

**Appendix A:
Detailed Analysis Of Houston Pension Situation**

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A-1: Description and Assessment of Benefit for HMEPS, HPOPS, and HFRRF

HMEPS

The Houston Municipal Employees Pension System (HMEPS) provides benefits for general City employees. The system contains three tiers of employees: Groups A, B, and D. Generally, Group A includes members hired prior to 1981, Group B consists of members hired between 1981 and 1999. Group D includes City employees hired on or after January 2008. Until recently there was a Group C for City executives hired between 1999 and 2005, but that has since merged with Group A.

For all HMEPS tiers, vesting is set at 5 years of credited service. Final average salary is calculated using the average of the 78 highest biweekly salaries (roughly 3 years). For all groups, the maximum benefit is 90% of final average salary. Group A is the only tier with required employee contributions, currently set to 5% of payroll.

Group A and B employees are eligible for full retirement benefits at the earliest of the following: 1) Age 62 and 5 years of service; 2) Age plus years of service equals 70 (provided that prior to 2005 age plus years of service equals 68, with a minimum of 5 years of service); or 3) Age plus years of service equals 75, with a minimum age of 50 and 5 years of service. Group A and B members hired before 2005 receive a fixed 3% annual COLA (regardless of inflation), while members hired in 2005 or later receive a 2% annual increase. In addition, Group A and B members are eligible to participate in the DROP program.

Group D employees are eligible for full retirement at age 62 and 5 years of service, and early retirement at either 10 years of service, or when age plus years of service equals 75, with a minimum of 5 years of service. Group D members do not receive a COLA and are not eligible for DROP participation.

Benefit increases were awarded for all employees in 1998, 2000, and 2001. In 2004, benefits increases awarded in 2001 were reversed and benefits were reset to the levels set in 2000. The oldest tier, Group A, currently receives the most generous benefits. At present, the Group A benefit formula uses a 2.5% for each year under 20 years of service and 3.25% for each year past 20. The Group B benefits formula uses a 1.75% rate for each year under 10 years of service, 2% for each year between 10 and 20 years, and 2.5% for each year past 20 years. Group D members have the lowest benefit accruals, with 1.8% for the first 25 years, and 1% for each year thereafter.

HPOPS

The Houston Police Officers Pension System (HPOPS) provides retirement benefits for City police officers. HPOPS members are officially divided into three tiers based on hiring date: Plan 1 covers members hired before 1975, Plan 2 covers those hired between 1975 and 1981, and Plan 3 covers members hired since 1981. Yet since 2004, for the most part, the benefits offered to Plans 1-3 have converged. At present, benefits for all members are based on a final average salary calculated using the last 3 years of compensation, excluding overtime. Benefits are subject to a COLA set to 80% of the CPI-U, with a minimum of 2.4% and maximum of 8%.

Members hired before October 9, 2004, are eligible for benefits after 20 years of service. Upon retirement, these participants receive the highest of the following alternatives: 1) 2.25% of final average salary for the first 20 years of service, with 2% for every additional year, capped at 80% of final average salary; 2) The benefit the member would have received had they retired or entered DROP before October 2004; or 3) The benefit calculated using a sliding average of the pay periods elapsed since October 2004. Pre-2004 members contribute 9% of payroll to the fund and are also eligible for DROP.

Officers hired on or after October 9, 2004, are eligible for benefits at age 55 with 10 years of service. Benefits are calculated using 2.25% of final average salary for the first 20 years of service and 2% for every additional year, capped at 80% of final average salary. Post-2004 members contribute 10.25% of payroll to the fund and are not eligible for DROP.

HFRRF

The Houston Firefighters Retirement and Relief Fund (HFRRF) provides benefits for City firefighters. HFRRF members are eligible for benefits after 20 years of service, and contribute 9% of payroll to the fund. Benefits are 50% of final average salary, plus an additional 3% for each year of service past 20, with a maximum of 80%. Final average salary is calculated using the highest 36 months of salary, including base pay and overtime. Benefits are subject to a 3% annual COLA. Members are eligible for DROP participation after 20 years of service.

Assessment of core benefits

Most systems provide a benefit multiplier that ranges from 1.75% to 2.5% for each year of service, and it usually increases with greater years of service. For the Houston's plans, the benefit multipliers for each year of service under 20 are at the high end of the range. The rates for each year above 20 (3% for HMEPS-Group A and HFRRF) are very high relative to the norm. In terms of the high benefit multiplier after 20 years, it is important to consider the proportion of employees that have retired (and are expected to retire) with more than 20 years of service. If the proportion of plan members is high, this very generous rate could impact costs significantly.

The 5-year vesting period is in line with what most other plans use. In terms of the retirement eligibility, the age and tenure requirements set for the three plans are not dramatically out of line with common practice. However, for most systems, retirement prior to age 60 comes with some penalty. Usually, there is a 4-5 percent reduction in the annual benefit for each year before age 60 (or 62 or 65) that an employee retires. For example, if an employee decides to retire at age 58, his annual benefit payments in retirement will be 8-10 percent lower than they would have otherwise been. This early retirement reduction protects plans against the costs of early retirement, while still allowing employees to access their benefits early if they so choose.

The use of service-only eligibility definitions by HMEPS and HFRRF is not uncommon for police and fire plans. Nonetheless, using only years-of-service to decide when employees are eligible to receive benefits can lead to retirement income being provided when the employee is still able to work (even if not at their current job, or in their current field). As such, paying full benefits based on service often goes against the main goal of the system which is to provide retirement income for when employees can no longer work, which is usually a function of age.

Assessment of COLA

Maintaining the purchasing power of benefits in retirement is a laudable goal. It makes little sense to leave the well-being of retirees to the vagaries of the economy. And, inflation protection is particularly important for those who are not covered by Social Security, which provides full inflation protection. But, providing full inflation protection or automatic increases is a risky undertaking because few municipalities have economies that can ensure the revenues to cover this type of commitment.

The City of Houston varies in the cost-of-living adjustment, or COLA, provided by each of its public pension plans. HPOPS has historically based its COLA on the CPI, capping the maximum increase at 2.4%. HFRRF has consistently applied a fixed rate of 3%, regardless of inflation. HMEPS, on the other hand, provides a fixed rate of 3% for employees hired before 2005, a fixed rate of 2% for those hired between 2005 and 2008, and no COLA for those hired 2008 or later.

Generally, COLAs come in four main forms: 1) fixed rate – the increase is a constant percentage or dollar amount that is not tied to the Consumer Price Index (CPI); 2) CPI-linked—the increase

is tied to the CPI; 3) ad-hoc – the increase is set by the legislature and revised on an ad-hoc basis; and 4) investment-based—the increase is tied to some financial metric, generally the plan’s overall funded level or the level of assets in a special COLA fund.

Between 2010 and 2013, 17 states (with a total of 30 state-administered plans) enacted legislation that reduced, suspended, or eliminated COLAs for current workers and often for current retirees. Cutting COLAs is an attractive option to plan sponsors, because it is virtually the only way to make large reductions in a plan’s unfunded liabilities. Interestingly, the vast majority of state plans that had their COLAs changes had a fixed guarantee of 2.5-3.5 percent compounded annually, regardless of what was happening to inflation.

At present, about 40 percent of the 122 large local plans in our sample provide automatic fixed rate increases, while 26 percent link the COLA to the CPI. Plans that provide no COLA at all and plans that determine their COLA on an ad hoc basis each represent 15% of our sample. The few remaining localities base their COLA on investment performance.

Assessment of DROP

Each of Houston’s three retirement systems offer DROP programs. DROP programs are meant to retain employees who would otherwise retire to receive pension benefits. The DROP allows employees to continue working while their pension benefits are deposited in an escrow account and accrue interest until they actually retire. Upon retirement the account balance is usually distributed as a lump sum. In 2014, only 8 percent of large state and local pension plans surveyed (20 state plans of the 117 state and 19 local plans) provided DROP benefits to their employees. Of these plans, over half have closed their program to new members since the mid-to late- 2000s. HPOPS and HMEPS closed their DROP programs to new hires in 2004 and 2008 respectively.

On average, DROP participation is limited to 5 years. However, HPOPS and HMEPS do not limit how long members can participate, and HFRRF’s limit is set at a staggering 13 years. Also, the average interest credited to DROP accounts is set at 4 percent, while Houston’s plans base interest on investment performance, with established upper and lower limits: HFRRF ranges between 5 and 10 percent, HPOPS between 3 and 7 percent, and HMEPS between 2.5 and 7.5 percent.

If pension benefits are designed to properly meet the average worker’s retirement needs, the DROP should entice only a small number of employees – who would otherwise retire – to continue working for a few extra years without foregoing pension benefits. However, based on actuarial reports for Houston’s three retirement systems, DROP is used heavily by those eligible to participate. All three systems assume at least 80 percent of eligible employees will participate in the DROP program. The high usage suggests that the existing pension system is poorly designed for the retirement patterns of its workers or that the DROP is provided a generous additional benefit for employees.

Appendix A-1: A Historical Analysis of Houston's Unfunded Liability

To better understand how Houston arrived in its current situation, the CRR performed a forensic analysis of each system's unfunded liability over the past two decades. The goal was to identify the factors that have contributed to the growth in the unfunded liability in order to inform what options might be considered going forward.

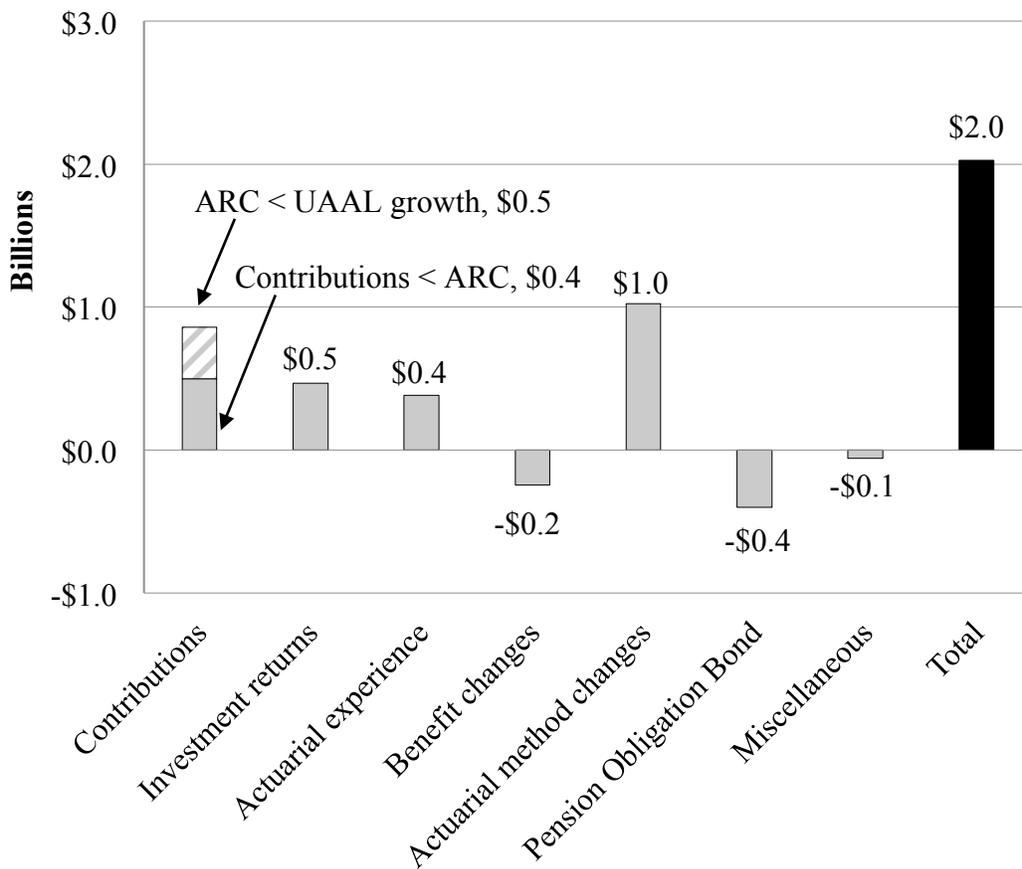
We focused on five key factors: inadequate contributions, actual investment return relative to the assumed return, actuarial experience, benefit changes, and changes to actuarial assumptions and methods. Each actuarial valuation for HMEPS, HPOPS, and HFRRF include information on each system's current UAAL, the change in the UAAL since the last valuation, and the factors underlying that change. Moving systemically from one year to the next over this period presents a clear picture of how unfunded liabilities evolved for each plan. We begin the analysis in 1993 because it is the first year for which complete data were available for all three of Houston's plans.

While each of Houston's plans has its own narrative of underfunding, common themes emerge from the analysis. Inadequate contributions and investment returns below expectations have been major contributors to the growth in UAAL. Benefit improvements made in the late 1990s and early 2000s were also a significant contributor to the increase in the UAAL for all three plans, but a major reduction in benefits by HMEPS in 2004 more than offset the past increases.

HMEPS

Between 1992 and 2015, the unfunded liability for HMEPS increased by \$2 billion. Four factors contributed to the increase: 1) a history of inadequate contributions; 2) low investment returns, relative to expectations; 3) poor actuarial experience, relative to expectations; and 4) changes to plan assumptions and methods. After a comprehensive benefit expansion in 2001, reforms in 2004 reduced benefits, thereby limiting its overall impact on the plan's UAAL. In fact, as shown in Figure A-1, benefit change and the issuance of a pension obligation bond were the only major elements that resulted in a net decrease in the UAAL over the time period. Each of the factors will be discussed in detail below.

