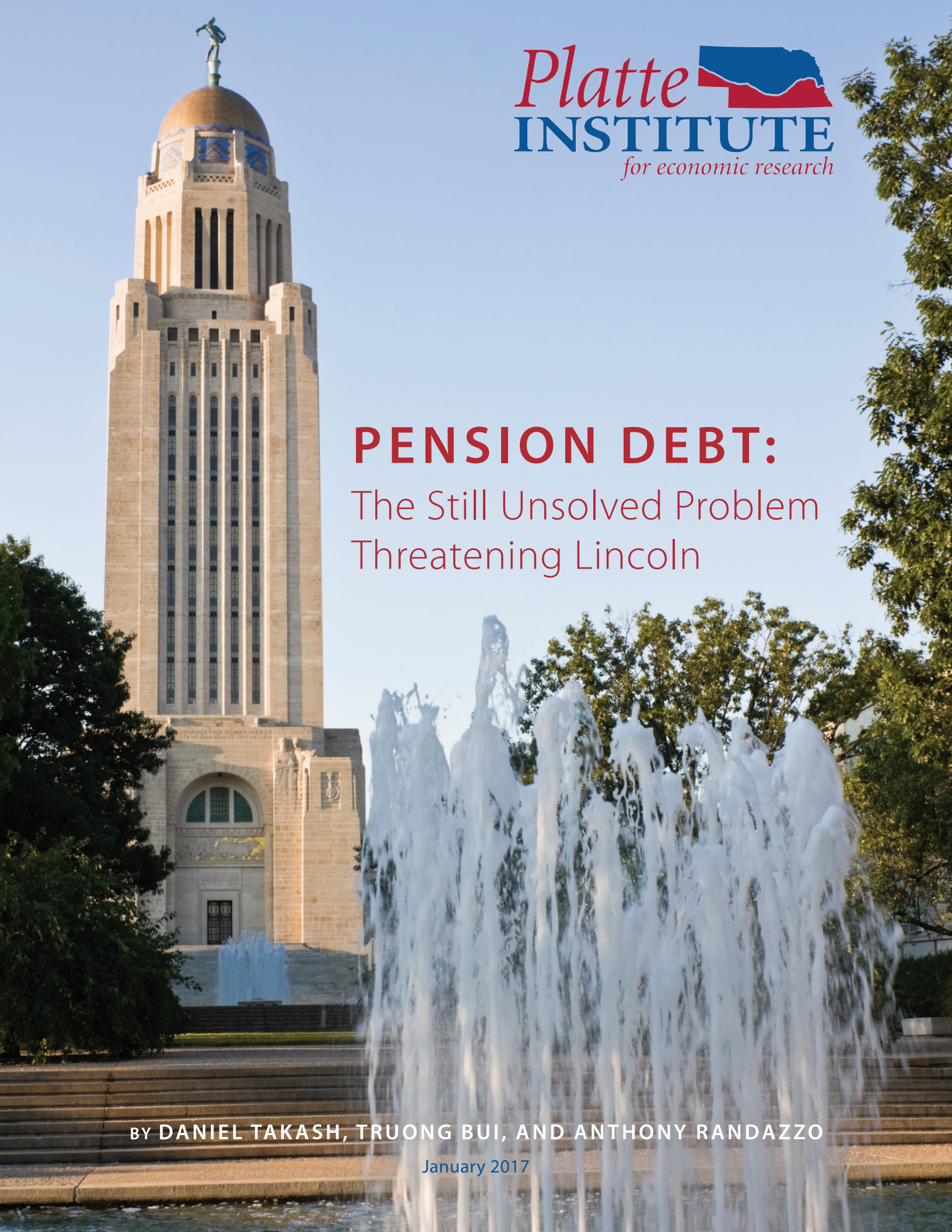

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PENSION DEBT:

The Still Unsolved Problem Threatening Lincoln

BY DANIEL TAKASH, TRUONG BUI, AND ANTHONY RANDAZZO

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Executive Summary

Prior to 2008, Lincoln's Police and Fire Pension Fund appeared to be in sound financial health. The sharp losses of the financial crisis exposed a series of underlying weaknesses in the pension plan, however. Years of underfunding actuarially recommended rates were papered over by strong investment returns during the housing and dot-com bubbles. And undervalued liabilities from financially unsound discount rate practices had inflated the reported funded ratio for the plan. The recent merger of the asset pool for "13th Checks" with the pension benefit asset pool only repeats the pattern of ignoring structural flaws with how Lincoln is saving to pay for promised pensions to public safety employees. While markets have recovered since the financial crisis, Lincoln's pension debt has not gone away. Without substantive benefit design and funding policy changes, unfunded pension liabilities are likely only going to increase in the coming years.

Introduction

The Lincoln Police and Fire Pension Fund (PFPF) defined benefit pension plan has just under 600 active members and nearly 400 retirees.[1] The city reported earlier in 2016 that it has promised an estimated $286.4 million in retirement benefits to this group of public safety employees and retirees, but exactly how many benefits have really been promised and what is saved to pay for them is up for some debate. In June 2016, Lincoln passed an ordinance that—in part—changed how PFPF values all promised pension benefits in a way that lowered the recognized value of benefits promised to an amount around $250 million.[2] The actual amount of normal retirement benefits didn't change, just the accounting method used to add up all estimated future pension checks and then translate those streams of future payments into a single amount reported in today's dollars.

Unfortunately, the change adopted by Lincoln—specifically, increasing the "discount rate" used to value liabilities from 6.4% to 7.5%—was a step in the wrong direction for pension solvency. Using accounting methods more widely accepted amongst financial economists and closer to those used by private sector defined benefit plans, Lincoln taxpayers may actually be on the hook for closer to $345 million in promised pension benefits.[3]

This discrepancy is reflective of a fundamental challenge facing Lincoln PFPF: whether the actuarial accounting practices used by the city and PFPF board accurately reflect the value of the promised pension benefits. This is a problem for Lincoln today, and it has been a major part of why unfunded liabilities have grown for PFPF in the first place.

Until 2008, PFPF reported that it had more assets on hand than the value of all promised benefits—i.e., it was "over-funded." In fact, from the late 1990s through the late 2000s, Lincoln PFPF reported funding ratios of between 100% and 130%. Since the financial crisis, however, the public safety pension fund has seen its funding ratio consistently hover around 80%—assuming we count assets set aside for Lincoln's 13th Checks. Another change Lincoln made in June 2016 was to merge an asset pool set aside to pay out so-called "13th Checks"—a sort of cost-of-living adjustment (COLA)—with the pool of assets for normal retirement benefits.[4]

Since the early 1990s, PFPF paid out 13th Checks, but didn't pre-fund the benefit with normal cost, instead paying for the COLAs by siphoning off a certain amount of investment returns in years where the market was strong. Merging the asset pool for COLAs and normal retirement benefits—and subsequently adopting a proposal to guarantee the COLA—means that PFPF will report a larger amount of assets in future years, but in practice, the combined money has always been a part of PFPF.

Focusing just on the assets PFPF has recognized as available to pay normal benefits, the funded ratio at the end of 2015 was just 62%. Absent reform, the funding ratio will probably dip further in coming years.[5]

The financial crisis effectively exposed serious, systemic problems with the funding polices for PFPF. Prior to 2008, Lincoln consistently paid less than the actuarially recommended amount into the system annually, and was able to do so because favorably timed investment returns helped paper over the shortchanging contributions (see Problem 1).

Prior to 2008, the city chose to adjust its asset allocation to increase the percentage of high-yield, high-risk investments because doing so allowed the plan to make up for falling yields in lower-risk assets like bonds and keep a 7.5% assumed rate of return (see Problem 2). As market conditions changed and the returns for low-risk investments fell over the past few decades, the city could have kept its allocation of assets fixed and simply lowered the assumed return. But, in order to avoid the additional contributions this would have required, Lincoln added investment risk. This only exacerbated the losses in the financial crisis when they happened.

Prior to 2008, the discount rate for PFPF didn't change, even as "risk free" rates of return plummeted for decades, ultimately leaving liabilities undervalued (see Problem 3). If Lincoln had pegged the discount rate it used for PFPF to the rate of change in 30-year treasuries starting in 2001, then by 2008 instead of reporting a 100% funded plan, Lincoln would have reported PFPF as only 82% funded with $39 million in unfunded liabilities.[6]

Table 1 shows the basic financial condition of PFPF based on the most recent actuarial valuation. In June of 2016, Lincoln voted to make changes to the plan that allowed the city to increase the assumed rate of return and discount rate for the pension plan up to 7.5%. The table, thus, also shows an estimate of what the valuation would have looked like under the new actuarial assumptions.

