

PENSION REFORM FOR THE NEW NORMAL ECONOMY: EXAMINING COLORADO'S SUCCESSFUL MODEL

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October 2020





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EXECUTIVE SUMMARY

Facing a real threat of pension insolvency, in 2018 Colorado lawmakers enacted major, bipartisan reform of the Public Employee Retirement Association (PERA) that provides retirement benefits to all state and school employees, along with many local employees. This reform came at a time when the pension system had experienced decades of growing funding shortfalls and a deteriorating ability to provide promised benefits in full.

The 2018 effort—a culmination of collaboration from several involved parties, including the Pension Integrity Project at Reason Foundation—significantly increased annual contributions and established automatic annual adjustments to contributions and cost-of-living-adjustment benefits, among several other prudent adjustments to benefit eligibility and availability.

Now, with a few years of results beyond the reform, it is possible to use actuarial forecast modeling to evaluate the system's trajectory before and after the major changes made in 2018. Mapping out results over the next 30 years under several different return scenarios shows that the system is, in fact, in an improved position for closing its funding gap. The analysis also indicates that, where it was extremely vulnerable to unpredictable market shocks and long-term underperformance before, it is now much more prepared to withstand these possibilities. Much of this improvement in system resiliency can be attributed to the automatic adjustment policy implemented in 2018.

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While more improvements are still needed for the system in order to ensure resiliency and long-term financial sustainability, the 2018 reform steered Colorado's pension system to a much better position for handling the still-unrealized outcomes of 2020.

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INTRODUCTION

In 2018, the Colorado Legislature passed significant reforms of the state's Public Employee Retirement Association (PERA) with bipartisan support.¹ Facing a \$31 billion shortfall in funding for promised pension benefits, and with a significant risk of future insolvency looming over their heads,² state lawmakers sought to steer PERA back on a path of sustainability.

What came about from the legislative process was Senate Bill 200, which—using a variety of strategies—made great strides not only in improving the plan's funding trajectory, but also brought some much-needed resiliency to PERA so it was better able to withstand any future market shocks. In the wake of COVID-19 and the subsequent market challenges, Colorado policymakers demonstrated good foresight in their 2018 legislation, which will continue to benefit the state's workers and taxpayers for decades.

This brief uses actuarial modeling of PERA's State and School Divisions (the system's two largest divisions making up a combined 87% of liabilities) to examine the effect of SB200

Randazzo, Anthony, Leonard Gilroy and Zachary Christensen. "Colorado Adopts Significant Pension Changes for All Public Employees." *Reason.org*, Reason Foundation. 25 May 2018. Web. https://reason.org/commentary/colorado-adopts-significant-pension-changes-for-all-public-employees/ Accessed 16 July 2020.

Eason, Brian. "PERA Finances Hit 'Critical Juncture' as Unfunded Liabilities Top \$32 Billion." Denverpost.com, The Denver Post. 27 June 2017. Web. https://www.denverpost.com/2017/06/27/perafunding-unfunded-liabilities/

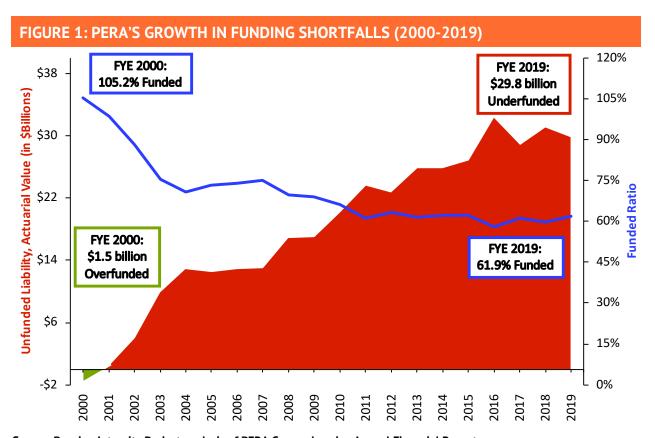
on several key metrics of funding and overall fiscal health. The analysis observes long-term asset and liability forecasts under PERA assumptions to evaluate how the reform has improved the overall trajectory of the fund. It also applies various adverse, yet possible, return scenarios to test how PERA would have responded to market volatility before the reform and how it will now respond after the passage of SB200.