Figure A-1. Sources of Change to HMEPS' UAAL, 1992-2015



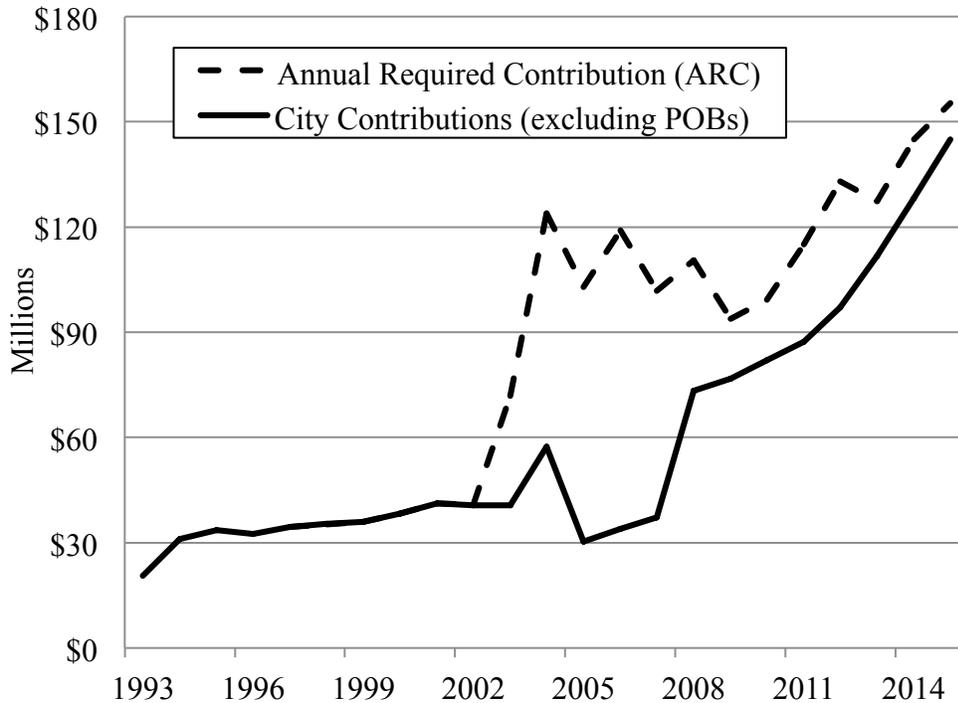
Source: CRR calculations based on HMEPS AVs.

Inadequate Contributions

Paying down the unfunded liability requires two steps: 1) calculating a payment that – at the very least – keeps the unfunded liability from growing each year; and 2) making the calculated payment. HMEPS has fallen short in both areas. Since 1993, inadequate contributions have accounted for \$860 million in UAAL – \$362 million due to a calculated ARC that was inadequate to keep the UAAL from growing and \$498 million due to not paying that calculated ARC.

Figure A-2 shows the ARC, and the actual contributions made from 1993 to 2015. Prior to 2003, HMEPS received 100 percent of the ARC each year, so both the actual contribution and ARC are a single line. However, in 2003, mainly as a result of benefit increases, the ARC jumped from its historical level of around \$40 million to over \$100 million. The City’s originally planned payments for that year amounted to only half of this greatly increased ARC. Meet & Confer Agreements between the HMEPS Board and the City took place in 2004, 2007, and 2011, establishing a schedule of increased City contributions to meet the higher ARC. As a result, the proportion of the ARC paid steadily increased from 2004 and 2015.

Figure A-2. *Annual Required Contribution and Actual Contributions for HMEPS, 1993-2015*



Sources: CRR calculations based on HMEPS AVs.

Note: The 2005-2007 contributions do not include the \$300 million Collateralized Note issued by the City to fund HMEPS nor the \$33,000 in Pension Obligation Bonds issued in 2005, 2006, and 2007.

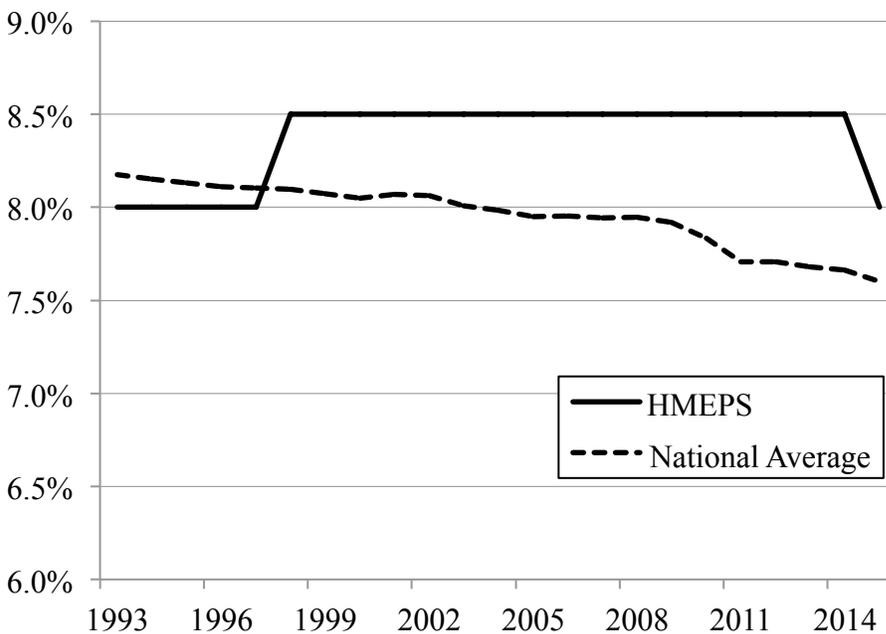
Unfortunately, for HMEPS, paying the ARC is not enough. This is because the ARC is based on a “level-percent-of-payroll” method. This method results in a schedule of low initial payments that do not cover interest on the unfunded liability and allow it to grow, followed by high ending payments that exceed interest and pay down the UAAL. In 1984, HMEPS was scheduled to pay down its UAAL over 40 years. By 2005, it was only 18 years from its funding goal and

transitioning to a period of higher ARC payments that would reduce the UAAL. Unfortunately, since that point, the payment schedule has been continually reset to 30 years, so that calculated ARCs are consistently in the low-initial-payments stage and do cover interest on the UAAL. As a result, there has been a gap between the calculated ARC and the amount needed to prevent UAAL growth in recent years. An incorrectly calculated ARC has caused nearly a half billion in UAAL growth for HMEPS.

Investment Returns

The impact of investment returns on the unfunded liability depends on the difference between the system’s assumed and actual return. For HMEPS, this difference has generated approximately \$467 million in UAAL since 1993. Figure A-3 shows the HMEPS’ assumed return compared to the national average from 1993-2015. Unlike the national trend in assumed return, which steadily decreased throughout the time period, HMEPS increased its rate from 8 to 8.5 percent, and maintained a steady rate until dropping back to 8 percent in 2015. Despite reducing its rate in 2015, it still exceeds the national average by about 50 basis points.

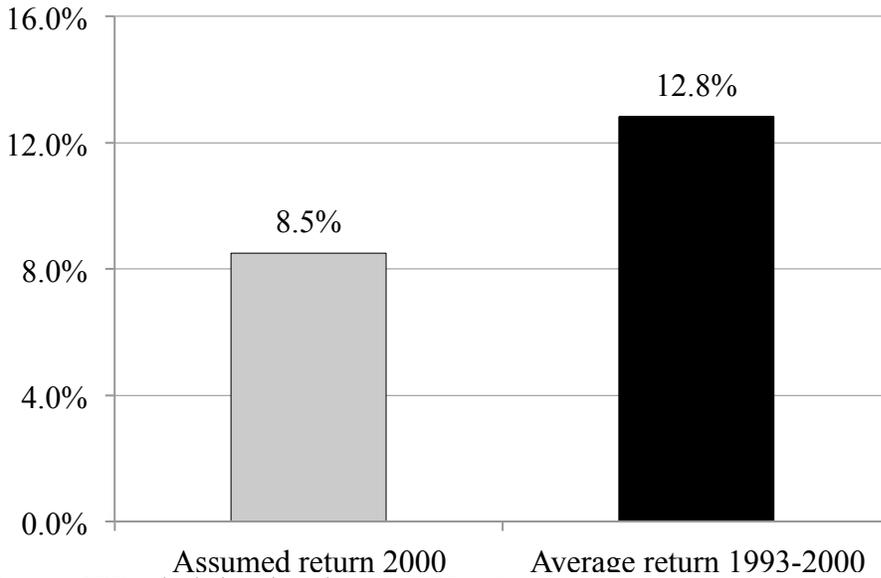
Figure A-3. Assumed Return for HMEPS Compared to the National Average, 1993-2015



Sources: HMEPS AVs; CRR calculations based on PENDAT (1990-2000); and *Public Plans Database* (2001-2015).

The actual returns for HMEPS were studied over two distinct periods: 1993-2000, which included the stock market boom of the 1990s, and 2001-2015, which included the 2002 market downturn and the 2008-2009 financial crisis. Figure 13a compares the actual and assumed returns for HMEPS from 1993-2000. Over that period, HMEPS’ actual investment return was over 4.0 percentage points above its assumed return. As a result, from 1993 to 2000, investment experience reduced the unfunded liabilities by \$236 million.

Figure A-4-A. *Actual and Assumed Investment Return for HMEPS, 1993-2000*



Source: CRR calculations based on HMEPS AVs.

Figure A-4-A compares the actual and assumed return for HMEPS from 2001 to 2015. Unlike the earlier years, HMEPS' average return during this period was approximately 2 percentage points below its assumed return. This investment experience added \$703 million in unfunded liability.

Figure A-4-B. *Actual and Assumed Investment Return for HMEPS, 2001-2015*



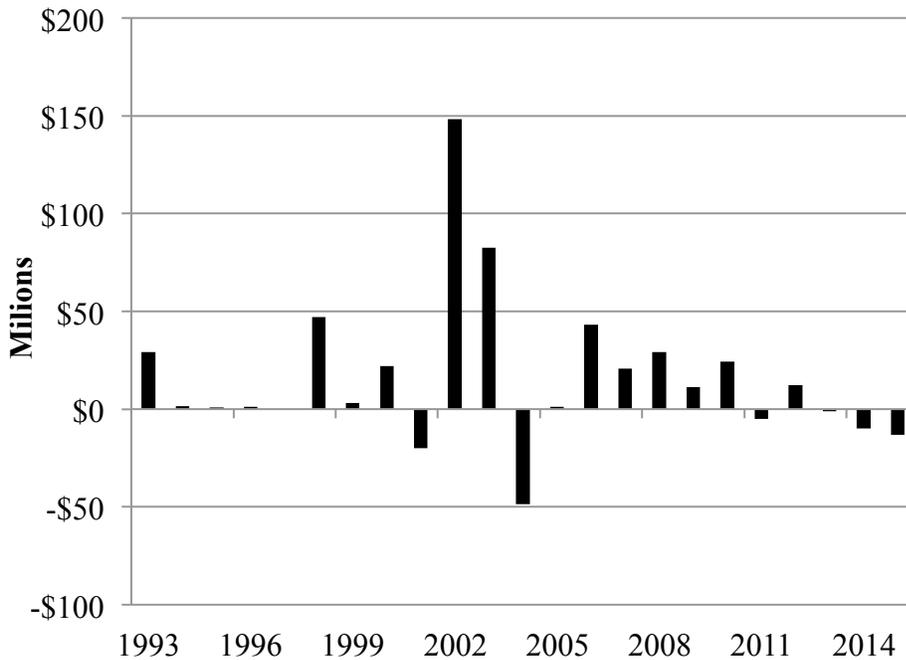
Source: CRR calculations based on HMEPS AVs.

Actuarial Experience

Actuarial experience has accounted for an increase of \$381 million in UAAL since 1993. While actuarial assumptions are not expected to precisely match experience in any given year, the year-by-year differences should net-out over the long term.

Figure A-5 shows the annual impact of actuarial experience on HMEPS' UAAL from 1993 to 2015. In most years, except between 2002 and 2004, the difference between assumptions and actual experience has resulted in minor increases in the unfunded liability. Interestingly, in these three years the Deferred Retirement Option Program (DROP) changed. DROP programs allow employers to retain employees who would otherwise retire, while employees are able to freeze pension benefits while continuing to work past the minimum retirement age. It is possible that changes in the DROP program may have affected the predictability of employee retirement.

Figure A-5xw. Annual Impact of Actuarial Experience on UAAL for HMEPS, 1993-2015



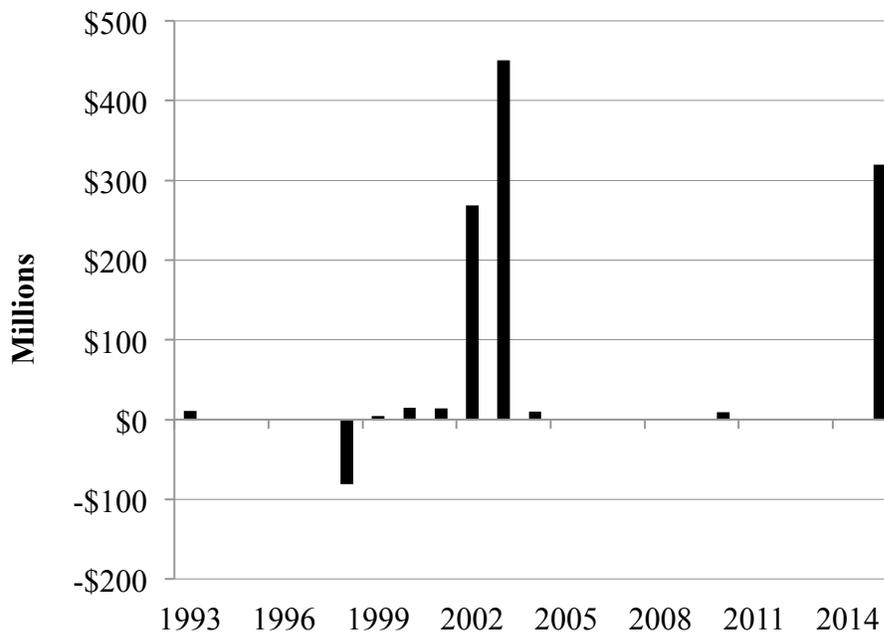
Source: CRR calculations based on HMEPS AVs.