In this report, we highlight three underlying causes for the existing pension debt currently weighing down Lincoln's Police and Fire Pension Fund. We then use actuarial analysis to project how much worse the pension debt problem will likely become absent some substantive pension reform. Finally, we outline what the scope of pension reform should look like for the city of Lincoln.

Part I: The Problems Creating Need for Comprehensive Reform

The history of Lincoln's Police and Fire Pension Fund is one of a very rapid decline after the financial crisis exposed underlying problems with the retirement system. As shown in Figure 1, the estimated unfunded liability for PFPF is almost $45 million with a funded ratio of 82.2%, as of August 31, 2015—again, using the newly

TABLE 1: Lincoln Police and Fire Pension Fund Summary as of August 31, 2015, in Millions

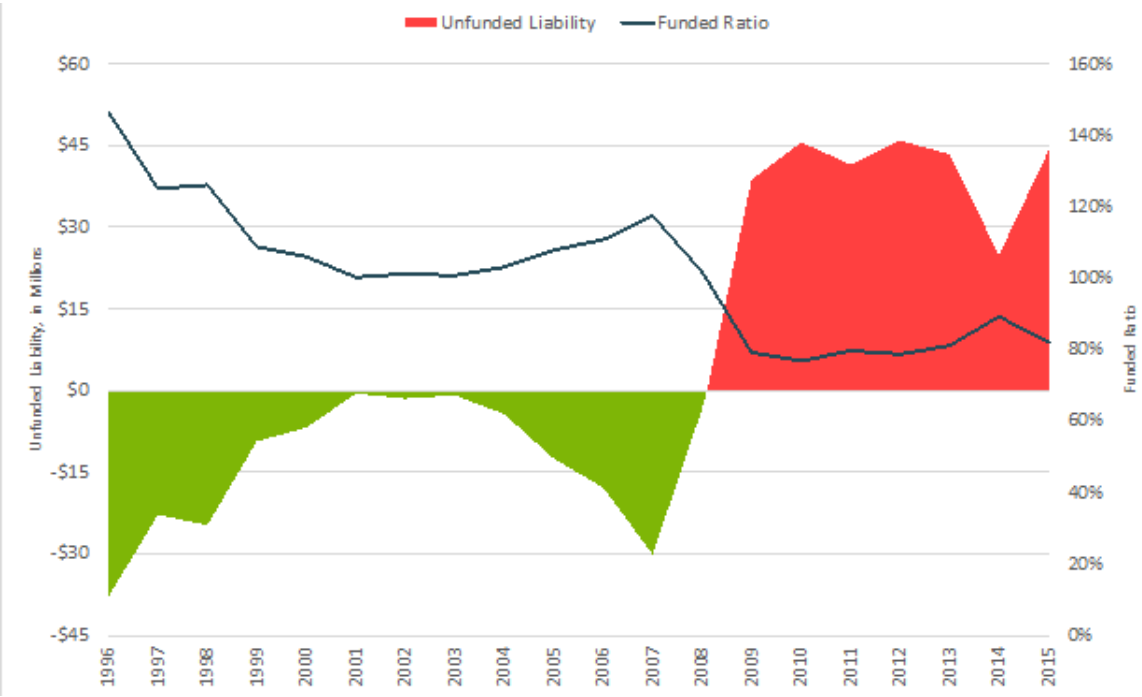
Discount Rate	Market Value of Assets (Pension Pool + 13th Check Pool)	Actuarial Accrued Liability	Unfunded Liability	Funded Ratio	Pension Debt As A % of General Fund Revenue
6.4% (Reported by Plan)	$ 203.9 M	$ 286.4 M	$ 82.5 M	71.2%	60.6%
7.5% (Adjusted for New DR, FY 2016+)	$ 203.9 M	$ 248.1 M	$ 44.1 M	82.2%	32.4%

Source: Reason Foundation Analysis of Lincoln Police and Fire Pension Fund 2015 Valuation Report

Note: The actuarial accrued liability represents the present value of all accumulated promised pension benefits. The unfunded actuarially accrued liability (simply "unfunded liability") is the difference between the value of a plan's assets and its liabilities. A common way to measure the health of a pension plan, the funded ratio is equal to the value of these assets divided by the accrued liability. Accrued Liability has been re-discounted to reflect the 7.5% assumed rate of return and discount rate that was changed by the ordinance passed by Lincoln in June 2016.

FIGURE 1: Funding History, 1996-2015

City of Lincoln Police & Fire Pension Fund



Source: Reason Foundation analysis of Lincoln PFPF valuation data (years shown are contribution fiscal year end dates).

increased discount rate and including the 13th Check asset pool. This means Lincoln has only saved 82.2 cents for every dollar it estimates it has promised in pension benefits for PFPF members. Over the past 20 years, the PFPF's funded ratio has fallen from 147% to 82.2%, with most of the decline occurring in the wake of the financial crisis. However, it would be a mistake to conclude that PFPF's current situation is exclusively a product of the financial crisis.

How did this unfunded liability emerge? The actuarial valuation reports for the Police and Fire Pension fund dating back to 2001 provide detailed information about the factors that contributed to the discrepancy between the expected and actual liability for the PFPF. From these reports, we identify three main reasons the PFPF is in its current situation.

Problem 1: Not Paying the Full Actuarially Determined Employer Contribution

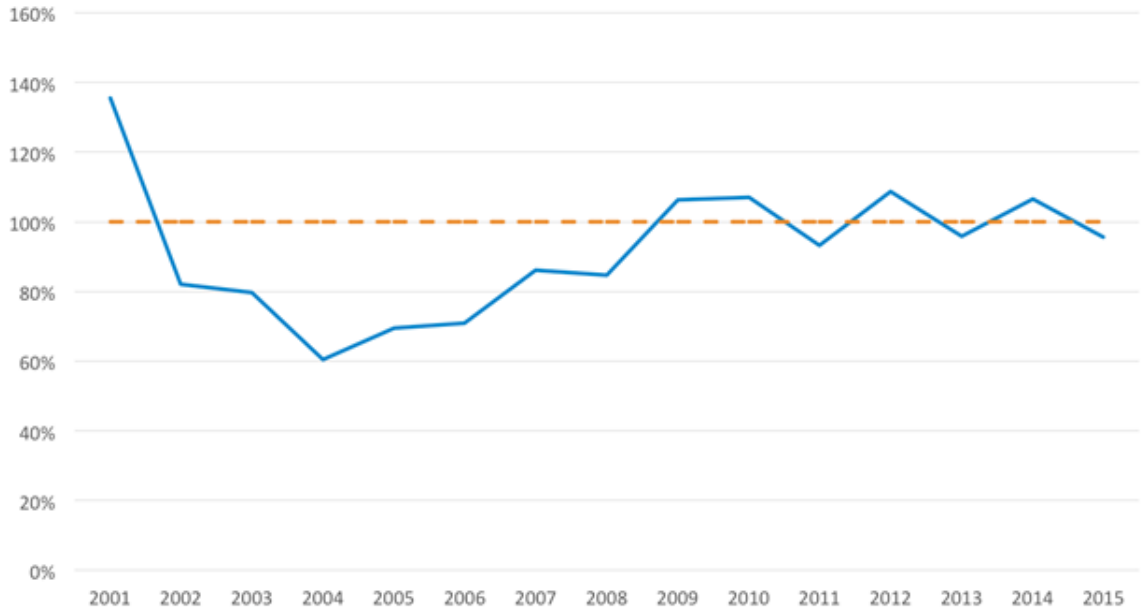
Defined benefit pension plans are designed to be "pre-funded." As pension benefits are earned, an amount equivalent to those earned benefits minus an expected investment return is paid into the pension fund. The necessary amount that should be contributed in a given year is called the "normal cost," with employees paying a share of this cost out of their paychecks and the city employers picking up the rest.