THE MOTIVATION FOR REFORM

Spanning just an 18-year timeframe (2000-2018), Colorado's primary public pension system went from full funding to being short on pension promises by \$31 billion (Figure 1), and this despite an attempt to right the system through a legislative reform in 2010.³ Much like other public pensions around the country, PERA suffered from a variety of problems that chipped away at the system's ability to keep up with rising liabilities, the largest driver being a long streak of investment returns that failed to live up to the system's expectations.⁴ The culmination of nearly two decades of these problems resulted in a fund with only 59.8% of the assets needed to cover the retirement promises made to Colorado public workers and retirees.

[&]quot;Colorado PERA 2010 Reform Legislation and Historical Funded Status." Leg.colorado.gov, Colorado Legislative Council Staff. 28 September 2010. Web. https://leg.colorado.gov/sites/default/files/lcs_pera_2010_reform_ip_memo.002.pdf Accessed 3 August 2020.

Randazzo, Anthony, Marc Joffe and Zachary Christensen. "What Has Caused Colorado's Pension Crisis?" *Unfundedcolorado.org*, Reason Foundation. 2018. Web. https://unfundedcolorado.org/ Accessed 16 July 2020.



Source: Pension Integrity Project analysis of PERA Comprehensive Annual Financial Reports.

These significant shortfalls didn't go unnoticed by financial experts. By late 2017, credit rating agencies were beginning to adjust outlooks for Colorado, citing large pension debts with excessive amortization forecasts (meaning the time to pay off pension debts would extend well beyond the standard timeframe). State lawmakers and PERA's board were not blind to this issue either. In 2017, they commissioned a study from their actuaries that indicated that—even assuming returns and other assumption experience match expectations—the system's divisions wouldn't be able to reach full funding in excess of 60 years, a bad indicator considering the target amortization timeframe for PERA was 30 years.

Kelly, Stephanie. "S&P revises Colorado credit outlook to negative from stable." *Reuters.com*, Reuters. 16 Nov. 2017. Web. https://www.reuters.com/article/usa-municipals-colorado/sp-revises-colorado-credit-outlook-to-negative-from-stable-idUSL1N1NM1LZ Accessed 16 July 2020.

[&]quot;Hybrid Defined Benefit Plan Signal Light Reporting." *copera.com*, Cavanaugh Macdonald Consulting LLC and Colorado PERA. 30 July 2018. Web. https://www.copera.org/sites/default/files/documents/signallight18.pdf Accessed 16 July 2020.

How Amortization Schedules Affect a Plan's Ability to Pay Off Unfunded Liabilities

When retirement plan managers establish their amortization policy, they make crucial decisions that determine how many years they plan to take to close any gap between promised benefits and assets (commonly known as unfunded liabilities). Plan actuaries use amortization schedules to determine required annual contributions (ADC), which express the amount needed to avoid adding to the plan's unfunded liabilities.

Some pension plans—like Colorado PERA—base their annual contributions not on the ADC, but in statute. This results in amortization schedules that can extend beyond whatever amortization window the plan is using. Statutory contributions that are well below actuarially determined amounts can even result in a trajectory in which the unfunded liabilities are never paid off, meaning the plan is not on a path to providing all of the benefits promised to public workers.

Colorado PERA, like many other plans around the country, uses an amortization schedule of 30 years. This lengthy period, however, is proving to generate overwhelming and unnecessary costs in interest on pension debt (or investment interest not earned due to long periods of underfunding). For this reason, credit ratings agencies and actuarial professional associations are recommending amortization policies of no more than 20 years. Using shorter amortization schedules results in higher annual contributions, but saves significantly in long-term costs and buttresses pension funds from adverse market factors.

