets.

The higher the ratio of equities relative to fixed income assets, the more volatile the portfolio is likely to be. Because of this volatility some economists question the use of equities in public pension plans.²

Like many state and local pension plans across the country, the PERA system has experienced a drastic decline in its investment portfolio valuation.

Like many state and local pension plans across the country, the PERA system has experienced a drastic decline in its investment portfolio valuation. As of December 31, 2008, the market value of assets held in PERA was \$29.5 billion.³

This amount represented a decrease of \$11.9 billion from the December 31, 2007, figure of \$41.4 billion.⁴ The return on assets in that year was a negative 28 percent.

Table 2. Market Valuation of PERA Investment Portfolio

Investment Type	Market Value 12/31/2007	Percent of Total Market Value	Market Value 12/31/2008	Percent of Total Market Value
Domestic Equity	\$17,894,976	43.3%	\$11,311,506	38.4%
International Equity	\$6,501,567	15.7%	\$3,902,285	13.2%
Fixed Income	\$9,903,354	23.9%	\$7,843,112	26.6%
Alternative	\$3,204,459	7.7%	\$2,631,322	8.9%
Real Estate	\$3,120,362	7.6%	\$2,603,509	8.9%
Timber	\$462,255	1.1%	\$446,333	1.5%
Cash and Short Term	\$286,431	0.7%	\$746,532	2.5%
Total	\$41,373,404	100.0%	\$29,484,599	100.0%

Source: Comprehensive Annual Financial Reports, December 31, 2007, and December 31, 2008, Pg.78

A decade ago PERA administrators had most of the assets of the plan in equities. When the stock market bubble burst in 2001, PERA suffered a sharp drop in the value of assets in the portfolio. PERA then shifted more of the portfolio into fixed income assets, and promised to pursue more prudent investment policies. Recent

evidence reveals that PERA administrators continue to repeat mistakes they have made in the past, resulting in accumulation of even greater unfunded liabilities in the plan.

Table 3. Actual and Target Shares in the PERA Portfolio.

	12/31/ 2007 Actual %	2007 Target %	2007 Ranges	12/31/ 2008 Actual %	2008 Target %	2008 Ranges
Domestic Stocks	43.3%	45%	42%-48%	38.4%	43%	40%-46%
Fixed Income	23.9%	25%	22%-28%	26.6%	25%	22%-28%
Intl. Stocks	15.7%	15%	12%-18%	13.2%	15%	12%-18%
Alternative Investments	7.7%	7%	4%-10%	8.9%	7%	4%- 10%
Real Estate	7.6%	7%	4%-10%	8.9%	7%	4%- 10%
Timber/ Opportunity Fund	1.1%	1%	0%-2%	1.5%	3%	0%- 6%
Cash & Short- Term Investments	0.7%	0%		2.5%	0%	

Source: <http://www.copera.org/pdf/5/5-20-08.pdf>, Pg. 21

The PERA asset allocation reported in table 3 reveals a portfolio heavily weighted toward equities.⁵ The target share for equities is 75 percent, and for fixed assets is 25 percent. The current position reported in table 3 is less risky than the target portfolio because of the sharp drop in value for equities over the past year—illustrating precisely why such a high target share for equities can cause volatility.

The volatility in PERA can be compared to that in the California Public Employees' Retirement System (CALPERS). CALPERS reported a 23 percent decline in the value of assets in the system over the past year, less than the decline in the value of assets in PERA over that period.

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CALPERS reports that the sharp drop in the funding ratio will require an increase in employer contribution rate between 2 and 4 percent of payroll.⁶ Even with increased employer contribution rates California legislators are encountering constraints in funding CALPERS. Moody's Investor Services reports that it put the triple-A rating of CALPERS on review for downgrade for the first time. The

review reflects the deterioration in the funding status

of CALPERS, and of the California state government. Moody's is also considering a downgrade in the triple-A rating of the California State Teachers Retirement system. A lower rating for these pension plans will mean increased borrowing costs for state and local jurisdictions in California.⁷

CONTRIBUTION RATES

The actuarial process is the basis for determining employer and employee contributions into the pension plan. To meet GASB standards, the pension plan must calculate an actuarial contribution rate that will eliminate unfunded liabilities in the system within a 30-year amortization period. The actuarial contribution rate is a schedule of employer contributions required to meet this standard. The actuarial contribution rate includes two components:

- A 'normal cost' for that portion of projected liabilities allocated by the actuarial cost method for service of members during the year following the valuation date.
- An 'unfunded actuarial contribution' to cover the excess of projected liabilities over the actuarial value of assets.