Whenever actuarial assumptions about the future turn out to be wrong (or if benefits are increased without additional contributions) then a pension plan experiences an "unfunded liability," known colloquially as pension debt, that requires amortized payments. In Lincoln, as in most other jurisdictions, the city employers pay 100% of the unfunded liability amortization payments. The combined total of the employer's share of normal cost and whatever the necessary unfunded liability amortization payments are for a given year is known as the actuarially determined employer contribution (ADEC).[7]

Lincoln has not consistently paid the full ADEC. As shown in Figure 2, from 2002 to 2008, Lincoln paid as little as 60% of the required contribution before improving its funding policy. Since 2009, the city has either paid more than the full ADEC or fallen just slightly short of the actuarially determined target.

FIGURE 2: Percentage of Actuarially Determined Contributions Actually Paid, 2001-2015

City of Lincoln Police & Fire Pension Fund



Source: Reason Foundation analysis of Lincoln PFPF valuation data (years shown are contribution fiscal year end dates).

Cumulatively, Lincoln has paid about 94% of the ADEC for each of the preceding 20 years. However, failure to pay all actuarially determined contributions during the housing bubble years when investment returns were high (2002-2008) meant the plan did not have adequate assets to soften the blow of the financial crisis. Defined benefit pension plans have long-term investment horizons that should include regular cyclical changes in markets including severe downturns. Under-contributing to a pension plan that reports it is overfunded breaks from the principle of keeping a long-term vision.

If the government fails to fully pay the ADEC and unfunded liabilities accumulate, it must make up those contributions at a later date through amortization payments for the pension plan to be fully funded. The difference between the ADEC and the actual contribution made is added to the actuarially determined contribution for the following year. By failing to pay the ADEC, Lincoln entered a vicious cycle where required payments could increase to the point where they become unaffordable for the city's budget.[8]

Problem 2: Underperforming Investment Returns

Though Lincoln reduced the assumed rate of return from 7.5% in 2013 to 6.75% in 2014, and again to 6.4% in 2015, PFPF's assets have historically failed to consistently meet these figures. Just in the last fiscal year, ending August 2015, the Lincoln plan returned a -2.76% and was one of the worst performing pension plans in the country. As shown by Table 2, both near-term (i.e. 10 years) and medium-term (i.e. 15 years) average investment returns are far lower than what Lincoln believed they would be 10- and 15-years ago. Figure 3 shows the actual investment returns, historical averages, and assumed rates of return over time, suggesting that even the lower assumed targets are overly optimistic.

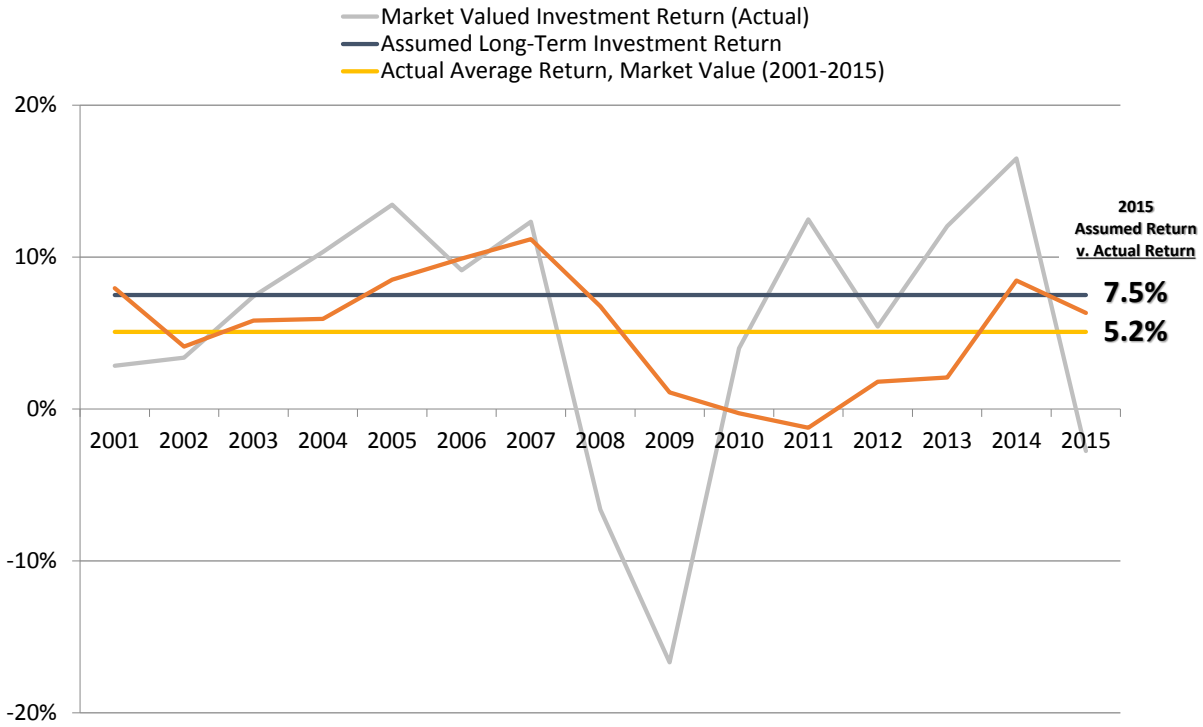
TABLE 2: Lincoln Police & Fire Pension Fund Investment Return History, 2001 to 2015

Current Assumed Return (as of August 2016)	7.5%
10 Year Average Return, 2006-2015	4.09%
15 Year Average Return, 2001-2015	5.18%

Source: Reason Foundation analysis of Lincoln Police and Fire Pension Fund valuation reports. Note: Data to show a 20-year average return was not publicly available.

FIGURE 3: Historic Investment Returns & Actual Experience, 2001-2015

City of Lincoln Police & Fire Pension Fund



Source: Reason Foundation analysis of Lincoln PFPF valuation data (years shown are contribution fiscal year end dates).

Looking at the 15-year average, PFPF's investment return was more than 230 basis points below the assumed 7.5% return. This underperformance resulted in an increase of the PFPF's unfunded liability by over $60 million since 2009.

Part of the reason for these losses was negative investment experience during the financial crisis (2008-09) and dot-com bubble crash (2001-02). However, the system saw strong periods of investment return growth in the housing bubble years, and even in some years since the financial crisis. Plus, long-term investment returns should account for significant cycles in the market.

The more substantial reason that returns have underperformed is that there have been significant shifts in the way institutional investors are earning returns on their portfolios over the past two decades.

In the 1990s, pension funds could invest primarily in bonds—i.e. fixed income products that had lower yields, but more stable returns and less risk, than stocks—and earn returns of 7% and 8%. Since then, the yield on 30-year U.S. treasuries has fallen to less than 3%, and loans to the government for 10-years will only get you about 2%. Globally, investment returns from relatively safe, fixed income investments has hit rock bottom. McKinsey & Co. estimate that the average yield on U.S. and foreign bonds will be between 0% and 2% over the next two decades, as compared to the nearly 5% average over the past three decades.[9]

This change in sources for investment yield has forced pension plans across the country to do one of two things: either diversify portfolios with increased holdings of stocks and alternative investments, or reduce assumed rates of return. Lincoln's PFPF has largely pursued the former option. Though PFPF temporarily lowered its assumed rate of return from 7.5% to 6.75% and then to 6.4% in the past two years, this was done to better fund cost-of-living adjustments rather than to better reflect the continuing trend toward lower investment returns across the board.[10] After the merger, however, the PFPF raised the assumed rate of return back to 7.5%. Over the past decade, Lincoln's asset portfolio has decreased investment in relatively safe assets, like fixed income, in favor of more volatile assets like real estate and other alternatives.

Figure 4 shows the trend in asset allocation over time for FPFP. The chart shows a clear shift toward real estate and risky alternative investments such as private equity, hedge fund strategies, and away from fixed-income investments and bonds.