Frost, Ryan. "S&P Presents Guidelines for Funding Pension and OPEB Plans." *Reason.org*, Reason Foundation. 22 May 2020. Web. https://reason.org/commentary/sp-prescribes-guidelines-for-funding-pension-and-opeb-plans/ Accessed 16 July 2020.; "Report of the Blue Ribbon Panel on Public Pension Plan Funding." The Society of Actuaries, 2014. Web. https://www.soa.org/globalassets/assets/files/newsroom/brp-report.pdf Accessed 16 July 2020.

FORECASTING OUTCOMES BEFORE REFORM

Amortization and general funding problems for PERA before the 2018 changes are visible in the pre-reform forecast of the system's assets and liabilities (see Figure 2). This forecast applies the system's own long-term return assumptions, meaning each year renders a 7.25% return on assets. As the analysis illustrates, PERA was on a path that would have seen little progress in closing the funding gap, even over a 30-year window. Forecast results show that the State and School Divisions would have reduced their unfunded liabilities from \$28 billion to about \$15 billion by 2049 (figure adjusted for inflation), and that would have been under the unlikely scenario that investment experience matches PERA's assumptions perfectly.

As the 2020 global pandemic and related market volatility demonstrate, actual outcomes will often vary from expectations, and sometimes in completely unpredictable ways and magnitudes. Before the 2018 reforms, PERA's trajectory was alarming even under optimistic scenarios. Applying more-realistic and more-volatile scenarios reveals just how vulnerable the system's fund was before the SB200 reform bill. The Figure 3 forecast uses a return scenario that assumes a long-term experience that is closer to what many financial experts believe will be a "new normal" in market performance going forward, namely a long-term



FIGURE 2: PERA FUNDING FORECAST BEFORE SB12, ASSUMING EXPERIENCE MATCHES PLAN ASSUMPTIONS

Source: Pension Integrity Project actuarial forecast of PERA School and State Divisions. Assets and liabilities expressed in actuarial values.

2032

2035

2038

2041

2044

2047

2029

\$40

\$20

\$0

2017

2020

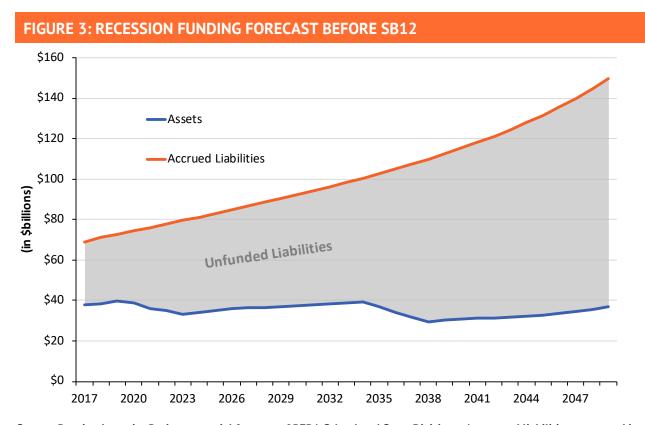
2023

2026

average return of 6%.8 The scenario also applies a significant loss in 2020 and a subsequent recovery to reflect the conceptual "market stress" scenario of an immediate recession, followed by an additional recession and recovery in 2035–2038. The second recession is included to reflect the increasingly accepted sentiment that the market will experience at least one significant shock every 10 to 15 years.

Applying a scenario that likely better matches the fallout of the current and any future recessions shows that PERA's old path would be slow to reach full funding and likely continue to grow unfunded liabilities, deteriorating PERA's ability to keep retirement promises made to public workers. Under the above-described recession scenario, the State and School Divisions would have seen unfunded liabilities grow from \$28 billion to over \$100 billion by 2049.