The Annual Required Contribution Rate (ARC) is the employer contribution rate required to meet the maximum 30-year amortization standard. Table 4 compares the ARC rate with the actual contribution rates for each division in PERA. The table also shows the Health Care Contribution Rate, the Amortization Equalization Disbursement (AED), Supplemental Amortization Equalization Disbursement (SAED), and Contribution Rate Available for Funding. Table 4 shows that the actual contribution rates fell well short of the ARC rates for all of these divisions.

Table 4. Actuarial and Statutory Contribution Rates, December 31, 2008 Valuation

Trust Fund	Annual Required Contribution	Actual Employer Contribution Rate	Health Care Contribution Rate	AED	SAED	Contribution Rate Available for Funding
State Division	18.45%	10.15%	(1.02%)	1.40%	0.50%	11.03%
State Troopers		12.85%	(1.02%)	1.40%	0.50%	13.73%
School Division	17.18%	10.15%	(1.02%)	1.40%	0.50%	11.03%
Local Government Division	11.95%	10.00%	(1.02%)	1.40%	0.50%	10.88%
Judicial Division	17.66%	13.66%	(1.02%)	1.40%	0.50%	14.54%
Health Care	1.11%		1.02%			1.02%

Source: <http://www.copera.org/pdf/5/5-20-08.pdf>, Pg. 24

The amortization period is the number of years it will take to pay off the unfunded actuarial accrued liability for each division based on the assumptions underlying the plan. The following table shows the amortization periods based on current funding and benefits, and with future AED and SAED increases.

Table 5. Amortization Periods Based on Current Funding and Benefits, and with Future AED and SAED Increases.

Trust Fund	Amortization Period With Current Funding	Amortization Period With Future AED and SAED Increases
State Division	Infinite	Infinite
School Division	Infinite	75 Years
Local Government Division	29 Years	19 Years
Judicial Division	Infinite	48 Years
Health Care	39 Years	39 Years

Source: <http://www.copera.org/pdf/5/5-20-08.pdf>, Pgs. 28, and 61-68.

The GASB standard is for a system to demonstrate that unfunded liabilities will be paid off within a 30-year amortization period. If the amortization period is infinite, it means the unfunded liabilities cannot be paid off even if all the assumptions are met. The state division has an infinite amortization period, even with future AED and SAED increases. The school division has an infinite amortization period with current funding, and a 75-year amortization period with Future AED and SAED contributions. The

only division that meets GASB standards is the local government division, and that is only with future AED and SAED contributions.

WHY THE PERA FUNDING CRISIS MAY BE WORSE WHEN EVALUATED BY PRIVATE PENSION PLAN REQUIREMENTS

A recent study by the National Bureau of Economic Research (NBER) suggests that the funding status in PERA and other public pension funds is worse than reported (Novy-Marx and Rauh 2009). These pension systems are likely to experience significant funding shortfalls in future years, even if the economy recovers and financial markets stabilize. These funding shortfalls will impose a heavy burden on future generations.

The potential for future funding shortfalls in pension plans can be estimated from future assets and future liabilities. Future liabilities are estimated based on the current actuarial value of liabilities, the discount rate employed by the plan, and the amortization period. Future assets are estimated based on the expected growth rate and volatility of the plan's assets.

The NBER study of a sample of state pension plans finds that future under-funding in these plans is actually greater

A recent study by the National Bureau of Economic Research (NBER) suggests that the funding status in PERA and other public pension funds is worse than reported (Novy-Marx and Rauh 2009).

than that reported in their financial statements because of the accounting rules used to estimate future assets and future liabilities in the system.

The NBER study, and other studies as well, point out that the 8 percent average discount rate used by PERA and other state pension systems is almost certainly too high (Novy-Marx and Rauh 2009; Barclays Global Investors 2004). This discount rate assumption is based on Government Accounting Standards Board (GASB) ruling

25 and Actuarial Standards of Practice (ASOP) item 27. These standards require a discount rate determined by the accrued return on pension plan assets. Critics argue that the discount rate should be based on the market risk inherent in the system liabilities (Novy-Marx and Rauh 2009; Gold 2002; Bader and Gold 2004).

Support for the critics' position comes from the discount rate used in private pension plans (Novy-Marx and Rauh 2009). In contrast to government pension plans, private pension plans use a discount rate applied to liabilities that is a blend of corporate bond yields and Treasury bond yields. The NBER study uses a

lower discount rate to estimate the present value of future liabilities in their sample of state pension systems. In 2005, the present value of liabilities in these state plans—based on an 8 percent discount rate—is estimated at \$2.5 trillion. Using the Municipal bond rate to determine the discount rate results in an estimated present value of liabilities equal to \$3.1 trillion; using the Treasury rate as the discount rate, the present value of the liabilities is estimated at \$4.0 trillion (Novy-Marx and Rauh 2009).