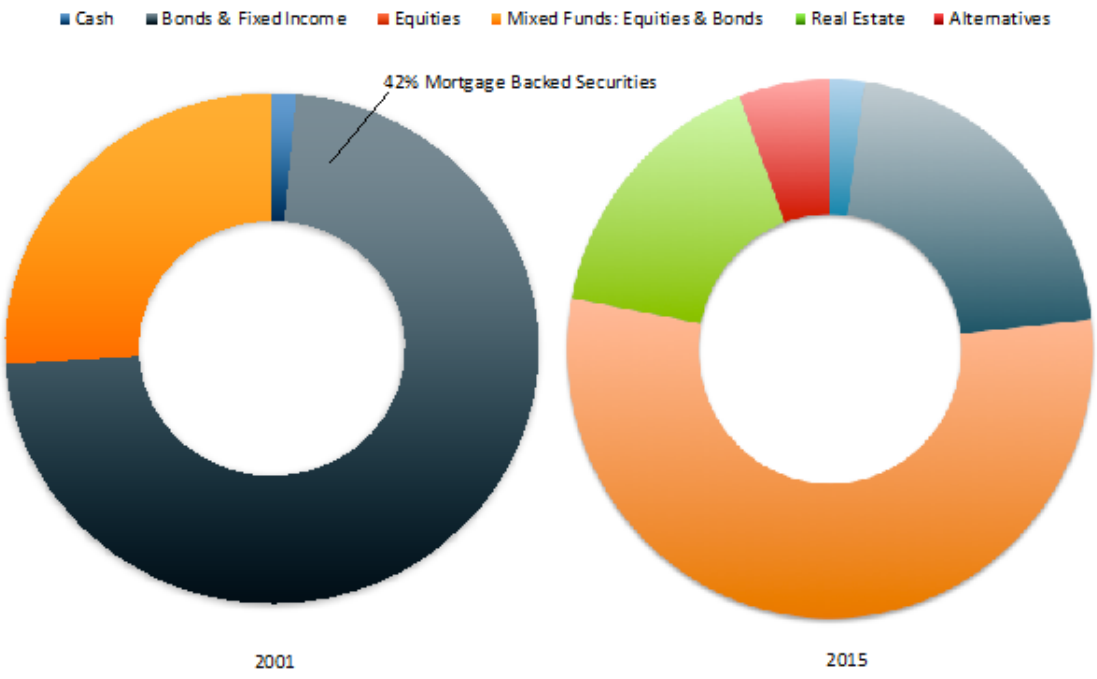
In the private sector, there is nothing wrong with investing in private equity or hedge funds, or in expanding investments in risky asset classes over time. For a public sector investment strategy, however, there are separate considerations. Because Lincoln's taxpayers ultimately share the downside risk of the investment strategies used by the city's pension system, there is a need for explicit buy-in from the electorate as to just how much risk PFPF should be taking. Instead, the shift in portfolios has been tacitly increasing taxpayer risks.

In 2001, 31% of PFPF assets were held in government bonds or government agency-issued bonds, and 42% were in mortgage-backed securities (a kind of fixed-income product). The rest of PFPF's assets were held in mutual funds that held a mix of stocks and bonds. According to Lincoln city financial reports, PFPF held no real property and had no money managed by hedge funds or global tactical asset strategies.

Over the proceeding 15-years, this portfolio shifted considerably, however. As of August 2015, the share of alternatives—including private equity and hedge funds—and real estate grew to 22% of the portfolio, while the share of bonds and fixed income had dropped to just 21%. This gradual change in asset allocation parallels a similar trend in other public pension funds toward minimal investment in relatively safe, low-yield investments, a majority allocation to equities, and a meaningful share of the portfolio invested in alternative or "exotic" strategies.[11]

What exactly does this shift in asset allocation mean for the long-term rate of return performance for PFPF? First, it highlights the increasingly lower yields on safer fixed income—a pattern that is likely to persist into the future. As bonds and fixed income have fallen in their rates of return, PFPF has had to shift to higher risk, but higher potential yielding asset classes to keep targeting a 7.5% return. Second, it means larger volatility of investment returns as

FIGURE 4: Plan Asset Allocation Risk Increasing Over Time
City of Lincoln Police & Fire Pension Fund



Source: Reason Foundation analysis of Lincoln PFPF valuation data.

the PFPF portfolio more consistently tracks market swings and consequently, more volatile pension contribution rates. Third, it means that in order to maintain a 7.5% assumed return—or even the previously assumed return of 6.4%—Lincoln's pension system will have to maintain or add to the risk in the existing portfolio.

In this context, is the 7.5% assumed return used by PFPF realistic and reasonable? For a traditional investment portfolio today, such as a 60%/40% mix of stocks and bonds, the answer is clearly no. Of course, the current portfolio is far from that traditional mix.

For the existing portfolios, the best-case scenario is that there is a 50/50 chance of achieving a long-term average return of 7.5%. But current market trends and those expected going forward are significantly different from long-term historic patterns, making long-term averages like 30-year returns a less helpful guide than they would have been 10 years ago.

In almost any context, past investment performance is no guarantee of future results. Particularly for pension plans like Lincoln's Police and Fire Fund, the slow global growth, change in yields to fixed income, the short nature of the recent tech boom, and changing demographics as baby boomers retire are all contributing to a "new normal" for investment returns. This new normal suggests there is a significant likelihood that Lincoln will continue underperforming its 7.5% assumed rate of return over the next few decades.

Problem 3: Undervalued Liabilities

Unfortunately, even if investments were performing as expected over the long run, Lincoln may still have seen unfunded liability amortization payments grow over the past few years. This is because Lincoln is undervaluing the amount of all promised future PFPF benefits in today's dollars.

In order to determine the funded level for the Police and Fire Pension Fund, actuaries have to assign a value in present dollars to all of the expected pension checks that the system will have to pay in the future. Because money today is worth more than the same amount of money in the future (e.g., the time value of money), it is necessary to "discount" future payments to determine how much a future stream of payments is worth in today's money. Actuaries use a "discount rate" to put a value on future, promised pension benefits paid to each member over their lifetime, and this number is reported as the total pension liability (previously known as the actuarially accrued liability).

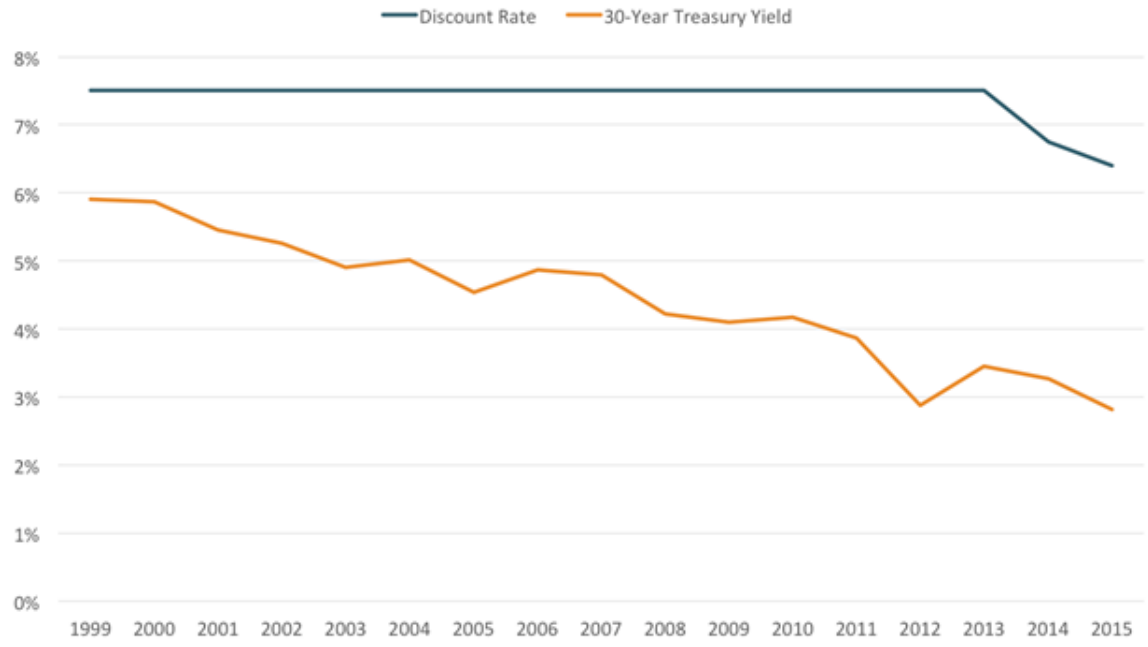
Selecting an appropriate discount rate is thus critical for properly calculating the value of liabilities, which is in turn necessary for knowing what the amount of unfunded liabilities is today, and subsequently setting up an appropriate amortization schedule. The higher the discount rate, the lower the value assigned to the total pension liability. So if the discount rate is too high, liabilities will be undervalued, the recognized amount of unfunded liabilities on an accounting basis will be too low, and amortization payments will inherently be less than necessary to get a pension plan fully funded.