Niraula, Anil and Truong Bui. "The 'New Normal' in Public Pension Investment Returns." Reason Foundation, 2020. Web. https://reason.org/wp-content/uploads/new-normal-public-pension-investment-returns.pdf Accessed 16 July 2020.



Source: Pension Integrity Project actuarial forecast of PERA School and State Divisions. Assets and liabilities expressed in actuarial values. Forecast applies recession and recovery scenarios to 2020 and 2035 and a 6% long-term average return.

This outcome would have been in line with the PERA's previous *two decades* of experience, a period in which the system was not able to recover from two recessions—in 2001 and 2008. These forecast results illustrate the critical need Colorado faced not only to accelerate asset accrual to meet the need of growing costs (in other words, contribution increases), but also the clear necessity for structural changes in how the system reacts to market shocks. PERA lacked resiliency⁹ in the face of an increasingly volatile and unpredictable future in market performance, which was a primary contributor to the system's problems in 2018 and would continue to be a problem unless this particular weakness was addressed.

Gilroy, Leonard and Zachary Christensen. "Seeking Pension Resiliency." *Reason.org*, Reason Foundation. 30 April 2020. Web. https://reason.org/commentary/seeking-pension-resiliency/ Accessed 16 July 2020.

FORGING A BETTER PATH FOR PERA

PERA's lack of resiliency, along with the threat of a credit downgrade, were enough to spur Colorado policymakers into action in 2018. The bipartisan SB200 approached PERA's challenges with changes to a variety of policy areas, namely contributions, cost-of-living-adjustments (COLAs), retirement age, alternative retirement plan options, and organizational oversight.

INCREASING EMPLOYER CONTRIBUTION

To address the obvious need for more funding, SB200 established higher contributions from both employees and employers. PERA members were placed on a gradual 2% increase of contributions to reach 10% of pay by 2021. Most employers saw an increase of 0.25% to their contributions, extending their total contribution to 10.4%.

On top of these increases, the reform established an annual supplemental contribution of \$225 million from the state budget, which would make a significant difference in closing PERA's funding gap.

4.2

AUTOMATIC ADJUSTMENTS AND OTHER CHANGES

The reform also temporarily suspended COLAs, established a higher retirement age for new workers, and expanded the availability of the PERAChoice defined contribution plan. These changes were all aimed at reducing the system's liability accrual.

While these changes helped steer PERA onto an optimal path toward full funding, Colorado policymakers further addressed the problem of plan resiliency with SB200's unique "automatic adjustment" feature. This created automatic 0.5% increases to both employee and employer annual contributions—with a total adjustment limit of 2%—that was triggered by how well statutorily-set annual contributions matched with amounts established by the system's actuaries. This effectively makes contributions going into PERA increase as needed to keep the system on a path to full funding within the set 30-year period, at least until the 2% increase limit is reached.

The automatic adjustments don't stop at contributions, either. They also apply to annual COLAs distributed to retirees. Using the same determining factor as the contribution adjustments, the reform will incrementally reduce COLAs automatically when statutorily-set contributions fall below what actuaries recommend based on the plan's 30-year amortization policy. While the contribution adjustments aim to increase assets to meet liabilities, the automatic COLA adjustments work to push the liability forecast down, making it easier for assets to eventually catch up.

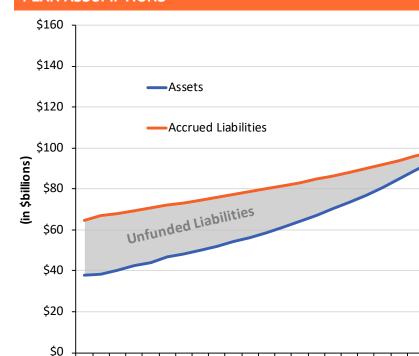
The power of SB200's automatic adjustments is in the ability to modify PERA's asset and liability lines to match any unforeseen need, and all of this without having to go through the lengthy—and usually delayed—process of making changes through the legislature or pension board. In short, the policy effectively prioritized the retirement security of Colorado workers by removing politics from the process.