Using these lower discount rates to estimate the present value of future liabilities results in much higher estimates of unfunded liabilities in these state pension plans. In their financial statements, these public pension plans estimate unfunded liabilities at \$312 billion. The NBER study estimates unfunded liabilities at \$901 billion using the Municipal bond discount rate and \$1.9 trillion using the U.S. Treasury discount rate. Unfunded liabilities as a ratio of assets in the plans is estimated at 41 percent and 86 percent, respectively, for these lower discount rates (Novy-Marx and Rauh 2009).

One way to assess the magnitude of the funding crises in state pension plans is to use the same government standards as those applied to private defined benefit pension plans. Private defined benefit pension plans are considered 'safe' by government standards if they have enough assets to support at least 80 percent of pension benefit obligations (Life and Health Insurance News.com 2009). In 2008, only 9 percent of a sample of state and local government pension plans met this standard (Munnell, A. H., J. Aubrey, and D. Muldoon 2008).

Private defined benefit pension plans are considered 'critical' if the value of assets in the plan is 65 percent or less of pension benefit obligations (Life and Health Insurance News.com 2009). This year more than half of state and local government pension plans are likely to fall in this 'critical' category. A number of states have already seen this ratio fall below 50 percent this year, including Connecticut, West Virginia, and Indiana (Wall Street Journal 2009C). As of December 2008 the PERA system has also fallen into this critical category.

The most important finding in the NBER study is the prospect of future under-funding in state pension plans based on more realistic discount rates. Using a 15-year amortization period, the NBER study estimates, conservatively, that there is a 50 percent chance of under-funding greater than \$750 billion; a 25 percent chance of under-funding greater than \$1.75 trillion; and a 10 percent chance that under-funding will exceed \$2.48 trillion. These estimates do not include any under-funding in other post-employment benefit (OPEB) plans in these state pension systems (Novy-Marx and Rauh 2009).

UNSATISFACTORY INCENTIVES

The funding crisis is not simply the result of poor judgment by PERA policy makers and the politicians who are supposed to exercise oversight of the system. The funding crisis in PERA reflects a systemic flaw resulting from what economists refer to as "moral hazard."

A "moral hazard" exists when individuals make decisions for which they will not bear the consequences. In these circumstances, individuals have little incentive to make good long-term decisions. In the case of the PERA Board, this moral

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hazard is exacerbated by the fact that all Board members are beneficiaries who have a direct financial interest in the benefits provided by the pension system.

Moral hazard is inherent in the defined benefit plan offered by PERA to employees. The costs of the unfunded liabilities in the system will be incurred over several decades. In the long run those who have made these decisions will not be held accountable to taxpayers who must bear these costs—because by the time the system goes bankrupt, or massive spending cuts on other state programs (probably coupled with massive tax increases) are needed to keep it solvent, these decision makers will have left office decades before. These decision makers include the PERA Board, public sector union negotiators, and elected officials. The PERA Board has negotiated generous pay and pension benefits for themselves and other employees, the full costs of which will not be seen for many years, long after they have left the Board. The PERA system continues to offer pension benefits superior to that available to employees in the private sector.⁸

Elected officials have significantly increased employer contributions to PERA, contributions that will increase taxes for many decades after they have retired.

The assumption of PERA executives is that employers will continue to increase employer contribution rates to the level necessary to bring the system into actuarial balance. However, there is growing evidence that the legislature will

encounter constraints from taxpayers in continuing to pursue this option.

Even with the assumption of an 8.5 percent return on assets, employer contribution rates would have to increase dramatically to bring the PERA system into actuarial balance. When the actual unfunded liabilities in the system are fully accounted for in financial statements state employer contribution rates will most likely have to more than double to more than 20 percent of payroll. This would require hundreds of millions of dollars in additional employer contributions into the PERA system, a difficult step when state and local jurisdictions are experiencing a revenue shortfall. If the assumption of an 8.5 percent return on assets is unrealistic, as many economists argue, and the system earns a lower rate of return on assets, actuarial balance may not be achieved even with the

higher employer contribution rates.

Increasing employer contribution rate into the PERA system will require some combination of higher taxes and/or decreased public services. Across the country citizens are no longer willing to bear the costs imposed by public sector pension funds. Legislators are facing taxpayer resistance to funding pension plan imbalances.