A properly calculated discount rate for valuing liabilities will reflect *the risk in a plan's liabilities*, or the probability that the city defaults on its payments.[12] However, Lincoln's pension plan uses the assumed rate of return as a proxy for the discount rate (though a bad assumption, this is a standard practice for public defined benefit plans). The assumed return is a reflection of a pension plan's portfolio of assets and thus *the risk in the plan's investment assets*. Using the assumed rate of return as the discount rate for plan liabilities is therefore economically unsound, as the likely performance of a portfolio and the probability of the city's making pension benefit payments are two different things.

What discount rate should PFPF use? It depends on how risky the liabilities are—i.e. what is the probability of Lincoln defaulting on these promised pension benefits. If there is no risk for bankruptcy or benefits being cut, then the discount rate should reflect a 'risk-free' rate of return. A commonly cited proxy for a risk-free return is the yield on 30-year Treasury bonds, and this could serve as baseline for thinking about how low the discount rate should be set. If there is some risk of city insolvency, then the discount rate for Lincoln's pension system may want to reflect some *risk premium*.

FIGURE 5: Discount Rate vs. 30-Year Treasury Yield, 1999-2015

City of Lincoln Police & Fire Pension Fund



Source: Reason Foundation analysis of Lincoln PFPF valuation data (years shown are contribution fiscal year end dates).

Back in the 1980s, the yield on 30-year Treasury bonds averaged around 8%, suggesting a similar discount rate for the plan would be appropriate. But that number has been falling ever since. By 2001, the yield on 30-year Treasuries was about 5.5% and the PFPF discount rate was 7.5%. Thus, the discount rate used in Lincoln at the turn of the century reflected a 200 basis point *risk premium* above a risk-free rate of return.

As shown in Figure 5, while the yield on 30-year Treasury bonds has continued to fall, the discount rate for the Police and Fire Plan has not reflected this change. In practice, this means that as of today there is an implied risk premium of more than 450 basis points—suggesting Lincoln is considerably likely to default on promised pension benefits. However, at the same time, the benefit payments are guaranteed by the city with its taxing power and backed by numerous court rulings protecting pension benefits.[13] Therefore, the risk that the city will not pay the pension benefits is quite low in reality and the discount rate used should thus be similarly low.

A better discount rate approach would be to use an average of Lincoln municipal bond yields that have a matching duration as the existing liabilities.[14] Failing that, another best practice would be to estimate the discount rate using a high-grade corporate bond index yield rate, which is currently about 4%.[15] Table 3 shows how unfunded liabilities would change for Lincoln's defined benefit plan given a range of lower discount rates.

As seen from the table, dropping the discount rate by just 90 basis points to the previous discount rate would raise the combined unfunded liability by more than

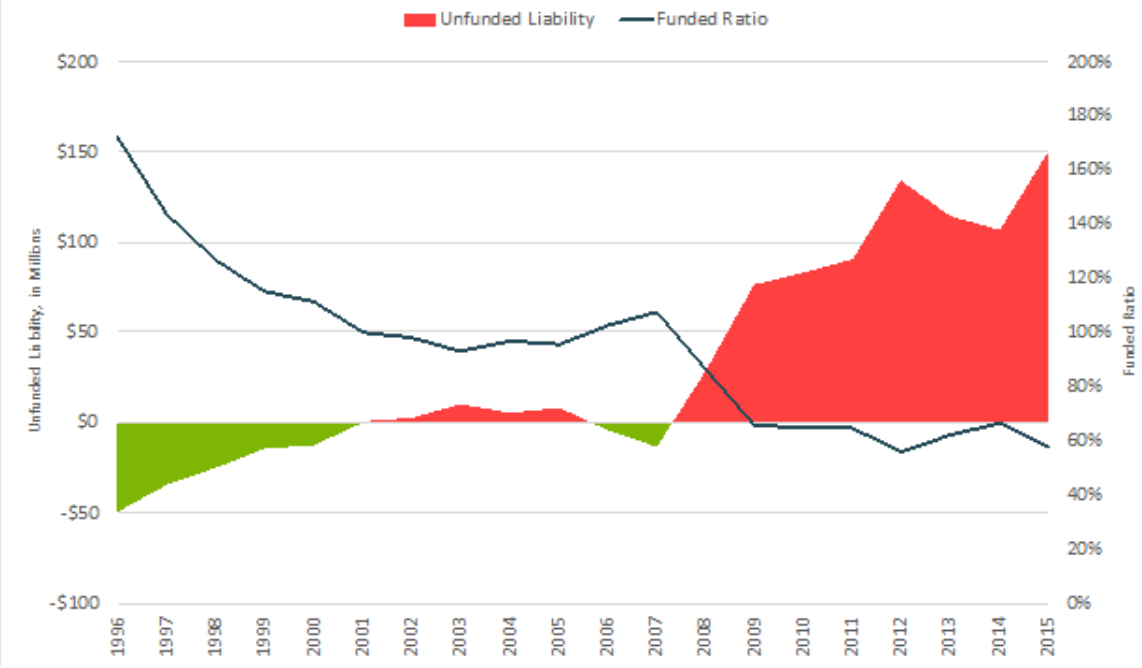
TABLE 3: Lincoln Lincoln Police and Fire Fund Solvency Under Alternative Discount Rates, as of August 31, 2015 (in millions)

Discount Rate	Unfunded Liability	Funded Ratio
7.5% (2016 Adopted Rate)	$44.1	82.2%
6.4% (2015 Official Rate)	$82.5	71.2%
6%	$98.0	67.5%
5%	$140.9	59.2%
4%	$190.3	51.7%

Source: Reason Foundation Analysis of Lincoln Police and Fire Fund Valuation Data.

FIGURE 6: Funding History, 1996-2015 Using Adjusted Discount Rates

City of Lincoln Police & Fire Pension Fund



Source: Reason Foundation analysis of Lincoln PFPF valuation data (years shown are contribution fiscal year end dates).

$38 million and reduce the funded ratio to 71%. If the discount rate used were 4%, which approximates the yield of high-quality corporate bonds with similar maturities as liabilities for PFPF, the reported unfunded liability would be more than quadruple the current value for the unfunded liability, making the plan barely half-funded.

To be clear, changing the discount rate does not create *additional* unfunded liabilities, it simply changes the way the unfunded liabilities are accounted for and the amount recognized when actuaries are compiling financials for PFPF.

Understanding that the currently adopted discount rate is not an accurate reflection of the risks of the plan's liabilities means the actuarially determined contribution rate does not reflect the true cost of funding the pension plan. Even if Lincoln pays 100% of the ADEC, it may still be underfunding the plan and not saving enough to pay benefits. This systematic, structural underfunding manifests in two ways. First, if reported unfunded liabilities are too low, then amortization payments should be higher to ensure the pension debt is actually paid off. Second, the normal cost paid for each year of new benefits earned should be higher too.

Part II: The Risk of Doing Nothing

In May 2016, Lincoln issued a report by the city council's blue-ribbon panel on PFPF pension problems. The Pension Review Committee, convened by Mayor Beutler and City Council Chair Fellers, recommended merging the assets from the "13th Check fund" into the assets of the general pension fund, requiring the city make the actuarially determined employer contribution every year, and re-negotiating benefit provisions such as retirement age and final salary calculations.[16]

The first of these recommendations—merging the pool of assets for PFPF's 13th Check with the pool of assets for regular benefits—was approved by the city council in June 2016.[17] Merging the pool of assets that had been set-aside for 13th Check COLAs immediately boosts the amount of assets in the regular pension fund, which improves the funded ratio. At the same time, Lincoln will be committing to pay out annual 13th Checks from the assets of the regular fund, which should increase the accrued liability and decrease the funded ratio.

While no actuarial valuation including this COLA pool

merger has been issued, the Pension Review Committee report suggests the net effect will be an improved funded ratio. However, even if there is a marginal improvement, this change does not alter the underlying causes of Lincoln's pension crisis.

The Pension Review Committee reported that, in connection with merging the 13th Check pool of assets, the assumed rate of return for PFPF would increase again to 7.5%.[18] The city report also explicitly indicated that it did not recommend reducing this rate in future years. This runs counter to our analysis that underperforming investments have been a primary contributor to the insolvency trend of PFPF.