FORECASTING OUTCOMES AFTER REFORM

FUNDING FORECAST AFTER SB200 ABSENT MARKET SHOCKS

Forecast analyses of PERA's path to full funding before and after the passage of SB200 give an idea of what the reform accomplished. Using PERA's long-term assumption on returns, one can see the effect of SB200's reduction in liability accrual and increase in assets though higher annual contributions (see Figure 4 in comparison to Figure 2). With the application of the 2018 reforms, PERA's School and State Divisions will reach full funding within the prescribed 30-year period, assuming actual market experience matches exactly the plan's assumed annual return of 7.25%.

5.1



2017

5.2

2020

2023

2026

FIGURE 4: PERA FUNDING FORECAST AFTER SB200, ASSUMING EXPERIENCE MATCHES PLAN ASSUMPTIONS

Source: Pension Integrity Project actuarial forecast of PERA School and State Divisions. Assets and liabilities expressed in actuarial values.

2032

2035

2038

2041

2044

2047

RECESSION FUNDING FORECAST AFTER SB200

2029

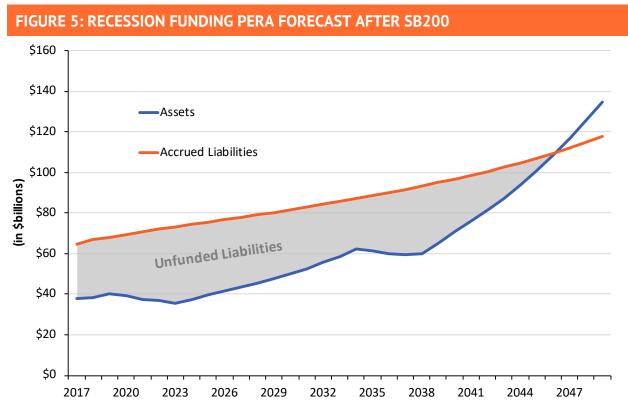
Even more insight can be gathered by forecasting PERA's assets and liabilities under realistic recession scenarios. Despite the assumptions the plan uses, actual annual results will obviously deviate from the long-term 7.25% assumption held by PERA's board and actuaries. In fact, PERA already experienced a loss in 2018, and is very likely to see returns fall short of their assumption in 2020.

Before the passage of SB200, PERA's ability to reach full funding depended entirely on market experience, and a recession scenario with long-term returns below expectations resulted not only in failure to reach full funding, but significant growth in pension debt.

Applying these same return inputs (recession and recovery scenarios in 2020 and 2035 with

[&]quot;Colorado PERA Releases 2018 Comprehensive Financial Report." *Copera.org*, Colorado PERA. 21 June 2019. Web. https://www.copera.org/news/colorado-pera-releases-2018-comprehensive-financial-report Accessed 16 July 2020.

average long-term returns at 6%) to PERA's School and State Divisions after the passage of SB200 shows a strikingly different outcome (see Figure 5 in comparison with Figure 3).



Source: Pension Integrity Project actuarial forecast of PERA School and State Divisions.

Forecast applies recession and recovery scenarios to 2020 and 2035 and a 6% long-term average return. Assets and liabilities expressed in actuarial values.

As the post-SB200 forecast under recession scenarios indicates, the reformed version of PERA can withstand multiple market shocks and long-term average returns below expectations. Instead of continued growth in the system's unfunded liabilities, PERA will likely be able to reach full funding within the forecasted window, demonstrating a significant leap in the system's resiliency to uncontrollable and unpredictable market factors.