Changes to Actuarial Assumptions

Changes to plan assumptions account for about half percent of the growth in UAAL between 1993 and 2015, totaling \$1 billion. Plans generally review assumptions every few years through an actuarial experience study. As shown in Figure A-6, in most years there is no change in the UAAL given that plan assumptions remained constant. However, in the years that plan assumptions were amended, the changes have had a significant impact on the UAAL.

In 2002, HMEPS changed several assumptions related to its DROP program. The reforms increased the assumed DROP participation rate from 50 to 100 percent, and changed the assumed DROP Entry Date from five years prior to the assumed retirement date, to the earliest date employees are eligible to participate in DROP. Additional 2003 amendments increased retirement rate assumptions, transfer assumptions, and lowered expected salary increases, payroll growth, and inflation assumptions. In 2015, the UAAL increased by \$320 million due to a lower discount rate – down to 8 from 8.5 percent– and changing mortality assumptions.

Figure A-6. Annual Impact of Changes in Actuarial Assumptions and Methods on UAAL for HMEPS, 1993-2015

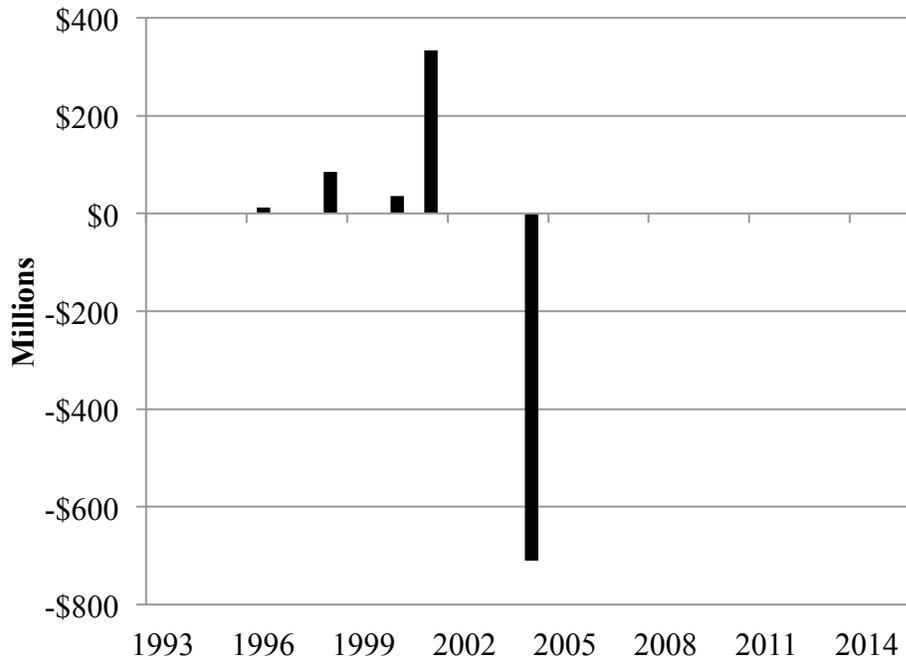


Source: CRR calculations based on HMEPS AVs.

Changes to Benefit Provisions

Between 1993 and 2015 changes to plan benefits decreased the UAAL by \$244 million. After the \$330 million increase in UAAL due to a major benefit expansion in 2001, reforms in 2004 cut back on benefits significantly, curtailing the overall impact on the plan's UAAL. In fact, as shown in Figure A-7, the benefit cuts in 2004 were so dramatic that it reduced the UAAL by \$710 million.

Figure A-7. Annual Impact of Changes in Benefits on UAAL for HMEPS, 1993-2015



Source: CRR calculations based on HMEPS AVs.

Meet and Confer agreements took place between the Board and the City in 2004 and 2007 to amend HMEPS benefit provisions. The 2004 reforms decreased the benefit multiplier, increased retirement age, and decreased the DROP credit and COLA. The 2007 Meet & Confer Agreement dramatically changed the benefits for new employees hired after 2008. There is no change in the UAAL for that year, because changes were not made to benefits of current employees. The 2011 Meet & Confer agreement did not affect benefit provisions.

For complete list of the benefit reforms for HMEPS and their impact on the UAAL, see Table A-1 at the end of this report.

Pension Obligation Bonds (POB)

Like some cities, Houston has used municipal debt to help manage its pension payments. In November 2004, on the heels of a meet-and-confer agreement with HMEPS, the city transferred a \$300 million note to HMEPS that was secured by a deed of trust on a city-owned hotel. The plan was to pay off the note through hotel revenues. In fiscal years 2005 through 2008, the city issued three additional pension obligation bonds worth roughly \$100 million to fund HMEPS. In 2009, because the hotel revenues were lower than expected, the city refinanced the initial \$300 million note to HMEPS (plus about \$75 million in unpaid interest accrued on the note) with a new bond worth about \$380 million. In total the city issued about \$450 million in municipal debt to finance pensions from 2004 to 2009 to fund HMEPS.

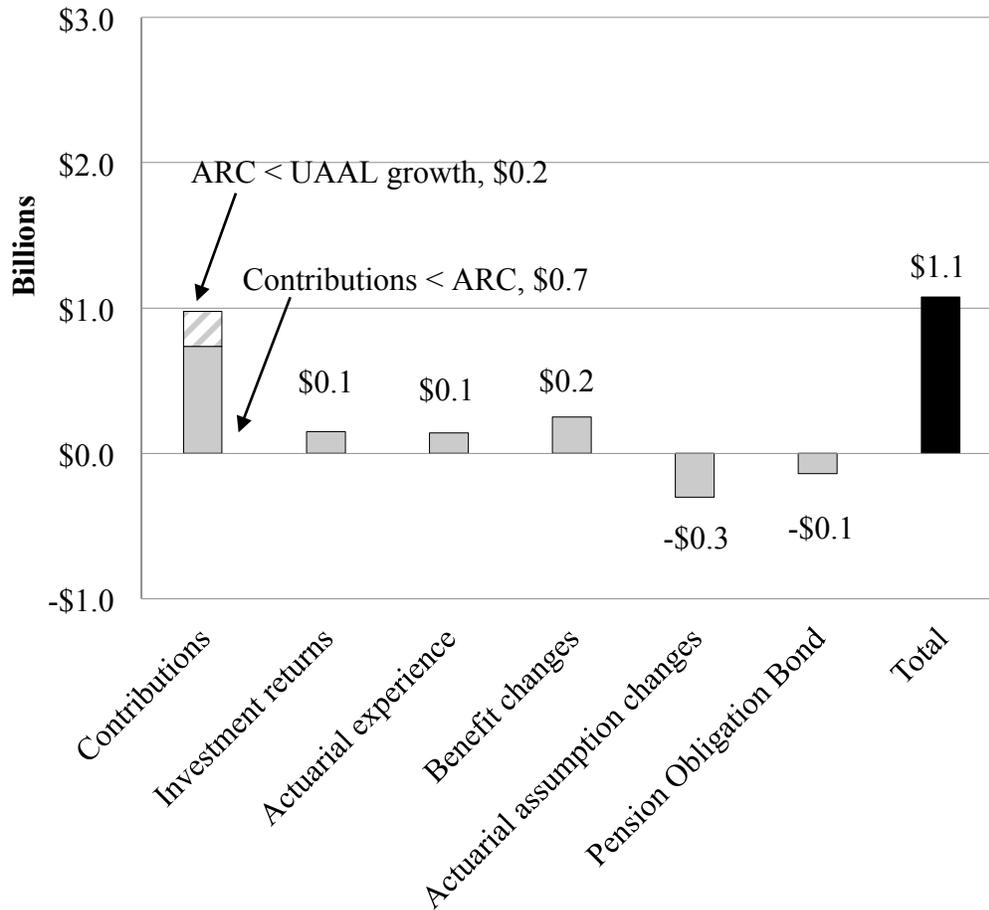
Due to the backloaded structure of the principal payments on the POBs, the bonds have played an important role in providing the city with cash-flow flexibility. However, the issuance of Pension Obligation Bonds does not really reduce the overall liability related to pensions for Houston. Rather, it simply shifts the city's financial obligation – instead of owing the pension systems directly, it owes bondholders.

In issuing Pension Obligation Bonds, a government issuer is essentially gambling that the return on investment it will reap from investing bond proceeds will exceed the interest rate it pays on the bonds. The Center for Retirement Research's analysis concludes that, at least so far, this gamble has not paid off for the City of Houston. The CRR has found that if outstanding POBs were to be called today, the invested bond proceeds would be worth about \$14 million less than the principal owed to bondholders. Given that there is about \$435 million in POB debt still outstanding, the city has so far taken a relatively small loss on this "arbitrage."

HPOPS

Between 1993 and 2015, the unfunded liability for HPOPS increased by \$1.1 billion. Figure A-8 shows the four major sources of underfunding: 1) a history of inadequate contributions; 2) low investment returns, relative to expectations; 3) poor actuarial experience, relative to expectations; and 4) changes to benefit provisions. Changes to plan assumptions and methods and cash infusions from pension bond proceeds were the only elements that resulted in a net decrease in UAAL over the time period. Each of the factors will be discussed in detail below.

Figure A-8. *Sources of Change to HPOPS' UAAL, 1993-2015*



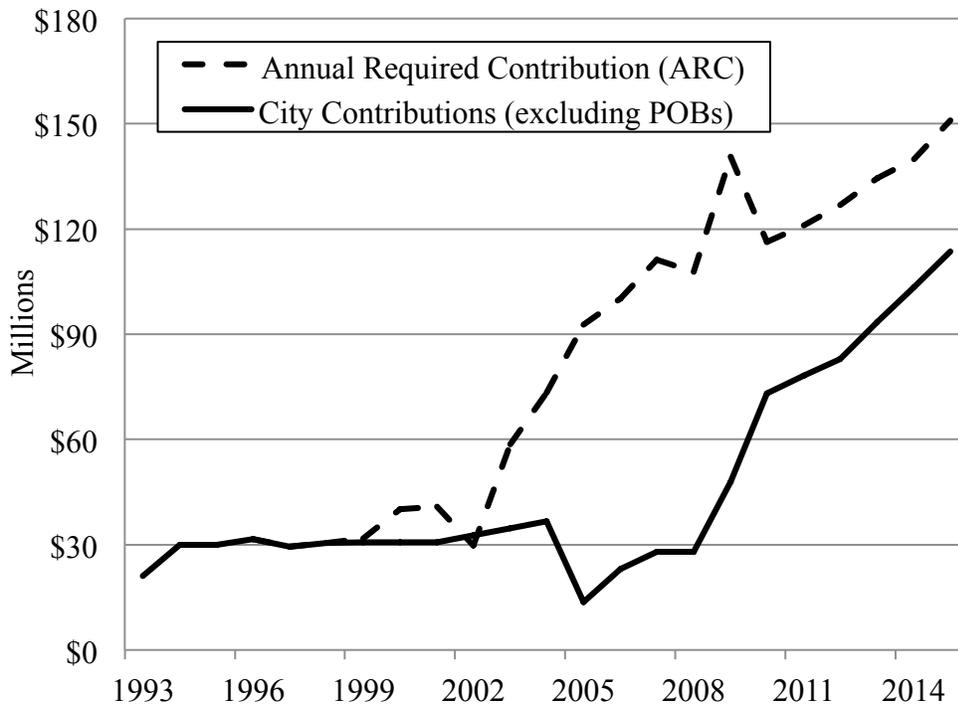
Source: CRR calculations based on HPOPS AVs.

Inadequate Contributions

Paying down the unfunded liability requires two steps: 1) calculating a payment that – at the very least – keeps the unfunded liability from growing each year; and 2) making the calculated payment. Like HMEPS, HPOPS has fallen short in both areas. Since 1993, inadequate contributions have accounted for a combined growth of almost \$980 million in UAAL – \$240 million due to a calculated ARC that was inadequate to keep the UAAL from growing and \$740 million due to not paying that calculated ARC.

Figure A-9 shows HPOPS’ calculated ARC and the actual contributions made from 1993 to 2015. Up until 1999, the City paid 100 percent of its actuarially determined contribution, so both the actual contribution and ARC are a single line. Yet from 1999 forward, the City used a statutory rate, rather than an actuarially determined rate, resulting in City contributions well below the ARC. Meet & Confer Agreements between the HPOPS Board and the City in 2004 and 2011 established a schedule of increased City contributions until the plan achieves full funding. As a result, HPOPS’ payments have grown from 43 to 75 percent of the ARC from 2004 to 2015.

Figure A-9. *Annual Required Contribution and Actual Contributions for HPOPS, 1993-2015*



Source: CRR calculations based on HPOPS AVs.