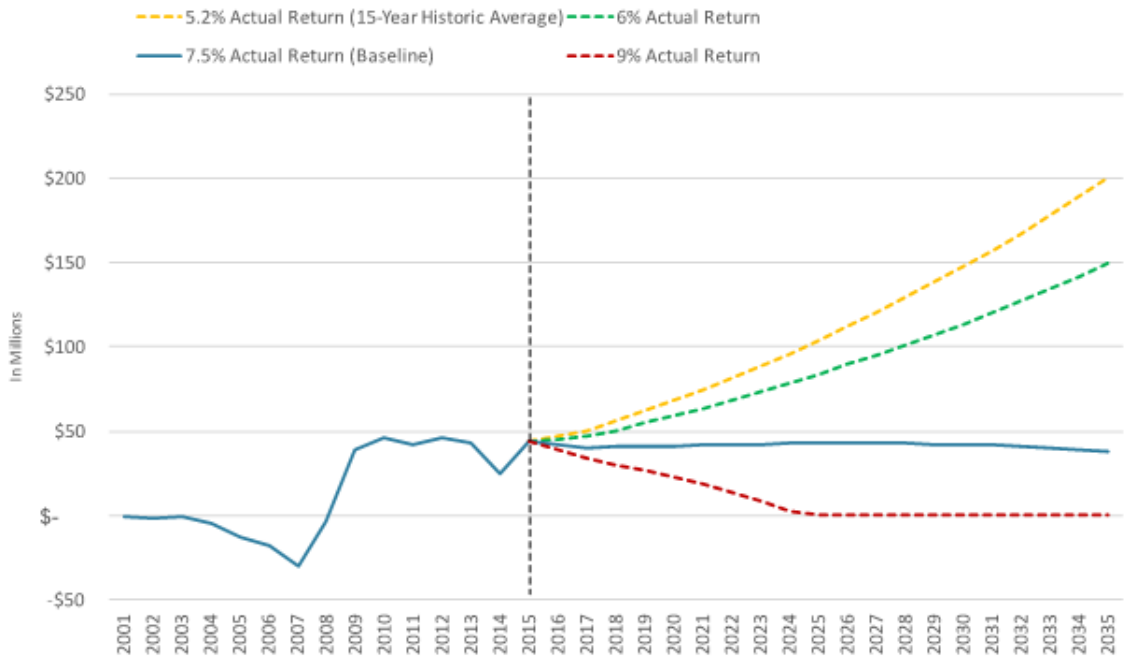
A positive recommendation from the Pension Review Committee was for Lincoln to adopt a more responsible funding policy of making its annual contribution and not amortizing unfunded liabilities over a long-term period of time. Adopting this change would address part of the historic problems, but if the assumed return and discount rate are underpricing normal cost and undervaluing accrued liabilities, then even if 100% of the ADEC is paid each year, PFPF solvency will still erode.

Based on the status quo for PFPF, without appropriate changes made to the existing pension system, Lincoln is likely to see investment returns underperform, unfunded liabilities continue to grow, and employer contribution rates continue to rise. What would all of this mean for Lincoln's finances and taxpayer resources?

Risk: Growing Unfunded Liability

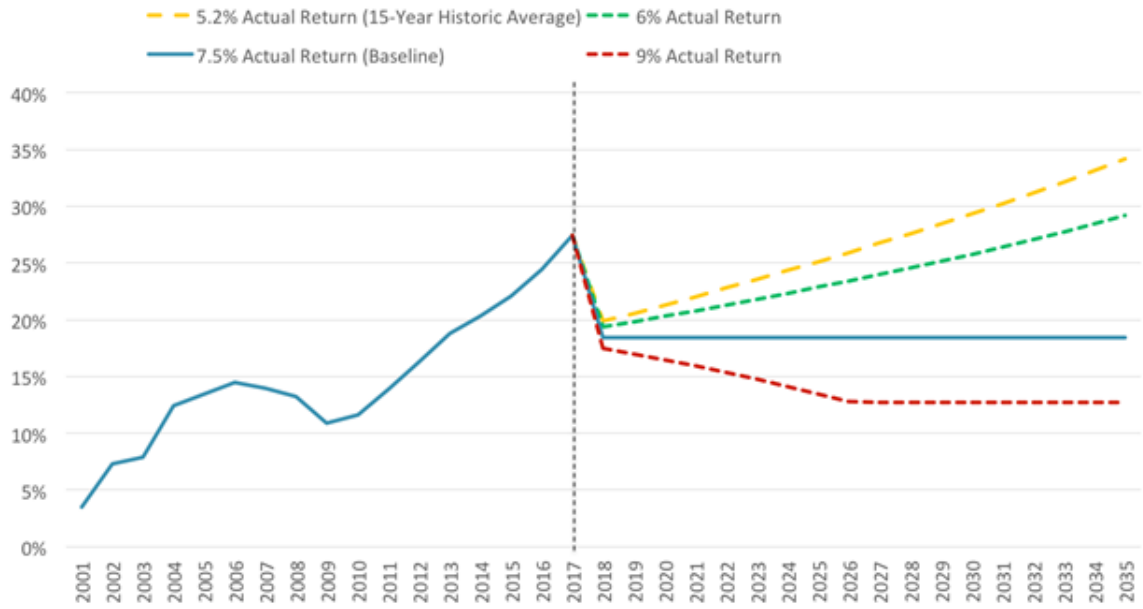
Our previous investment return analysis for the Police and Fire Fund suggests that actual returns will be less than 7.5% on average in the long-term under the "new normal" for markets. Figure 7 shows a forecast of the combined unfunded liabilities for PFPF should investment returns differ from current expectations.[19] As the sensitivity analysis shows, if actual returns are just 1.5% percentage points lower (150 basis points) than the assumed return, Lincoln should expect to see its unfunded liabilities grow approximately $100 million by 2035 to around $150 million. In fact, the forecasted unfunded liability for PFPF in 2035 grows an average of about $60 million for every 1% percentage point return below the assumed 7.5% return.

FIGURE 7: Unfunded Liability Forecast Given Varying Rates of Return, 2016-2035
City of Lincoln Police & Fire Pension Fund



Source: Reason Foundation analysis of Lincoln PFPF valuation data (years shown are contribution fiscal year end dates).

FIGURE 8: Employer Contribution Rate Forecast Given Varying Actual Rates of Return, 2016-2035
City of Lincoln Police & Fire Pension Fund



Source: Reason Foundation analysis of Lincoln PFPF valuation data (years shown are contribution fiscal year end dates).

Risk: Growing Employer Contributions

These additional unfunded liabilities would translate into larger amortization payments and thus higher employer contribution rates. Figure 8 shows probable projections of the required employer contribution rates for the Police and Fire Fund given alternative actual investment returns over the next 20 years.[20]

The ideal budgeting scenario is to have stable, constant contribution rates. Upward growth or volatility makes it difficult to manage a city budget from year to year. Given the likelihood of future investment performance diverging from return assumptions, this volatility risk is very real for Lincoln. If future investment performance remains the same as that of the last 15 years (averaging at about 5.2%), then PFPF's ADEC will increase to almost 35% of payroll by 2035.

Risk: Contribution Rates Crowding Out Lincoln's City Budget

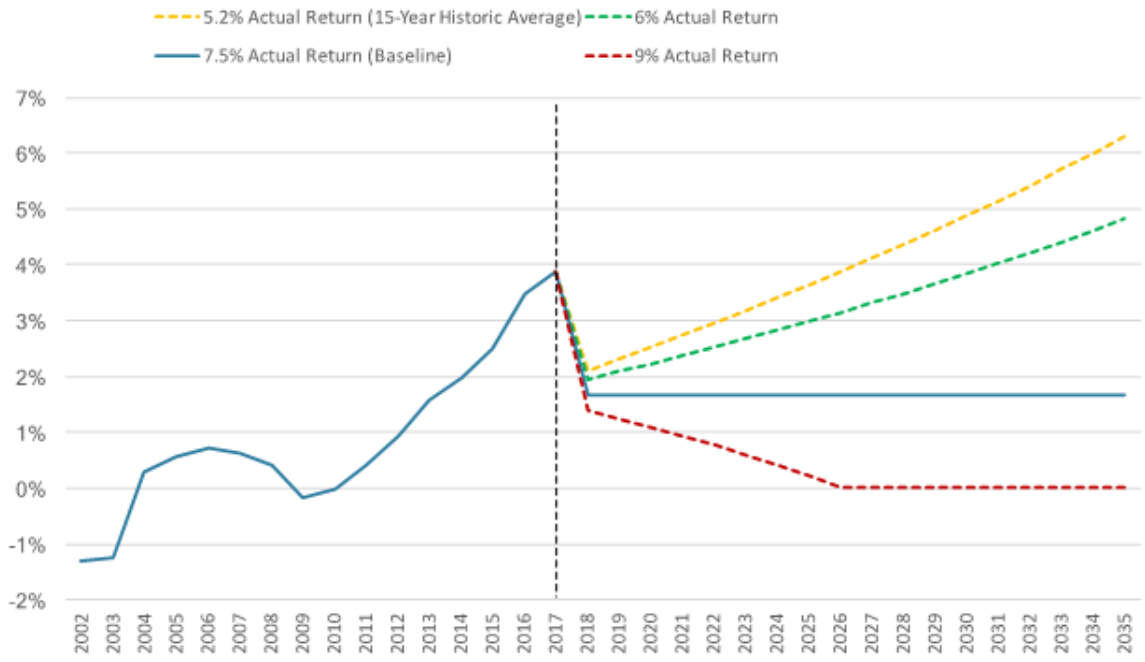
Ever-increasing employer contributions would almost certainly crowd out Lincoln's capacity to finance other public services such as public safety, road repairs and snow removal. Should pension contributions simply grow at the same rate as the city's revenue, then budgetary costs may be manageable. However, the trends over the past decade have seen contribution rates rise faster than city revenue.