A good example is the California Public Employees' Retirement System (CALPERS). CALPERS reports that the sharp drop in the funding ratio will require an increase in employer contribution rate between two percent and four percent of payroll.⁹

Even with increased employer contribution rates, California legislators are encountering constraints in funding CALPERS. Moody's Investor Services reports that it put the triple A rating of CALPERS on review for downgrade for the first time. The review reflects the deterioration in the funding status of CALPERS, and of the California state government.

State payments into CALPERS are a major source of the shortfall in the state budget. California voters rejected, by a two-to-one margin, Governor Schwarzenegger's proposal to solve the budget crisis by, among other things, increasing taxes \$16 billion, and issuing more debt.¹⁰

Governor Schwarzenegger has called California's pension system "unsustainable". He proposes changes in the pension system, including increasing the age at which public employees are eligible for retirement benefits.¹¹ The funding crisis in PERA is actually worse than that in CALPERS. PERA has experienced a sharper decline in the value of assets, and a greater deterioration in funding status of the system.

Achieving actuarial balance will require fundamental reform of the PERA system. Across the country state and local jurisdictions are enacting reforms in pension plans similar to those introduced in the private sector. In the long run, the most effective way to eliminate unfunded liabilities is to require new employees to enroll in a defined contribution plan—a plan like the one used by the state

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university system (and by most private employers). As employees in the defined contribution plan replace those retiring from the defined benefit plan, unfunded liabilities are eliminated.

Current employees in the defined benefit plan must begin to share the burden of unfunded liabilities in the plan along with employers. This requires modifications in benefits to reduce costs. It also requires increased employee contribution rates to share costs equally with employers. Current employees in the defined benefit plan should be given the option of enrolling in the defined contribution plan. For employees who choose to remain in the defined benefit plan, employee contribution rates must increase to share in the cost of that plan equally with employers. This change will permit the state to begin to earmark a greater share of contributions to pay off unfunded liabilities in the system.

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CONCLUSION

PERA is a public pension system that is ultimately the responsibility of Colorado taxpayers. Taxpayers are already liable for \$28 billion in unfunded liabilities, and they will have to pay for any future unfunded liabilities incurred in the system. The key finding of the study is that the PERA system will not be in actuarial balance over the 30-year amortization period set in GASB standards. As a result, PERA will continue to accumulate unfunded liabilities for the foreseeable future. It is highly likely that PERA will continue to impose a heavy tax burden on future generations. The result will be an intergenerational transfer of wealth from future generations to the present generation through the pension system.

Colorado citizens may well ask how they got into this PERA mess. The explanation is that the people making these pension decisions do not have to bear the cost. The PERA Board and the unions who represent public sector employees negotiated benefits for those employees that they could not afford. Elected officials charged with oversight of the state pension system failed to fulfill their charge to oversee the system. As a result, taxpayers will be paying taxes to finance these benefits long after these decision makers have left. Without reform, spending on almost every other state-funded program will have to be

cut, or taxes increased. It is simply not fair for Colorado citizens and the Colorado General Assembly to sanction such an intergenerational transfer of wealth through the pension system.

The moral hazard will continue as long as the PERA pension plan is based on defined benefits rather than defined contributions. Third parties will continue to negotiate pension benefits and costs under a defined benefit plan. The reality is that Colorado citizens cannot do much about the funding crises that already exists in PERA; but, they can stop the bleeding by enacting fundamental reforms in the state pension system.

In response to the funding crisis, PERA executives recommend that the legislature continue to muddle along with the defined benefit pension plan. However, bringing the PERA system into actuarial balance will require more fundamental reform. Everything should be on the table, including changes in plan structure, changes in benefits, increased employee contribution rates, and increased employer contribution rates.¹²

The reality is that Colorado citizens cannot do much about the funding crises that already exists in PERA; but, they can stop the bleeding by enacting fundamental reforms in the state pension system.

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ENDNOTES

¹ <http://www.copera.org/pdf/5/5-20-08.pdf>, Pg. 31

² For a discussion of the arguments against this high ratio of stocks in public pension funds see Bader and Gold (2004).

³ Colorado Public Employees Retirement (2008), p.78

⁴ Ibid.

⁵ For a discussion of the arguments against this high ratio of stocks in public pension funds see Bader and Gold (2004).

⁶ *Wall Street Journal* (2009E).

⁷ Ibid.

⁸ For a comparison of the pension benefits offered in public and private sector pension plans see Passantino and Summers (2005).

⁹ *Wall Street Journal* (2009E).

¹⁰ Ibid.

¹¹ Ibid

¹² It should be noted that the American Legislative Exchange Council has adopted this reform in model legislation.

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