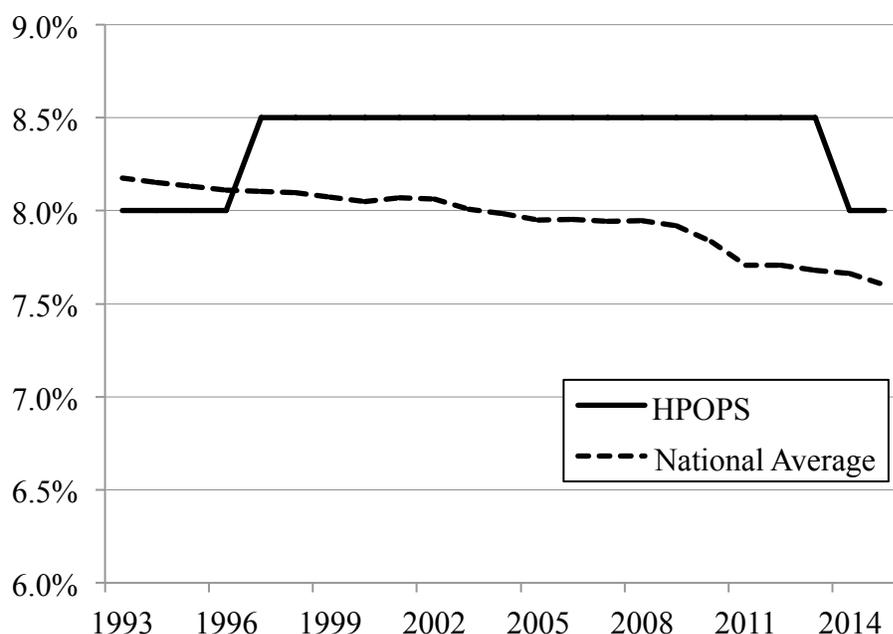
As with HMEPS, simply paying the ARC is not enough for HPOPS. This is because the ARC is based on a “level-percent-of-payroll” method. This method results in a schedule of low initial payments that do not cover interest on the unfunded liability and allow it to grow, followed by high ending payments that exceed interest and pay down the UAAL. Like HMEPS, HPOPS was originally scheduled to pay down its UAAL over 40 years. By 2003, it was only 21 years from its funding goal and transitioning to higher ARC payments that would reduce the UAAL.

Unfortunately, since that point, the payment schedule has been continually reset to 30 years, so that calculated ARCs are consistently in the low-initial-payments stage and do cover interest on the UAAL. As a result, there has been a gap between the calculated ARC and the amount needed to prevent UAAL growth in recent years. This gap accounts for nearly a quarter of a billion dollars in unfunded liabilities.

Investment Returns

The impact of investment returns on the unfunded liability depends on the difference between the system’s assumed and actual return. For HPOPS, this difference has generated approximately \$150 million in UAAL since 1993. Figure A-10 shows the HPOPS’ assumed return compared to the national average from 1993-2015. Unlike the national trend in assumed return, which steadily decreased throughout the time period, HPOPS increased its rate from 8 to 8.5 percent, and maintained a steady rate until dropping back to 8 percent in 2014. Despite reducing its rate in 2014, it still exceeds the national average by about 50 basis points.

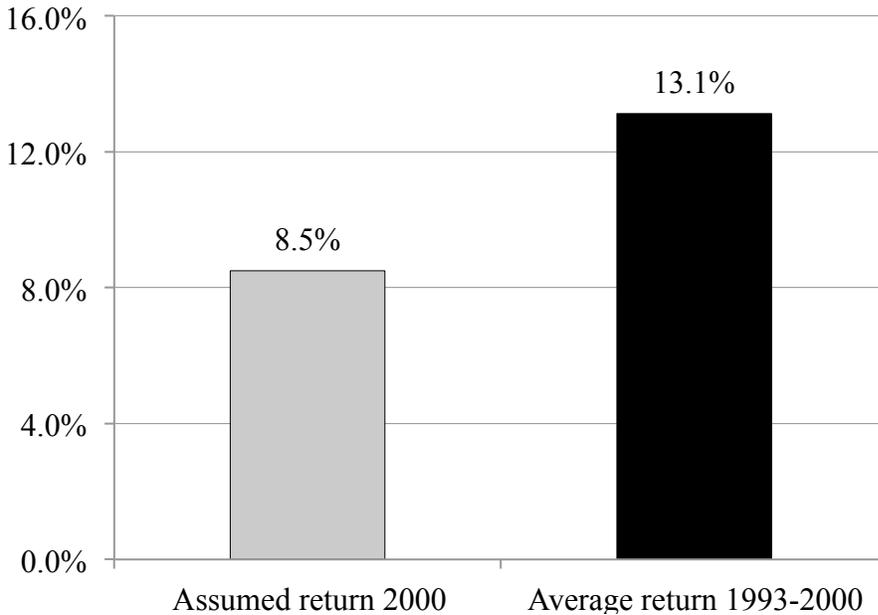
Figure A-10. Assumed Return for HPOPS Compared to the National Average, 1993-2015



Source: HPOPS AVs; CRR calculations based on PENDAT (1990-2000); and *Public Plans Database* (2001-2015).

The actual returns for HPOPS were studied over two distinct periods: 1993-2000, which included the stock market boom of the 1990s, and 2001-2015, which included the 2002 market downturn and the 2008-2009 financial crisis. Figure A-11-A compares the actual and assumed returns for HPOPS from 1993-2000. Over that period, HPOPS’ actual investment return was over 4.0 percentage points above its assumed return. As a result, prior to 2000, investment experience reduced the unfunded liabilities by \$421 million.

Figure A-11-A. *Actual and Assumed Investment Return for HPOPS, 1993-2000*



Source: CRR calculations based on HPOPS AVs.

Figure A-11-B compares the actual and assumed return for HPOPS from 2001-2015. Unlike the earlier years, HPOPS' average return during this period was approximately 1.5 percentage points below its assumed return. This investment experience added \$570 million in unfunded liability.

Figure A-11-B. *Actual and Assumed Investment Return for HPOPS, 2001-2015*



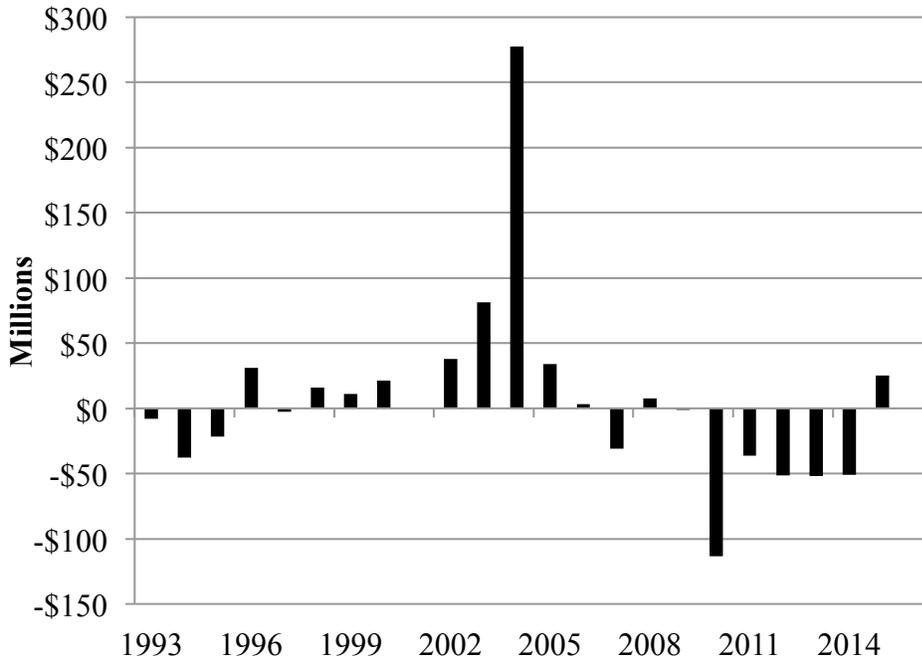
Source: CRR calculations based on HPOPS AVs.

Actuarial Experience

Actuarial experience has accounted for an increase of \$142 million in UAAL since 1993. While actuarial assumptions are not expected to precisely match experience in any given year, they should align over the long term. Figure A-12 shows the annual impact of actuarial experience on HPOPS' UAAL from 1993 to 2015.

For HPOPS the actuarial experience has played a minor role in the development of the UAAL except in the years 2004 and 2010. In 2004, the system made changes to its retirement eligibility provisions and closed its DROP option to new members. It is possible that these changes may have introduced increased volatility around retirement habits, accounting for a \$278 million increase in UAAL. The observed 2010 change in UAAL could reflect a misalignment between the year's actual experience and the newly adopted assumptions in 2010.

Figure A-12. *Annual Impact of Actuarial Experience on UAAL for HPOPS, 1993-2015*



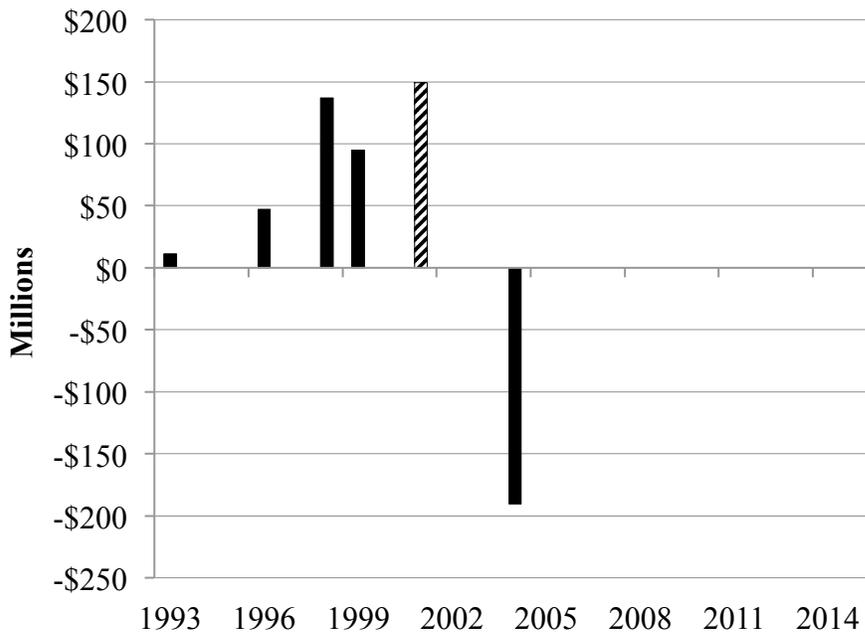
Source: CRR calculations based on HPOPS AVs.

Changes to Benefit Provisions

Between 1993 and 2015 changes to HPOPS' benefit provisions increased the UAAL by \$250 million. As shown in Figure A-13, substantial benefit increases were made between 1998 and 2001, increasing the UAAL by approximately \$380 million over the period. The plan introduced significant benefit cuts as a result of its 2004 Meet & Confer Agreement, reducing the UAAL by \$190 million, but it was not sufficient to offset the generous benefit promises already made. The 2011 Meet & Confer Agreement did not affect benefit provisions.

HPOPS did not complete an actuarial valuation for 2001. Therefore data on the extent to which the 2001 benefit changes impacted the UAAL growth is unavailable. The benefit increases in 1998 and 2001 were applied to current members as well as retiree benefits retroactively. Based on the overall UAAL growth in 2001 and the magnitude of its 1998 reforms, we estimate that approximately \$150 million in UAAL growth is due to the 2001 benefit reforms.

Figure A-13. Annual Impact of Changes in Benefits on UAAL for HPOPS, 1993-2015



Source: CRR calculations based on HPOPS AVs.

Note: 2001 UAAL growth is based on CRR estimates.

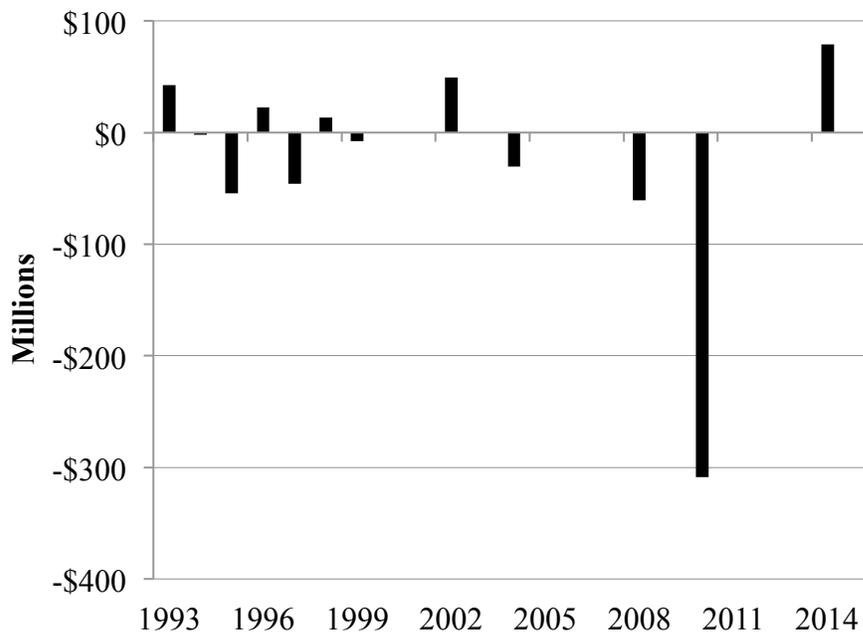
See Table A-2 at the end of this report for a summary of the changes made to HPOPS benefit provisions between 1993 and 2015, as well as their corresponding impact on UAAL growth.

Changes to Actuarial Assumptions and Methods

Changes to HPOPS' plan assumptions and methods account for a \$303 million reduction in HPOPS UAAL between 1993 and 2015. As shown in Figure A-14, due to consistent modifications to plan assumptions and methods, the UAAL changes frequently throughout the time period.

In most cases, changes were made to retirement rates, termination rates, DROP participation rates, and payroll growth and mortality assumptions. The assumed return (also used to discount plan liabilities) increased from 8 to 8.5 percent in 1997, returning to 8 percent in 2014. In 2008, HPOPS switched to a new actuary and initiated an experience study. Under guidance from the new actuary, HPOPS switched from an Entry Age Normal cost method to a Projected Unit Credit method, and made changes to the method for smoothing actuarial assets. Additionally, a host of demographic assumptions were updated to better align with plan experience. These changes resulted in a significant one-time reduction in the UAAL of \$310 million.