In 2001, the ADEC for the Police and Fire Fund was equal to less than 1% of Lincoln's general fund revenue. By 2015, it increased to 6.2%. Most of the ADEC's growth is attributable to increased amortization payments. As these payments grow, Lincoln will need to dedicate funds that could be used for other services. In 2015, the ADEC for PFPF was 130% of the operating budget for streets and highways. In 2001, it was less than 20%.[21]

Looking forward, Figure 9 shows a forecast of total amortization payments for PFPF as a percentage of Lincoln's general fund revenue. Should PFPF earn its expected 7.5% rate of return, contributions toward unfunded liabilities will be stable. However, underperforming assets could lead to as much as 22% of city revenues being crowded out by pension debt payments in the 2030s.

FIGURE 9: Amortization Payments as a Percentage of General Fund Revenue, 2016-2035 Forecast Given Varying Actual Rates of Return

City of Lincoln Police & Fire Pension Fund



Source: Reason Foundation analysis of Lincoln PFPF valuation data (years shown are contribution fiscal year end dates).

Part III: A Two-Step Solution

Pension reform that effectively addresses the current crisis facing the city is a two-step process. First, Lincoln needs to cap the growth of liabilities exposed to volatility and significant risk. Second, it needs to ensure that the funding policy for existing liabilities does not remain a threat to city budgets with aggressively optimistic assumptions.

1. Capping the Liabilities

While the COLA pool merger did nominally improve the funded status of the plan, it did nothing to stop the growth of the unfunded liability driving the current pension crisis. Only by re-designing the Police and Fire Fund can Lincoln prevent the current crisis from spiraling further out of control. While this is not a sufficient condition to resolve the current crisis (changing a system does not eliminate existing liabilities), it is a necessary condition to prevent a future crisis.

This proposal would entail closing the current defined benefit system to all new hires and creating a new system for any new employees. To do this, there are a number of policy options available to Lincoln. The alternative plan design for future public safety employees could be a cash balance plan, a defined contribution plan, or an alternatively designed defined benefit plan that has built-in mechanisms to minimize risk and ensure benefits are accurately priced.

Cash Balance Plans

A cash balance plan is a defined benefit system that guarantees a certain rate of return on investment. If investment returns for a given year fall below this figure, Lincoln taxpayers will make up the difference. If investment returns exceed this figure, then Lincoln splits the difference between plan members and city taxpayers. This "upside sharing" varies from district to district. Omaha recently developed a cash balance plan guaranteeing 4% return on investment, a reasonable

figure PFPF could meet in the long run without investing in risky assets. Omaha also created a "buffer", where all returns in excess of 4% but less than 7% go to the city plan. For years where returns are greater than 7%, 75% of returns above 7% go to the member. Kentucky's KRS implemented a similar system in 2014, except all returns above 4% are split 75-25 between the member and system, respectively.

Defined Contribution Plans

The primary features of defined contribution (DC) plans for members include allowing employees ownership over their retirement benefit, the ability to keep both the employee and employer contributions if they change jobs, and ensuring the benefit itself aligns with the retirement goals of the member and their family. For the city, the most important features of a DC plan include having a fixed contribution rate that isn't exposed to inaccurate actuarial assumptions or underperforming assets, and the ability to recruit and retain 21st century workers who are more mobile and have varying preferences for how much of their compensation they want in the form of retirement contributions or salary. By definition, DC plans are always fully funded because they cannot develop unfunded liabilities. Defined contribution plan designs used by other police and fire employers that Lincoln could consider include the Arizona Public Safety Personnel Retirement System and Utah Retirement System.

The May 2016 Lincoln Pension Review Committee reported that the panel considered a defined contribution plan approach, and rejected it based on a concern about costs. However, the "DC plan" scenario considered by the Committee included a number of unnecessary elements that increased its prospective budgetary costs that could be amended to make the plan affordable.

First, new hires in the proposed DC plan were offered a retirement benefit that included a 16.05% contribution from the city—a generous rate compared to similar plans nationwide that could be reduced by a few percentage points or graded based on experience such that the employer normal costs of the new hire plan do not exceed the employer normal costs of the new plan.

Second, the proposed DC plan included a change to the assumed rate of return, lowering it from 6.4% to 4.5% over the next 25 years. A change that adopts a more conservative asset portfolio would be welcome from the perspective of the current plan, but is not a necessary or required practice when changing from a defined benefit to defined contribution plan. There is little difference in the amount of benefit payments that would flow out of PFPF over the next two decades, whether the defined benefit plan remained open or a defined contribution plan was created. Thus, strictly looking at necessary changes when adopting a DC plan, there is no immediate need to change the assumed rate of return.[22] Any change to the assumed return deemed necessary would be necessary for the status quo plan, thus any budgetary costs associated with changing the assumed return should not be attributed to closing the defined contribution plan.

Should Lincoln want to embrace the benefits of a DC plan for PFPF—such as eliminating all future liability growth—they can easily be designed to be cost-neutral or near-cost-neutral, depending on the policy objectives the city is seeking to accomplish.

Defined Benefit Plans

Finally, Lincoln could theoretically continue to use a defined benefit (DB) system, as it has in the past, but with significant changes to funding policy and governance. The May 2016 committee recommended changes to the current DB system that would improve the funding status of the plan, but we believe that even with these changes the system would still be vulnerable to future shocks and find itself in the same position it is in today. A modified DB plan that could successfully promote solvency would need to use a risk-free rate of return to value liabilities and a very conservative asset allocation strategy with a low assumed return. In addition, a well-designed DB plan would include cost-sharing between employees and the city—including a variable employee contribution that shares any future unfunded liability amortization payments—paired with an increased employee voice in the decision making process for actuarial assumptions. However, the

budgetary cost of DB plans are highly sensitive to these kind of assumptions and governance designs and the subsequent normal cost for such a DB plan would likely be much more than is feasible or desirable for Lincoln's budget.

2. Improving the Existing Funding Policy

At a fundamental level, defined benefit pension plans like the Police and Fire Pension Fund work when contributions plus investment returns are equal to promised benefit payments plus expenses. Calculating the right contribution rate depends on correctly estimating both investment returns and total promised benefit payments. The more aggressive the assumptions about investments and liability values, the more risk that the contribution rates will be wrong.

This reality holds true whether or not a defined benefit plan is open to new hires. Lincoln should improve the funding policy for its plan by first adopting more conservative actuarial assumptions. The discount rate used to value existing liabilities should be lower than the status quo and based on a market-valuation of liabilities. The assumed rate of return used to price new benefits earned each year should reflect a less risky allocation of assets. Mortality and longevity estimates should reflect the most current actuarial tables. Inflation assumptions should favor conservative estimates about the future.

Funding policy could be further improved by shrinking the number of years used to amortize unfunded liabilities (as also proposed by the Pension Review Committee) and requiring in the city charter that employer contributions to pension funds be among the first liabilities paid out as revenues are collected. Collectively, this would mean adopting a new comprehensive funding policy for the defined benefit plan such that it would not continue to undermine city finances even while being closed to new hires.