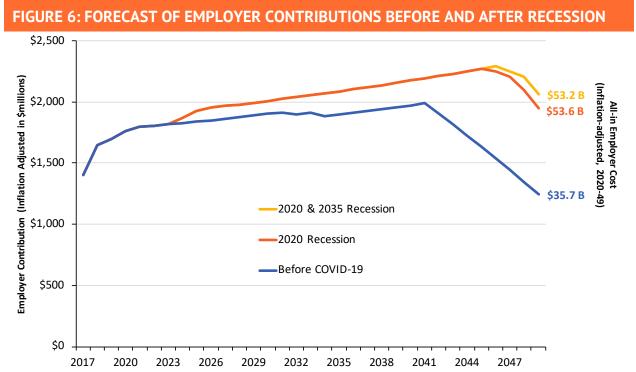
Unlike PERA's trajectory before SB200, the accrual of liabilities will react and adjust to the key metrics built into the "automatic adjustment" part of the reform that applies to the COLAs given to retirees. Asset accrual also responds to whatever market experience may come. This stabilization in asset accrual is the product of contributions that increase and stay high as needed. It is important to understand, however, that this dynamic asset accrual does come at a cost by way of potentially increased annual contributions for both members

and employers. To achieve the displayed automatic increase in assets, total contributions will, indeed, need to go up to make up for returns below PERA's expected 7.25%.

FORECAST OF EMPLOYER CONTRIBUTIONS WITH AND WITHOUT MARKET SHOCK

A forecast of employer contributions (in inflation-adjusted dollar values) shows what additional costs can be generated by the automatic adjustments under various return scenarios (see Figure 6). The analysis below shows the cost of achieving a fully funded PERA if there were no recessions, as well as the cost under scenarios with one and two recessions.

To fully evaluate the costs associated with these scenarios, the analysis adds the ending unfunded liability to the sum of all employer contributions during the displayed timeframe, generating the "all-in employer cost". This makes it possible to compare various scenarios using not only the total amount paid by employers, but also the end result as it pertains to pension debt—or in these cases asset surplus—that will eventually need to be paid. The results show that, for the benefit of a more resilient pension plan, overall employer costs could rise significantly depending on actual investment return outcomes.



Source: Pension Integrity Project actuarial forecast of PERA School and State Divisions.

Forecast applies recession and recovery scenarios to 2020 and 2035 and a 6% long-term average return.

Pension Reform For The New Normal Economy: Examining Colorado's Successful Model

The costs for maintaining a more resilient plan do arise in increased overall contributions, but these additional costs in the short term end up saving tremendous amounts in the long term. The table in Figure 7 gives the detailed results of the Figure 6 scenarios and how PERA would have responded before the passage of SB200. The results show that while the system in its reformed state requires more up-front contributions to adjust to market crises, this is far outweighed by the benefit of lower ending unfunded liabilities. When all is said and done, the all-in employer cost under multiple return scenarios is less than half of what was forecast before SB200.

FIGURE 7: EFFECT OF SB200 ON FORECAST OF EMPLOYER CONTRIBUTIONS BEFORE AND AFTER RECESSION

	Pre-SB200			Post-SB200		
Scenarios	30-Year Employer Contributions	2049 Unfunded Market Liability	Total All-in Employer Costs	30-Year Employer Contributions	2049 Unfunded Market Liability	Total All-in Employer Costs
Baseline (no recessions)	\$57.0 B	\$15.2 B	\$72.2 B	\$54.1 B	\$(18.4) B	\$35.7 B
2020-23 Crisis + Average 6%	\$57.2 B	\$54.7 B	\$111.9 B	\$61.5 B	\$(7.9) B	\$53.6 B
Two Crises + Average 6%	\$57.2 B	\$55.2 B	\$112.3 B	\$61.8 B	\$(8.6) B	\$53.2 B

NEXT STEPS FOR SECURING PERA FOR FUTURE WORKERS

While Colorado's 2018 pension reforms significantly improved PERA's solvency and overall fiscal health, other policies should be considered and pursued to further strengthen the system.