Figure A-14. *Annual Impact of Changes in Actuarial Assumptions and Methods on UAAL for HPOPS, 1993-2015*



Source: CRR calculations based on HPOPS AVs.

Pension Obligation Bonds (POB)

Like some cities, Houston has used municipal debt to help manage its pension payments. In fiscal years 2005 through 2009, the city issued five pension obligation bonds worth roughly \$140 million to fund HPOPS.

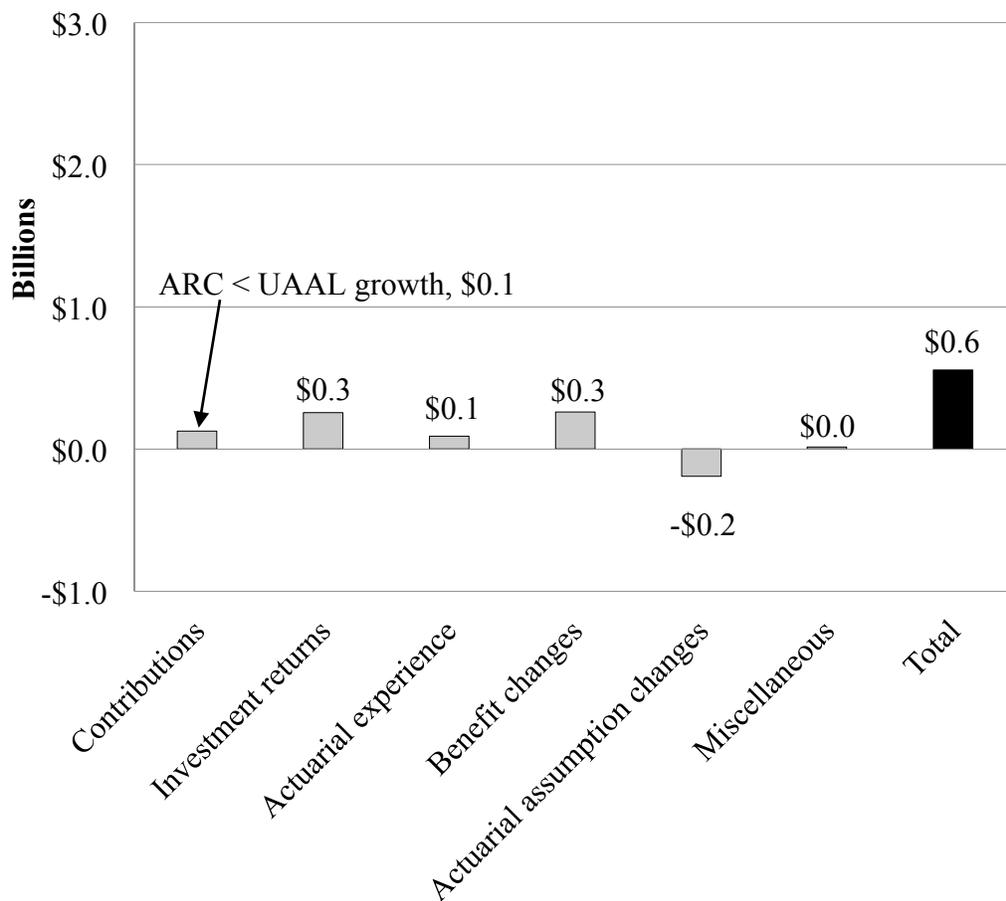
Due to the backloaded structure of the principal payments on the POBs, the bonds have played an important role in providing the city with cash-flow flexibility. However, the issuance of Pension Obligation Bonds does not really reduce the overall liability related to pensions for Houston. Rather, it simply shifts the city's financial obligation – instead of owing the pension systems directly, it owes bondholders.

In issuing Pension Obligation Bonds, a government issuer is essentially gambling that the return on investment it will reap from investing bond proceeds will exceed the interest rate it pays on the bonds. The Center for Retirement Research's analysis concludes that, at least so far, this gamble has not paid off for the City of Houston. The CRR has found that if outstanding POBs were to be called today, the invested bond proceeds would be worth about \$6.5 million less than the principal owed to bondholders. Given that there is \$131 million in POB debt still outstanding, the city has so far taken a relatively small loss on this "arbitrage."

HFRRF

The most recent actuarial valuation for HFRRF was performed in 2013. Therefore our analysis of the HFRRF's UAAL is limited to the period 1993 through 2013. Between 1993 and 2013, the unfunded liability for HFRRF increased by \$560 million. As shown in Figure A-15, four factors contributed to HPOPS' underfunding: 1) a history of inadequate contributions; 2) low investment returns, relative to expectations; 3) poor actuarial experience, relative to expectations; and 4) changes to benefit provisions. Changes to plan assumptions and methods were the only element that resulted in a net decrease in UAAL over the time period. Each of the factors will be discussed in detail below.

Figure A-15. Sources of Change to HFRRF's UAAL, 1993-2013



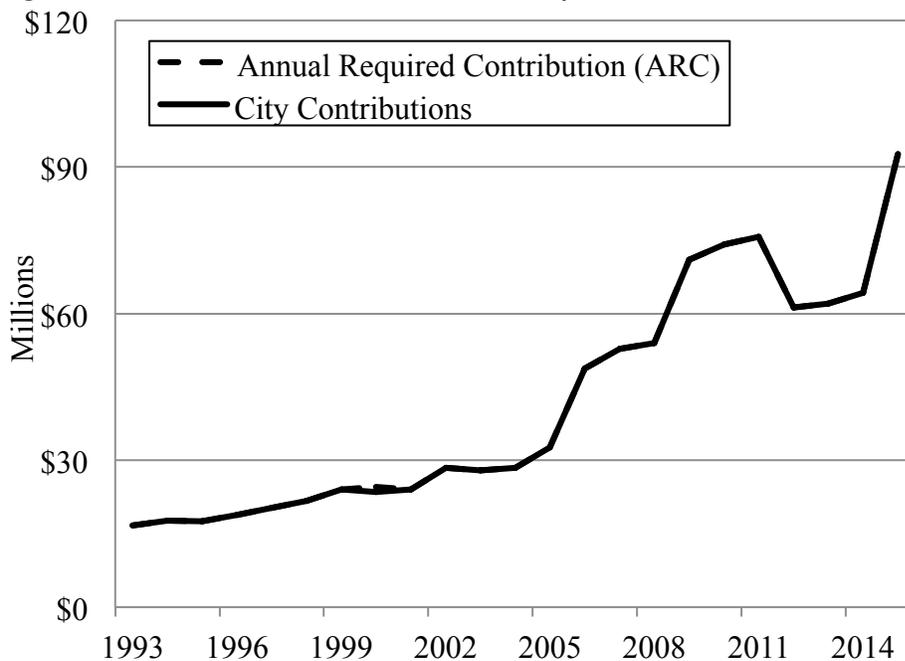
Source: CRR calculations based on HFRRF AVs.

Note: Miscellaneous UAAL growth is due to an agreed judgment in 2005.

Inadequate Contributions

HFRRF is the only Houston plan that has consistently made its ARC payments. Figure A-16 shows the calculated ARC and the actual contributions made from 1993 to 2015. Because the City has always paid 100 percent of its actuarially determined contribution, both the actual contribution and ARC are represented by a single line – even while required contributions have jumped from around \$30 million prior to the 2001 benefit reforms to nearly \$90 million today. Unlike HMEPS and HPOPS, the governing State statute requires the City to pay its contributions to HFRRF as set by the Board.

Figure A-16. *ARC and Actual Contributions for HFRRF, 1993-2015*



Sources: CRR calculations based on HFRRF AVs and CAFRs.

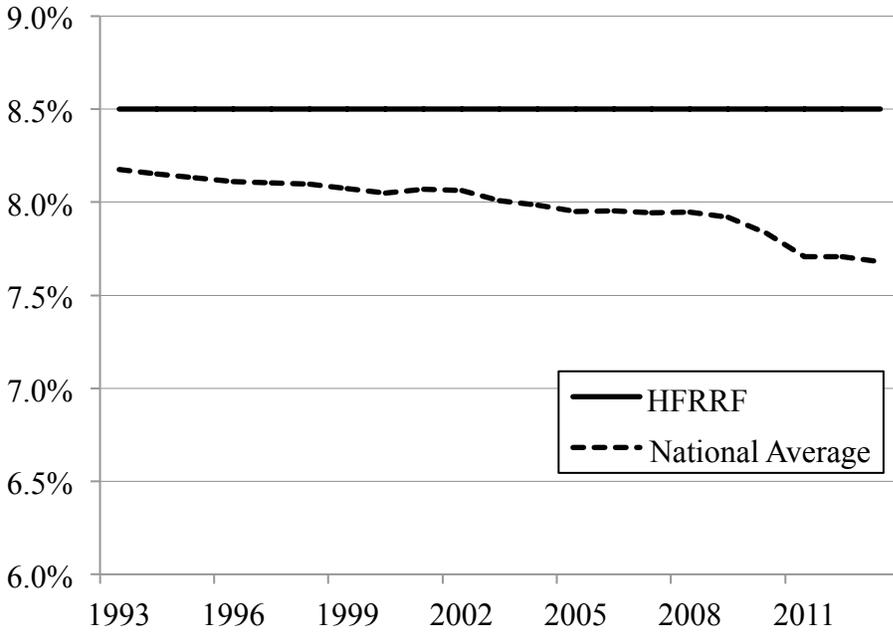
Unfortunately for HFRRF (like HMEPS and HPOPS), paying the ARC is not enough. This is because HFRRF uses a “level-percent-of-payroll” method to calculate payments against the unfunded liability. This method results in low initial payments that do not cover interest on the UAAL and allow it to grow, and high ending payments that exceed interest and ultimately pay down the UAAL.

Beginning in 1985, HFRRF set a schedule to pay down its UAAL over 40 years. By 2005, it was only 20 years from its funding goal and at the point in its schedule where higher ARC payments begin reducing the UAAL. Unfortunately, since that time, the payment schedule has been continually reset to 30 years, so that calculated ARCs are consistently in the low initial payments stage and do not cover interest on the UAAL. As a result, there has been a gap between the calculated ARC and the amount needed to prevent UAAL growth in recent years. This gap accounts for \$128 million in unfunded liabilities.

Investment Returns

The impact of investment returns on the unfunded liability depends on the difference between the system’s assumed and actual return. For HFRRF, this difference has generated approximately \$255 million in UAAL since 1993. Figure A-17 shows the HFRRF’s assumed return compared to the national average from 1993-2013. Unlike the national trend in assumed return, which steadily decreased throughout the time period, HFRRF maintained a consistent rate of 8.5 percent. By 2013, HFRRF’s rate exceeded the national average by over 80 basis points.

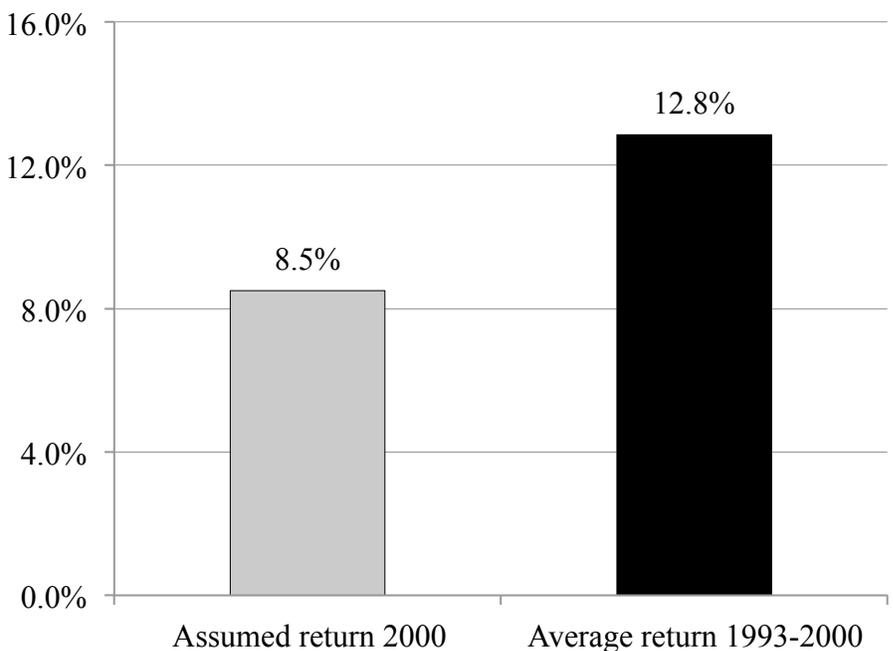
Figure A-17. *Assumed Return for HFRRF Compared to the National Average, 1993-2013*



Sources: HFRRF AVs; CRR calculations based on PENDAT (1990-2000); and *Public Plans Database* (2001-2013).

The actual returns for HFRRF were studied over two distinct periods: 1993-2000, which included the stock market boom of the 1990s, and 2001-2013, which included the 2002 market downturn and the 2008-2009 financial crisis. Figure A-18-A compares the actual and assumed returns for HFRRF from 1993-2000. Over that period, HFRRF’s actual investment return was 5.0 percentage points above its assumed return. As a result, prior to 2000, investment experience reduced the unfunded liabilities by \$320 million.

Figure A-18-A. Actual and Assumed Investment Return for HFRRF, 1993-2000



Source: CRR calculations based on HFRRF AVs and CAFRs.

Figure A-18-B compares the actual and assumed return for HFRRF from 2001-2013. Unlike the earlier years, HFRRF’s average return during this period was approximately 1.0 percentage points below its assumed return. This investment experience added \$575 million in unfunded liability.