Part IV: Conclusion

The growth of accrued liabilities with significant risk exposure is similar to an environmental spill. The first step in cleaning up a spill is always to make sure that the leak is capped and no more destructive waste is piling up. That's what capping the liabilities of Lincoln would be seeking to do. However, even once an environmental leak has been contained, there is still a need to clean up the mess that's been made. That is what the funding policy improvements accomplish.

Lincoln moved in the right direction when it reduced its assumed return rate to better reflect market conditions, but by changing this decision after the 13th Check asset pool merger, it failed to address the underlying problem facing PFPF. So despite efforts to address pension issues over the past decade in one form or another, unfunded liabilities are still likely to continue growing and harm city finances—just as leaving toxic waste alone without cleaning it up is likely to lead to increased environmental damage.

Objectives for Good Pension Reform

Fortunately for Lincoln, the pension problem it is facing is not uncommon across the United States, and a wide range of policy tools have been developed for addressing pension insolvency problems. The following six objectives can serve as a guide for how to select the best mix of pension reform options and consider the trade-offs that different policy proposals offer:

1. **Provide retirement security for all employees, current and future.**

   Promised pension benefits are not optional, they are deferred compensation that employers should take every effort to ensure gets honored. For future employees, the retirement benefit design should emphasize security through minimizing volatility and risk, while also taking care to avoid problems of the past.

2. **Stabilize contribution rates for the long term.**

   Volatile contribution rates are challenging for municipal budgeting and can create a perverse incentive to skip out on portions of the actuarially determined contribution.

3. **Reduce taxpayer and pension system exposure to financial risk and market volatility.**

   The ability for a pension plan to pay out promised benefits rests on ensuring contributions will be supplemented with investment returns as expected. Pension plans should thus be responding to changes in the market plan that have lowered the yields of fixed income investments by reducing investment risk and increasing contributions, not by maintaining unachievable assumed rates of return that lead to underfunding.

4. **Reduce long-term costs for employers, taxpayers, and employees.**

   By minimizing the costs for all parties involved, policymakers make previously unavailable resources usable for other projects.

5. **Ensure the ability to recruit 21st century employees.**

   For the government to run well, it must be able to attract talented employees. Changes in labor markets have changed demands for fixed pensions versus flexible, portable retirement benefits, as well as preferences for salary today over benefits. Lifestyle preferences vary by region so an employer should consider the specific considerations of employees in their jurisdiction for what 21st century employees prefer.

6. **Improve governance.**

   During pension crises, it is easy for other political interests to hinder pension reform, making the whole government worse off. Ensuring the long-term solvency of Lincoln's pension system means aligning the incentives of pension fund administrators and board members with long-term solvency.

Methodology

Data reflecting historic analysis is drawn directly from actuarial valuations or comprehensive annual financial reports for PFRS, ERS, and the city of Lincoln.

Data for forecasts is based on a roll forward model developed using information gathered from the actuarial valuations as of January 1, 2016. The baseline analysis for the roll forward model uses all published actuarial assumptions by PFRS and ERS themselves. The comparative analysis with employer contributions as a percentage of city revenue assumes the city's general fund revenue will grow at 4%, which is the payroll growth rate.

Our modeling method for forecasting accrued pension liabilities (AAL) and market valued assets (MVA) use the following formulas:

$$AAL_{t+1} = AL_t + I_t + N_t - P_t$$

$$MVA_{t+1} = MA_t + R_t + C_t - P_t$$

where I is the interest accrued on the pension liability; N is the normal cost; P is the total benefit payout including benefits and refunds; R is the market investment return on pension assets; and C is the total actual contribution to cover the normal cost and the amortization cost.

The normal cost as a percentage of payroll is projected to equal the average the normal costs determined by the last three actuarial valuation reports, and to remain level during the projection period. This necessarily creates a limitation to the long-term specificity of our roll forward model as normal cost is likely going to be adjusted over time. However, this limitation does not change the accuracy of the representativeness the model forecasts.

Alternative assumptions and experience will necessarily yield different results than forecasted. Forecasts based on data not publicly available may also show different results.

Endnotes

1. 2015 Lincoln Police and Fire Pension Fund Valuation Report.
2. Lincoln adopted Ordinance No. 20345 on June 30, 2016. According to the August 11, 2016 Meeting Minutes of PFPF this change also increased the assumed rate of return and discount rate to 7.5%.
3. Estimate assumes a 5% discount rate, which reflects using yields on 30-year Treasury bonds as a proxy for a risk free rate of return plus a 200 basis point risk premium. This rate reflects the same risk spread implied by the PFPF discount rate in 2001 and the method reflects idea in financial economics that liabilities should be valued based on the risk of those liabilities, not based on the supposed risk of the assets. See Part I, Problem 3 for more details.
4. Lincoln Nebraska Ordinance No. 20345. Approved 30 June 2016.
5. Unless otherwise indicated, all figures, tables, and values stated in this report will combine the assets of the COLA pool and the defined benefit plan. Previous valuation reports used different methodologies to report COLA pool assets, but because these were accounting policies rather than substantive changes in the total value of the PFPF's assets, we feel it is more appropriate for this report to reflect the value of all assets of the system. This is consistent with changes being made to reflect the findings of Lincoln's Pension Review Committee report in May 2016 and the subsequent changes to plan.
6. Estimate assumes a 6% discount rate, which reflects using the 2008 yield on 30-year Treasury bonds as a proxy for a risk free rate of return plus 200 basis point risk premium.
7. Prior to 2015, the actuarial term for the combined normal cost and unfunded liability amortization payment was the "actuarially required contribution" (ARC). The Government Accounting Standards Board (GASB) adopted new rules that were implemented as of 2015 that changed some methods of calculation and terminology. While subtle differences exist between the ARC and ADEC, for purposes of this level of analysis they are equivalent and interchangeable terms for the amount the employer is supposed to pay based on actuarial calculations.
8. This cycle has continued in Lincoln because there is no statute that forces the city to fully fund PFPF. The Government Accounting Standards Board (GASB) only sets accounting requirements, not funding requirements; there is no law to force Lincoln to make any specific contribution to PFPF.
9. Richard Dobbs, et al. (2016), "Diminishing Returns: Why Investors May Need to Lower Their Expectations," McKinsey Global Institute
10. See discussion of the Lincoln Pension Review Committee in Part II of this paper.
11. The PEW Charitable Trusts (2014), "State Public Pension Investments Shift Over Past 30 Years," June 2014.
12. Truong Bui and Anthony Randazzo (2015), "Why Discount Rates Should Reflect Liabilities: Best Practices for Setting Public Sector Pension Fund Discount Rates," Reason Foundation, Policy Brief 130
13. Alexander Volokh (2014), "Overprotecting Public Employee Pensions: The Contract Clause and the California Rule," Reason Foundation

14. Truong Bui and Anthony Randazzo (2015), "Why Discount Rates Should Reflect Liabilities: Best Practices for Setting Public Sector Pension Fund Discount Rates," Reason Foundation, Policy Brief 130.
15. U.S. Department of the Treasury (2016), "The Treasury High Quality Market Corporate Bond Yield Curve."
16. City of Lincoln (2016), "Examination of Lincoln Police & Fire Defined Benefit Plan," *Pension Review Committee*, May 2016
17. Lincoln Nebraska Ordinance No. 20345. Approved 30 June 2016.
18. This change was reportedly accepted by PFPF, according to the investment board meeting minutes from August 11, 2016.
19. See the methodology note at the end for details about our forecasting.
20. At 9% average investment return, PFPF would be over-funded, making the amortization payments negative. While some pension plans reduce their normal cost payments in such a scenario this practice is imprudent, as it does not account for the long-term nature of liabilities and volatility in actuarial experience. Thus our model assumes that there would not be a future reduction in normal cost even in years where PFPF is overfunded.
21. Reason Foundation Analysis of 2001 and 2015 City of Lincoln Comprehensive Annual Financial Reports.
22. See Andrew Biggs, "Are There Transition Costs to Closing a Public-Employee Retirement Plan?" *Mercatus Center*, August 2016

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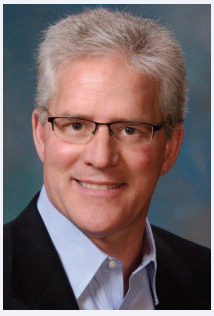

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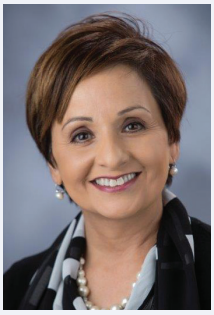

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