State policymakers should first consider addressing the main driver of unexpected liabilities head on by further reducing the system's assumed rate of return. Chronic experience below the system's long-term assumption has been the largest contributor to the current funding shortfall. Lowering this assumption now to match short-term expectations (instead of long-term) will help the system avoid further unexpected costs, with the added benefit of increased funding and contribution stability. Lawmakers could also consider expanding the automatic adjustment concept to this assumption, just as they implemented in SB200 for contributions and COLAs. PERA—along with most other plans around the country—has been slow to adjust return assumptions down in reaction to an overall slowing in asset growth. To address the slow-moving nature of this critical assumption, the plan could lock the rate at a certain level above the risk-free rate (typically expressed through 30-year Treasury yields) so that it moves with year-to-year trends. This

policy would effectively remove any element of politics and the temptation to wait too long on these important adjustments to assumptions.

The 2018 reform effectively reduced the debt schedules of PERA's unfunded liabilities, which will end up saving significant amounts of money for the state and taxpayers. At the moment, the system targets a 30-year amortization period, but experts in the actuarial profession are increasingly suggesting amortization schedules of 15-20 years. Just as SB200 reduced overall costs by achieving a 30-year amortization, reducing the plan's amortization policy to 20 years would save Coloradans even more.

Colorado policymakers can also turn to expanding upon the options already available to most of the divisions within PERA. The expansion of the PERAChoice defined contribution plan option to the Local Division helped reduce liability accrual, making it easier for assets to catch up to the necessary level of funding. It also made available a valuable option to an increasingly mobile workforce who are becoming more likely to move to other employment opportunities before they are able to enjoy the bulk of the pension plan's benefit accrual. This option, however, is still not available to the School Division, meaning teachers do not have the same retirement options available to other state and local employees statewide. Simply opening this option for teachers would not only give Colorado's educators more flexibility in post-employment planning, it would also help manage unexpected growth in liabilities.

[&]quot;Blue Ribbon Panel on Public Pension Plan Funding: Resource Guide." Society of Actuaries, 2014. Web. https://www.soa.org/globalassets/assets/Files/Newsroom/brp-guide.pdf Accessed 16 2020.

CONCLUSION

Seeing the need for effective and lasting reform, and the importance of living up to retirement promises made to state workers, Colorado policymakers came together to pass pension reform that addressed many of PERA's weaknesses. Now, just two years later, the value of this reform is becoming clearer. Stakeholders in other states and cities should look to adopt similar policies, especially ones that involve automatic adjustments to both contributions and benefits. Policies like those adopted in Colorado can usher pensions into the modern era, a time in which plans need to be more reactive and resilient to an increasingly volatile and unpredictable market settings. Colorado policymakers should also consider continuing their effort to build a more secure PERA, as this would benefit state taxpayers and employees alike.

ABOUT THE AUTHOR

Zachary Christensen is a managing director of the Pension Integrity Project and a senior policy analyst at Reason Foundation.

Christensen and Reason's Pension Integrity Project aim to promote solvent, sustainable retirement systems that provide retirement security for government workers while reducing taxpayer and pension system exposure to financial risk and reducing long-term costs for employers/taxpayers and employees. The project team provides education, reform policy options, and actuarial analysis for policymakers and stakeholders to help them design reform proposals that are practical and viable. The Pension Integrity Project has provided technical assistance to several successful pension reform efforts in recent years, including in Michigan, Colorado, Arizona, South Carolina, and other states tackling persistent pension solvency challenges.

Christensen's work has been published in the *Los Angeles Daily News*, *Orange County Register*, NJ.com, Colorado Politics, and many other publications. He has also been featured in the *Carolina Journal* and the Michigan Capitol Confidential. His research has been published by the Hoover Institution, Texas Public Policy Foundation, and Rio Grande Foundation.

Prior to joining Reason Foundation, Christensen was a pension finance analyst at the Hoover Institution, where he worked on widely cited research on the funding status and accounting methods for public sector retirement systems.

Christensen holds an M.S. in public policy from Pepperdine University and a B.S. in political science from Brigham Young University.