Figure A-18-B. *Actual and Assumed Investment Return for HFRRF, 2001-2013*



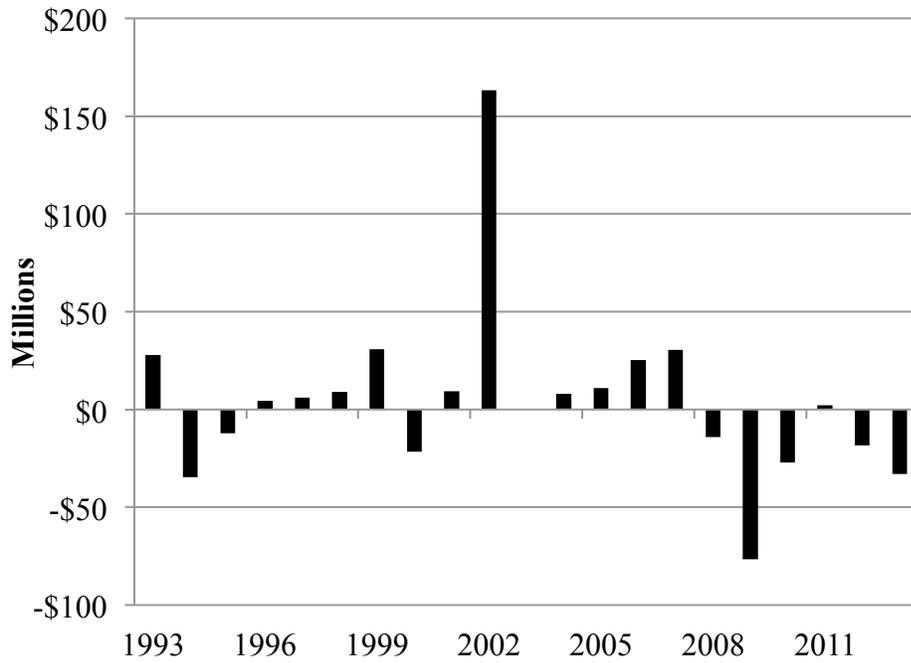
Source: CRR calculations based on HFRRF AVs and CAFRs.

Actuarial Experience

Actuarial experience has accounted for an increase of \$91 million in UAAL since 1993. While actuarial assumptions are not expected to precisely match experience in any given year, they should align over the long term. Figure A-19 shows the annual impact of actuarial experience on HFRRF's UAAL from 1993 to 2013. In most years, the difference between assumptions and actual experience has resulted relatively minor changes in UAAL.

The largest change in UAAL due to actuarial experience took place in 2002. A year prior, in 2001, actuarial assumptions and methods changed dramatically. The large increase in UAAL following these changes may reflect a temporary misalignment between the newly adopted assumptions and actual experience. This 2002 gap resulted in a \$163 million increase in UAAL.

Figure A-19. Annual Impact of Actuarial Experience on UAAL for HFRRF, 1993-2013

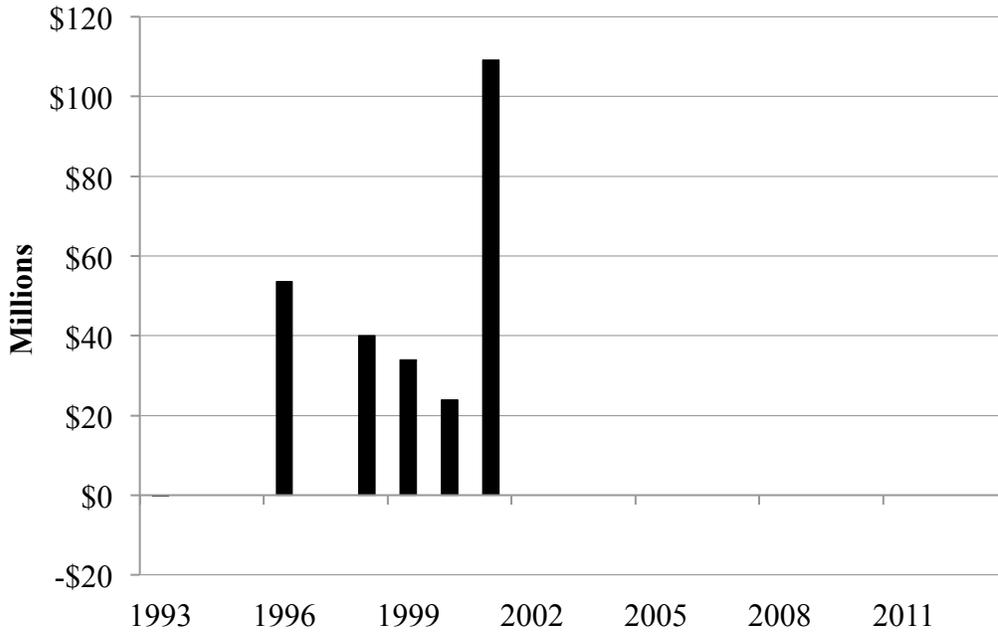


Source: CRR calculations based on HFRRF AVs.

Changes to Benefit Provisions

Between 1993 and 2013 changes to HFRRF’s benefit provisions increased the UAAL by \$261 million. Aside from the \$38 thousand reduction in UAAL in 1993, all changes to benefit provisions during this time period have increased HFRRF’s UAAL. The largest benefit expansion took place in 2001, increasing the UAAL by \$109 million. As shown in Figure A-30, since 2001 no reforms have been made to reduce benefits. See Table 3-A at the end of this report for a summary of the changes made to HFRRF benefit provisions between 1993 and 2013, as well as their corresponding impact on UAAL growth.

Figure A-20. *Annual Impact of Changes in Benefits on UAAL for HFRRF, 1993-2013*



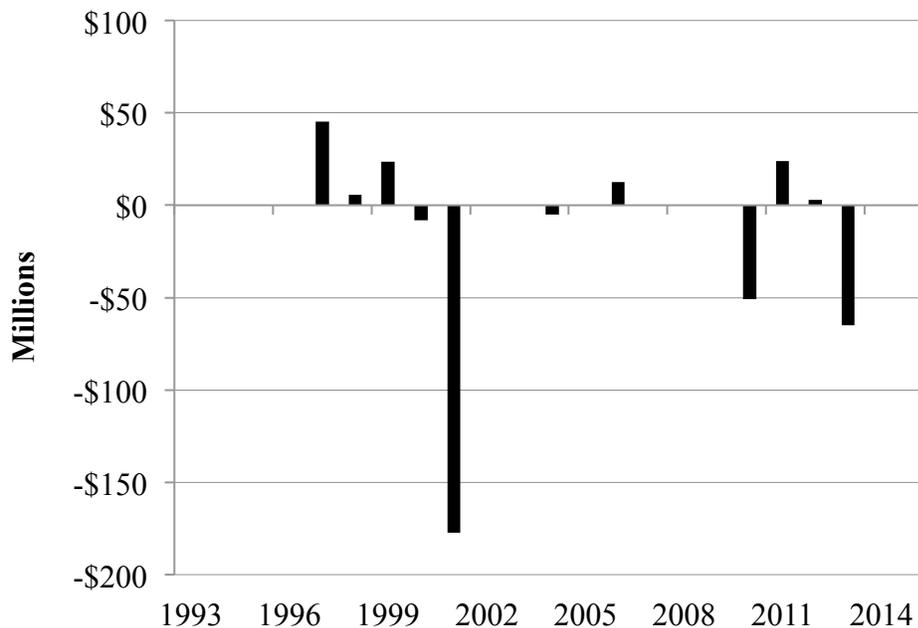
Source: CRR calculations based on HFRRF AVs

Changes to Actuarial Assumptions and Methods

Changes to HFRRF's plan assumptions and methods account for a \$192 million reduction in UAAL between 1993 and 2013. As shown in Figure A-21, due to consistent modifications to plan assumptions and methods, the UAAL changes frequently throughout the time period.

The majority of changes were made to assumptions for employee retirement, mortality, turnover, and salary growth, as well as employee participation and duration in the DROP. The most impactful changes were in 2001 when changes to the assumptions regarding retirement, salary increases, and DROP resulted in a \$177 million reduction in UAAL. In 2010, active liabilities and normal costs were increased by 5 percent to account for differences between the plan's definition of average monthly salary (average of the highest 78 pay periods), and the average of the final 78 pay periods. In 2013, HFRRF reset its actuarially smoothed assets to equal market assets, which were higher than actuarial assets at the time. This resulted in a decrease the UAAL of about \$65 million. Beginning in 2014, the system will once again smooth asset gains/losses over 5 years.

Figure A-21. Annual Impact of Changes in Actuarial Assumptions and Methods on UAAL for HFRRF, 1993-2013



Source: CRR calculations based on HFRRF AVs.

Detailed Description of Benefit Changes

Table A-1. *Benefit Changes to HMEPS and Annual Impact on UAAL (in Millions), 1993-2015*

Year	Reform Description	Change in UAAL
1996	<p>Expanded retirement eligibility: Prior to 1996, normal retirement for the non-contributory plan (Group B) was age 62 and 5 years of service, with early retirement beginning at age 55 and 20 years of service. In 1996, early retirement was removed entirely and the normal retirement eligibility was lowered to age 50 and 25 years of service, age 55 and 20 years of service, or age 60 and 10 years of service.</p>	\$12.1
1998	<p>Increased benefit multiplier: For the contributory plan (Group A), the accrual rate for under 20 years of service was increased from 2 to 2.25% of final average salary (FAS), and for 20+ years of service, 2.5 to 2.75%. For the non-contributory plan (Group B), the accrual rate for under 10 years of service changed from 1.25 to 1.5%, for 10-20 years of service, 1.6 to 1.75%, and for 20+ years of service, 1.75 to 2%.</p> <p>Introduced DROP: Implementation of DROP.</p> <p>Lowered vesting requirement: Group A vesting requirements were lowered from 10 to 5 years of service.</p> <p>Increased COLA: Changed from a CPI-linked COLA rate with a maximum of 4% to a fixed COLA rate of 3.5%.</p>	\$84.6
2000	<p>Increased benefit multiplier: For Group A, the accrual rate for under 20 years of service increased from 2.25 to 2.5% of FAS, and for 20+ years of service, 2.75 to 3.25%. For Group B, the accrual rate for under 10 years of service increased from 1.5 to 1.75%, for 10-20 years of service, 1.75 to 2%, and for 20+ years of service, 2 to 2.5%. Executive City officials (Group C) receive double the Group A rate.</p> <p>Expanded retirement eligibility: Group A and B normal retirement eligibility expanded to include age 62 and 5 years of credited service, or 5 years of service and the sum of age and years of credited service equals 70 or more. Group C employees same as above or age 65.</p>	\$35.6
2001	<p>Increased benefit multiplier: For Group A, the accrual rate for each year of service under 20 increased from 2.5 to 3.25% of FAS, and for 20+ years of service, 3.25 to 3.5%. For Group B, the accrual rate for 20+ years of service was increased from 2.5 to 2.75%. The maximum benefit was increased from 80 to 90% of final average salary</p> <p>Increased COLA: COLA increased from 3.5 to 4%.</p> <p>Increased DROP benefit: Prior to 2001 the monthly DROP credit was 3.5% each year. As of 2001, the monthly DROP credit increased to 4% each year.</p>	\$333.5

2004	<p>Reduced benefit multiplier: For Group A, the accrual rate for under 20 years of service changed from 3.25 to 2.5% of FAS, and for 20+ years of service, 3.5 to 3.25%. For Group B, the accrual rate for 20+ years of service, 2.75 to 2.5%.</p> <p>Restricted retirement eligibility: Increased Group A, B, and C's normal retirement eligibility from "age + service = 70" to "age + service = 75 and must be over age 50."</p> <p>Decreased DROP benefit: Monthly DROP credit decreased from 4 to 3%.</p> <p>Reduced COLA: Decreased from 4% to 3% for current members, 2% for members hired on or after 2005.</p>	-\$710.0
2007	<p>Introduced new benefit tier (no impact on UAAL): All new members hired after 2008 become members of Group D. Group D members are eligible for normal retirement at age 62 and 5 years of credited service, and early retirement at age 55 with 10 years of service or the Rule of 75 (age + service = 75). Employee contributions are not required. Group D benefits accrue at 1.8% for under 25 years of service, plus 1% for each year 25+. Maximum benefit is 90% of FAS. No COLA.</p>	\$0.0
Net Change		-\$304.1

Source: HMEPS AVs

Table A-2. *Benefit Changes to HPOPS and Annual Impact on UAAL (in Millions), 1993-2015*

Year	Reform Description	Change in UAAL
1993	<p>Expanded retirement eligibility: Expanded retirement eligibility for those hired after 1975 (plans 2 and 3) from age 50 with 20 years of service to just 20 years of service, regardless of age.</p> <p>Increased supplemental benefits: The extra monthly benefit, payable for life in retirement, is increased from \$88.05 prior to age 65 and 55.38 after age 65 to \$88.05 throughout retirement.</p> <p>Increased employee contributions (no impact on UAAL): Employee contributions increased from 7 to 8.75% of payroll.</p>	\$11.2
1996	Introduced DROP: Implementation of DROP program.	\$47.0
1998	<p>Increased benefit multiplier: Increased benefits earned for the first 20 years of service from 30%, 40%, and 45% of salary (based on date of retirement) to 50% for all members.</p> <p>Increased COLA: Minimum COLA (based on CPI-U) increased from 2.5 to 3%.</p>	\$136.9
1999	<p>Removed benefit maximum: Eliminated the 80% cap on final compensation.</p> <p>Increased supplemental benefits: Effective November 28, 1998, a \$5,000 lump sum is payable upon retirement.</p>	\$94.9
2001	<p>Increased DROP benefit: Added a "back DROP" option for current active and DROP members.</p> <p>Benefit Formula: Increased benefits for the first 20 years of service from 50 to 55% of final compensation for all members.</p> <p>Increased supplemental benefits: Increased extra monthly benefit, payable for life in retirement, from \$88.05 to \$150.</p>	\$149.2
2004	<p>Restricted final average salary: Changed compensation used to determine benefits from the highest biweekly pay period during the last 26 pay periods to an average of the last three years of compensation. Compensation excludes Exempt Time and Strategic Officer Staffing Pay as well as overtime pay.</p> <p>Reduced COLA: Minimum COLA (based on CPI-U) reduced from 3 to 2.4%.</p> <p><u>Benefit changes for those hired after 2004 – no impact on the UAAL</u></p> <p>Restricted retirement eligibility: Restricted retirement eligibility for those hired after 2004 to 55 with 10 years of service, rather than 20 years of service with no age requirement.</p> <p>Reduced benefit multiplier: Accrual rates for members hired after 2004 are decreased from 2.75 to 2.25% with a maximum cap of 80% of final average salary.</p> <p>Closed DROP: DROP closed to members hired after 2004.</p> <p>Increased employee contributions: Increased current employee contributions from 8.75 to 9% of payroll. New members hired after 2004 contribute 10.25% of payroll.</p>	-\$190.4
Net Change		\$248.8

Source: HPOPS AVs.

Note: 2001 UAAL growth is based on CRR estimates.

Table A-3. *Benefit Changes to HFRRF and Annual Impact on UAAL (in Millions), 1993-2013*

Year	Reform Description	Change in UAAL
1993	Disability Retirement Benefit: Service-connected disability pension benefit changed from 50 to 75% of monthly salary.	-\$38.0
1996	Increased benefit multiplier: Prior to 1996, benefits equaled 45% of average monthly salary plus 2.5% for 20+ years, plus 1% for 30+ years, up to a maximum of 80% of average monthly salary. As of 1996, benefits were increased to 46.667% plus 2.667% for 20+ years, up to a maximum of 80% Increased employee contributions (no impact on the UAAL): Increased employee contributions from 7.5 to 7.7% of payroll.	\$53.6
1998	Increased benefit multiplier: Benefits equal to 50% of average monthly salary plus 3% for 20+ years, up to a maximum of 80%. Increased COLA: COLA switched from CPI-U, with a maximum of 3%, to a fixed rate of 3%. Added supplemental benefit: A one-time \$5,000 lump sum benefit is payable to all current retirees.	\$40.0
1999	Expanded DROP: The maximum number of years a participant may remain in the DROP increased from 5 to 7 years. Added supplemental benefit: A fixed \$100 monthly supplemental benefit is paid to all current and future retirees per month.	\$34.0
2000	Increased supplemental benefit: The additional benefit paid to all retirees increased from \$100 to \$125 per month. The maximum supplemental bonus increased from \$4 million to \$5 million. The exiting payroll bonus increased from \$4,000 to \$5,000. Expanded DROP period: The maximum number of years a participant may remain in the DROP increased from 7 to 10 years. Increased DROP benefit: Monthly pension benefits increase by 1% for every year of DROP participation. DROP account recalculated based on what the account balance would have been had the participant elected the DROP up to 3 years earlier than they did. Expanded eligibility for COLA: Prior to 2000, participants age 50 with 30+ years of service are eligible for COLA. As of 2000, participants are eligible at age of 48.	\$23.9
2001	Increased supplemental benefit: The additional benefit paid to all retirees increased from \$125 to \$150. Increased DROP benefit: Monthly pension benefits increase by 2% for every year of DROP participation.	\$109.2
Net Change		\$260.7

Source: HFRRF AVs

A-3: How Have Other Cities Managed Their Pensions? (5 Case Studies)

Phoenix, Arizona

- Increase employee contributions
- 401(k) plan
- Hybrid plan

Jacksonville, Florida

- Increase employee contributions
- Reduce benefit obligations
- City bears burden
- 401(k) plan

San Diego, California

- 401(k) plan
- Reduce benefit obligations

Baltimore, Maryland

- Increase employee contributions
- Reduce benefit obligations
- Hybrid plan

Fort Lauderdale, Florida

- 401(k) plan

Reforms

- Increase employee contributions
- 401(k) plan
- Hybrid plan

Background

The City of Phoenix participates in three pension plans. One plan, the City of Phoenix Employees' Retirement System (COPERS), is administered by the City and covers the majority of City employees. The other two, Arizona's Public Safety Personnel Retirement System (PSPRS) and Elected Officials' Retirement Plan (EORP), are state-administered and cover police officers, firefighters, and elected officials employed by the City. In 2012, the City's annual required contribution (ARC) to the three plans equaled the national average of 8 percent of its revenue- half of which were related to COPERS. Although the City paid 100 percent of the annual required contributions between 2000 and 2012, the funded ratio for the system dropped to 60 percent. As of 2014, Phoenix ranked 16th in terms of pension costs among the 50 largest cities – one place behind Houston. Because the State of Arizona has the sole authority to amend PSPRS and EORP, reforming COPERS was the City's most straightforward option to relieve the budgetary pressure imposed by its pension obligations.

Description of Reforms

The City of Phoenix introduced several reforms between 2013 and 2015 to address the funding status of its Public Employee Retirement System (COPERS).

Increase Employee Contributions (2013): In 2013 the City introduced Proposition 201 to increase the employee contributions of new hires. Before Proposition 201, employee contributions were capped at 5 percent of payroll. Proposition 201 required new workers hired after 2013 (Tier 2) to split total pension costs equally with the City. While Tier 1 employee contributions remain capped at 5 percent, Tier 2 employees contributed 16 percent by 2015.

The City Bears the Burden (2013): Prior to 2013, the City of Phoenix utilized a rolling 20-year amortization method to address its unfunded liability. Beginning in 2013, the City committed to a closed funding schedule for its UAAL. The 2013 UAAL is amortized over a closed 25-year period, while any new gains or losses accrued after 2013 will be amortized over a closed 20-year period from the date they first arise. In addition, the City increased its annual amortization payments lowering the assumed payroll growth from 5 to 3.5 percent and lowering the discount rate from 8 to 7.5 percent.

401(k) Plan (2014): In 2014 the City voted on Proposition 487, a measure to implement a 401(k)-style plan for new City employees. Implementing a defined contribution plan would constrain employer contributions to an amount less than or equal to 8 percent of an employee's salary. This measure was intended to reduce the overall cost of the City retirement plan, and

would allow the City more predictability in budgeting. In November 2014, City voters rejected this measure.

Hybrid Plan; Amended Employee Contributions (2015): Although Proposition 201 reduced the contributions borne by the City, some expressed concern that requiring employees to contribute at this high level would impair the City's ability to recruit and retain quality workers. The passage of Proposition 103 in 2015 addressed the rapidly increasing employee contribution rates and introduced a "stacked hybrid" plan for new employees (Tier 3). This reform capped employee contributions at 11 percent for Tier 2 and Tier 3 employees, while Tier 1 employees continue to contribute at 5 percent. The "stacked hybrid" plan provides a defined benefit plan for compensation up to \$125,000 and switches to a defined contribution plan above that threshold. The cap increases each year to account for inflation, and the City contributes 2 percent of payroll above the cap to the 401(k)-style plan.

Assessment

Approximately half of projected pension costs for the City of Phoenix stem from the unfunded liability related to current employees and retirees (see figure 31). Proposition 103, with its focus on recently hired employees, does little to reduce those costs. Instead, Proposition 103 attempted to limit the size of the City's benefit promises to recently hired employees and share those costs more equitably between employee and employer.

By capping pensionable pay at \$125,000 through a "stacked hybrid" plan for new employees, the City intended to reduce the future liability of its pension commitments. However in 2015 the average employee over age 60 earned under \$100,000. Therefore although the initiative eliminated a handful of bloated pensions, its potential impact on the plan's future liability is limited. Additionally, the \$125,000 cap will be adjusted annually to account for inflation, thus maintaining its relatively small impact on the growth of liabilities going forward.

In regards to sharing the cost, keeping the Tier 1 employee contribution rate at 5 percent, and implementing an 11 percent cap on the employee contribution rate for Tier 2/3 employees, leaves the City responsible for the majority of pension costs over the next 15-20 years. Nationally, the employee contribution rate averages about 7 percent of payroll, and represents about half of the normal cost and the Tier 2/3 employees pay 11 percent and nearly three quarters of their normal cost. On the other hand, Tier 1 members, enjoy a 5 percent rate that is equal to just under one-third of the normal cost.

In aggregate, the City's contribution rate is expected to level out by 2020 as Tier 3 continues to grow and Tier 1 employees start leaving the workforce. Although these projections show that the City's contribution rate stops increasing, it is projected to remain at approximately 30 percent, a value exceeding the City's initial contribution rate before Propositions 201 and 202 were passed. Given the relatively low employee contribution rate for Tier 1, and the growing pension costs facing the city, revisiting the increase in the Tier 1 employee contribution rate may be warranted.

Jacksonville, Florida

Reforms

- Increase employee contributions
- Reduce benefit obligations
- City bears burden
- 401(k) plan

Background

The City of Jacksonville sponsors two main retirement systems: the City of Jacksonville Retirement System (JRS), which includes the General Employees Retirement Plan (GERP) and Corrections Officers Retirement Plan (CORP), and the Police and Fire Pension Fund (PFPPF). As City employees do not participate in Social Security, the pension systems are their only form of retirement income related to City employment. Both the JRS and PFPPF are funded at levels below the national average, at 60 and 40 percent, respectively. As of 2014 the City's annual required contribution to the systems equaled was about 7 percent of revenue, the majority of which can be attributed to the PFPPF. Given the PFPPF's high cost and poor funding status, the City has primarily focused its reform efforts on the PFPPF.

Description of Reforms

In 2015 the City of Jacksonville and Police and Fire Pension Fund (PFPPF) passed Ordinance 2015-304, which increased all employee contributions, reduced benefit obligations earned after 2015 for some current employees (Group I), and reduced benefits for new employees hired after June 19, 2015 (Group II). The City also committed to accelerating their payment schedule by pledging an additional \$350 million over the next 13 years, approximately 8 percent of its revenue. The City is also considering a revenue stream outside of the general fund that would assist in paying down the plan's unfunded liability at an accelerated pace, although the financing is yet to be resolved.

Increase Employee Contributions (2015): Prior to Ordinance 2015-304, employees contributed 7 percent of payroll to the pension fund. Beginning in June 2015, Group I employee contributions increase from 7 to 8 percent of payroll, increasing to 10 percent once certain pay raises occur. Group II members immediately contribute at the 10 percent level. Although 10 percent of payroll is slightly higher than the national average for the employee contribution rate (about 7.5 percent of payroll), it falls far below the national average when presented as a proportion of the total normal cost. Generally, employees pay half of the total normal cost. Currently the city contributes approximately 30 percent of payroll to normal cost alone, so that the employee's 10-percent contribution amounts to only a quarter of the total normal cost.

Reduce Benefit Obligations (2015):

- a. COLA: Prior to the 2015 reforms, employees received a 3 percent COLA upon retirement. After June 2015, Group I employees with 20 years of service – the normal retirement date – continue to receive the 3 percent COLA upon retirement. Group I employees with less than 20 years of service receive the 3 percent COLA for benefits accrued by June 2015, and the same COLA used by Social Security, capped at 6 percent, for benefits going forward. Group II members receive the same COLA used by Social Security, capped at 1.5 percent, beginning after three years of retirement.
- b. Final Average Salary: The final average salary for employees prior to Ordinance 2015-304 was based on the final two years of salary immediately preceding retirement. This calculation does not change for Group I employees with 5 years of service – the minimum vesting period. As of June 2015 the final salary for non-vested Group I employees is based on the final four years preceding retirement, while the final salary for Group II employees is based on the final five years.
- c. DROP Program: Prior to reforms, employees received an 8.4 percent rate of return on DROP benefits. With the passage of Ordinance 2015-304, Group I employees with 20 years of service continue to receive the 8.4 percent rate of return, while Group I employees with fewer than 20 years of service receive the actual rate of return, ranging between 2 and 14 percent.
- d. Additional Group II Reforms: The credited service required for retirement increases from 20 to 30 years. The benefit multiplier is reduced from 3 to 2.5 percent, while the maximum benefit is reduced from 80 to 75 percent of final average salary.

City Pays More (2015): Through Ordinance 2015-304 the City pledges to put more money into the Police and Fire Pension Fund over the next 13 years. In addition to the actuarially determined pension costs, the City commits to paying an additional \$350 million and transferring \$110 million from existing rainy day accounts. The additional payments accelerate the City’s amortization schedule.

In the face of paying an additional \$350 million on top of regular contributions, the City sought relief for its regular pension costs. An option that has currently been proposed utilizes sales tax revenue to pay down the plan’s unfunded liability, which will reduce the regular pension costs. This sales tax was initially authorized in 2000 as part of the “Better Jacksonville Plan” to pay for infrastructure through 2030. The proposal seeks to renew the tax by another 30 years to 2060, directing its revenue after 2030 to target the City’s pension debt. In addition to implementing the new sales tax, the proposal will re-amortize all amortization bases over a 30 year period, returning to a closed amortization period. At present the “discretionary sales surtax” bill has received State Senate and House approval, but will require both governor and voter approval to move forward.

Defined Contribution Plan (2015): In addition to utilizing a sales tax, the City has preliminarily discussed shifting new employees to a defined contribution plan. The specific type of plan, level of benefits, and employer contribution rate will be determined through collective bargaining.

Assessment

The City of Jacksonville focused its reform efforts on the Police and Fire Pension Fund which represents 60 percent of the City's unfunded pension liability and pension costs as of 2015. Nearly 70 percent of City contributions to PFPF are dedicated to amortizing its unfunded liability. Although Ordinance 2015-304 goes further than many reforms by reducing benefits for current employees though COLA cuts, the cuts apply only to future accruals. As such, these benefit reductions do not lower the plan's existing unfunded liability. And the benefit cuts for new hires, as well as the preliminary proposal to shift new hires to a defined contribution plan, do not reduce the unfunded liability.

While the benefit cuts put in place by Ordinance 2015-304 do not reduce the existing UAAL, they will decrease costs for newly accruing benefits going forward, freeing more employer funds to address the existing unfunded liability. The city's plans detailed in Ordinance 2015-304 to add additional funding to pay off the UAAL is a positive development that reflects a commitment to funding. However, the city threatens to undo that progress with its subsequent "discretionary sales surtax" plan. The plan artificially decreases the existing UAAL by accounting for the dedicated future tax stream as a pension asset, and then extends the current amortization schedule for the decreased UAAL from 18 to 30 years. While the surtax plan lowers the annual pension costs for the city, it also dramatically *delays* full funding of the plan. The additional revenue from the sales tax will not be directed into the pension fund until 2030. By reducing contributions over the next 30 years, and then after that relying on the sales tax to fund the system until 2060, the unfunded liability is actually being paid down over the next 45 years.

Dedicating a specific stream of revenue to paying down the unfunded liability is a positive development that reflects a commitment to funding. But, accounting for a dedicated future revenue stream as a pension asset today masks the true funded status from decision makers and other stakeholders. And, it is possible GASB accounting standards will ultimately not allow it. Regardless of how the tax revenue is treated for accounting purposes, the practical outcome of stretching out the unfunded liability over 45 years will most likely have implications for the bond rating of the City, as its unfunded liability will now be drawn out over 45 years rather than over the original 18-year schedule.

Fort Lauderdale, Florida

Reforms

- 401(k) plan
- Incentivizing Early Retirement
- Pension Obligation Bond

Background

The City of Fort Lauderdale administers two defined benefit plans: the General Employees' Retirement System (GERS) and the Police and Firefighters' Retirement System (PFRS). Prior to 2007, these systems provided pension benefits to virtually all City employees. The City also sponsored two small defined contribution options, covering only 1 percent of payroll. In 2007, the City's annual required contribution to its retirement systems totaled \$37 million, approximately 9 percent of revenue, slightly higher than the national average. With a combined unfunded liability of \$236 million, its debt represented 65 percent of revenue, 20 percentage points lower than the national average.

In June 2007 the Florida State Legislature imposed a statutory tax reduction across its municipalities. This reform reduced the amount of property tax that could be levied by local governments and then placed a cap on its potential for growth in the future. On average, cities across Florida reduced their property tax by between 3 to 9 percentage points. This reduction in tax revenue imposed budgetary pressure on the City, which, in addition to the ongoing recession, strained the City's ability to maintain its existing level of public services.

One of the fastest growing costs faced by the City of Fort Lauderdale is its pension systems. Between 2000 and 2007 the City's contribution to the GERS increased from 8 to 24 percent of payroll, while contributions to the PFRS increased from 10 to 42 percent. These growing contribution rates resulted from benefit increases, poor investment returns, and improved retiree life expectancies. In 2007, due to the growing burden of pension costs, the City negotiated with its general employees to restructure the retirement benefits offered to new employees. The City establishes benefit levels for its general employees through a collective bargaining process, whereas Florida State Statute regulates the minimum benefits owed to police and fire personnel. Therefore, the city focused its reforms on GERS.

Description of Reforms

New Defined Contribution Plan (2008): In March 2008 the City passed Ordinance C-06-06, closing the GERS to new employees. City employees hired after 2007, except for police and fire personnel, participate in a separate 401(k)-style defined contribution plan. The new General Employees Defined Contribution Plan is a single-employer defined contribution plan administered by the City. The City contributes 9 percent of payroll to the fund while participants are prohibited from making contributions themselves. By 2014 this new defined contribution

plan covered 10 percent of City payroll, while GERS decreased in participation from 46 to 36 percent of payroll.

While the 2007 General Employees Defined Contribution Plan set employer contributions at 9 percent of payroll, the other two defined contribution plans, although small, linked its employer contribution rates to the City's pension plan payments. Specifically, employer contribution rates were based on a five-year average of City pension contributions, averaging between 20 to 30 percent of payroll. Although the plans only affected 2 percent of City employees, its high contribution rates were staggering when compared to the rates applied to the 2007 plan. In 2012, a reform applied the 9 percent City contribution rate to all new non-union employees participating in any City defined contribution plan.

Incentivizing Early Retirement (2011): In 2011 the City passed Ordinance C-11-34 that created the Bonus Incentive Retirement Program (BIRP). This initiative allowed GERS members who were eligible for early or normal retirement to receive 30 extra months of service in both benefit and eligibility credit if they retire between December 2011 and March 2012. Out of 468 eligible employees, 134 elected to participate. The reform intended to shift employees at the top of the pay scale out of the payroll, replacing vacant positions with new employees and lower salaries. The reform was expected to increase the unfunded liability of the pension plan in order to gain a larger savings in payroll, resulting in a net savings for the City budget. The increase in unfunded liability resulting from the Bonus Incentive is amortized over a separate schedule of five years.

City Issues Pension Obligation Bond (2012): In October 2012, the City issued a pension obligation bond to pay down the GERS unfunded liability. The bond totaled \$146.4 million, equal to 80 percent of its outstanding pension debt. The Board used the funds to write down all amortization payments as of 2011 by approximately 83 percent, except for those associated with the Bonus Incentive Program.

Assessment

In 2007, right before the financial crisis, GERS' unfunded liability costs were 11 percent of payroll and about half of the total contributions required. At the time, the investment and economic outlook was positive and unfunded liability was perceived as manageable. As such, the city's 2007 reform was not focused on the unfunded liability. Instead, it addressed ongoing costs to fund newly accruing benefits under GERS. In 2007, the employer normal cost for GERS was 12 percent of payroll, while national average was about 7 percent. What's more, the total normal cost for GERS – a proxy for the value of benefits accrued each year – was between 16 and 18 percent compared to a national average of 14 percent. To address this, the City introduced a new defined contribution plan in 2007 that required employer contributions of 9 percent and prohibited employee contributions. The new DC plan lowered the city's costs for benefits accruing to new hires compared to what it would have been under the DB.

The flipside to the employer's savings under the new DC, is that it drastically reduced employee benefits. Under the DB, 16 to 18 percent of payroll was deposited into the pension fund each year to pay for future benefits. Under the DC, only 9 percent is contributed. Ultimately, without an increase in wages, the lower benefits under the DC amount to a reduction in total

compensation. In the long run, if no compensating adjustments are made, the city will attract lower quality workers.

The Bonus Incentive Retirement Program introduced in 2011 increased the unfunded liability of GERS by \$18 million, an increase of approximately 11 percent. Actuarial analyses indicate that the plan's funded ratio in 2012 would have been 69 percent instead of 66 percent if the program had not passed. Yet, this cost to the pension fund was anticipated as a result of the Program. When taking into consideration the savings achieved in payroll from early retirement and the elimination of positions, the initiative resulted in a net savings of \$3.2 million annually, or 1 percent of annual revenue.

By 2012, the unfunded liability costs for GERS had grown to 19 percent of payroll. To address this growing cost, the city issued a POB for \$146.4 million, equal to 80 percent of its outstanding pension debt. While the issuance of a POB does not inherently change the *amount* of the obligation, it does change the *nature* of the obligation. The payment schedule for interest and principal on a pension obligation bonds is much less flexible than the amortization of unfunded liabilities. So, while a POB may provide short-term budgetary relief, it reduces overall fiscal flexibility. Additionally, the POB could cost the city money if the investment earnings on the bond proceeds do not exceed the interest rate on the bond.

Reforms

- 401(k) plan
- Reduce benefit obligations

Background

The San Diego City Employees' Retirement System (SDCERS) provides retirement benefits to City employees in lieu of Social Security coverage. The system predominantly offers benefits to the City's general employees, police and fire personnel, and elected officials, but also administers benefits to employees of the Unified Port District and County Regional Airport Authority. SDCERS acts as an independent administrative agent for the three defined benefit plans, yet the City plan represents over 90 percent of its membership and assets.

Since 2000, the funded ratio for SDCERS has dropped from 97 to 74 percent. And, required contributions have nearly tripled, amounting to \$264 million in 2015 – equal to approximately 9 percent of City revenue. The system's unfunded liability now stands at \$2 billion, with 80 percent of city's pension costs going towards paying off that amount. While the total contributions and unfunded liabilities for the city of San Diego are near the national average, the burden to the city's finances posed by pension benefit promises has driven the city to introduce a defined contribution plan for new non-police members.

Description of Reforms

In 2009, the City passed reforms reducing the pension benefits for all new members of SDCERS. The reform reduced the benefit multiplier slightly for both general employees and police. Soon after that, on June 5, 2012 the City of San Diego passed its "Comprehensive Pension Reform Initiative," more commonly known as Proposition B. Most notably, Proposition B shifted new non-police members of SDCERS to a defined contribution plan and limited – if only slightly – the pension benefits of new police officers. In addition, the proposition eliminated the City Charter provision that required a citizen vote to make changes to the retirement plan.

Reduce Pension Obligations (2009): The 2009 reforms reduced the benefit multiplier for new general employees and police. The benefit multiplier for general employees decreased from 2.5 to 1 percent per year of service at age 55, and 2.8 to 2.6 percent at age 65. The multiplier for police eliminated the additional 10 percent that was added to final compensation. In addition, the reforms lengthened the period used to determine final average salary for general employees, and reduced the maximum allowable benefit from 90 to 80 percent.

Defined Contribution Plan (2012): Prior to Proposition B, various classes of City employees participated in the SDCERS defined benefit plan, including general employees, police and fire personnel, and elected officials. One of the main reforms of Proposition B closed the defined benefit plan and initiated a mandatory 401(k)-style defined contribution plan for City employees (except police officers) hired on or after July 20, 2012. General employees and non-police safety

personnel are required to contribute 9.2 and 11 percent of payroll to the defined contribution plan, respectively. The City matches all contributions.

Reduce Pension Obligations (2012): Proposition B curtailed the pension benefits offered to current and new members. First, for all members, the proposition imposed a six-year freeze on inflation based salary increases between fiscal years 2012 and 2018, and it eliminated specialty and supplemental pay from pension calculations. These measures limited the compensation used to calculate pension benefits. Second, the proposition reduced the maximum pension benefit of new public safety workers from 90 to 80 percent of final salary.

City Bears Burden (2012): In 2007, SDCERS introduced a new funding plan. It shortened the period for amortizing the 2007 UAAL from 26 to 20 years. Going forward, new unfunded liabilities arising each year would be amortized separately. Unfunded liabilities arising from actuarial gains and losses would be amortized over 15 years while those arising from changes to actuarial assumptions and methods would be amortized over 30 years. To avoid the negative amortization, the 2007 funding plan required a minimum contribution equal to the normal cost plus full interest on the UAAL. With the passage of Proposition B in 2012, the annual unfunded liabilities attributed to non-police were collapsed into a single UAAL and amortized over a closed 15 year period. And, the funding method was changed from a level-percent-of-pay to level-dollar method. For the unfunded liability associated with police officers, no changes were made from the 2007 plan.

Assessment

SDCERS is a system of two separate plans: one for general employees (including elected officials) and another for public safety – the majority of which are police officers. The city’s overall pension costs for SDCERS are split relatively evenly between the two plans. And for each plan, nearly 80 percent of the city’s costs are to amortize the unfunded liability – underfunded benefits already earned by workers and retirees.

Leading up to the first round of reforms in 2009, benefits provided under both the general employee and public safety plans were much greater than the national average. Total normal costs – a good measure for comparisons of benefit generosity across plans – for the general employees and public safety plans was about 21 and 32 percent, respectively, in 2007. By comparison, the national average at the time, was about 14 percent. Yet, due to the strong protections for public employee benefits in the state of California, not much can be done to reduce benefits accruing to current employees and retirees. Increasing employee contributions – the most common method to defray employer costs – is less viable for SDCERS because both general and public safety employee contribution rates are set by city ordinance to be half of the normal cost – the expected costs of benefits. This proportion of normal cost is about the same as the national average and is intuitively fair. With few options to limit costs related to current employees, the city’s pension reforms in 2009, and Proposition B in 2012 focused on reducing benefits for new hires. This approach, although reasonable in light of the greater than average benefits promised to workers, makes little impact on the employer costs over the next 20 to 30 years.

Interestingly, while both plans within SDCERS place roughly equal pressure on the City's finances, the reforms have been more severe for the general employee plan. In 2009, the cuts to the benefit multipliers for newly hired general employees were much more severe than those made to public safety benefits. The inequality in reforms continued in 2012 when newly hired general employees were shifted to a defined contribution plan while newly hired police had minor limitations imposed on the pensionable earnings and maximum replacement rate. Given the similar fiscal pressures put on the City by general employee and public safety plans, the difference in reform is hard to understand on purely financial terms.

While the benefit reforms did not directly reduce the unfunded liability, Proposition B did increase the City's commitment to paying it off. For the general employees and non-police public safety, the City shortened the period for paying down the unfunded liability and switched to a level dollar method that will ensure the UAAL decreases each year (if assumptions are met). For the police plan, the amortization period was also shortened and a provision put in place to ensure that contributions are enough to limit the growth in the UAAL.

Legal Obstacles: At present, Proposition B faces ongoing bureaucratic and legal obstacles. California's Public Relations Employment Board (PERB), a State agency overseeing the SDCERS governing statute, claims that the City violated State law by failing to bargain with City labor organizations before placing Proposition B on the ballot. The City contends that Proposition B passed as a citizens' initiative, a process by which citizens propose ballot measures directly after collecting a sufficient number of signatures. However PERB asserts that the Mayor acted as an agent of the City in supporting and advocating for the passage of the initiative, thereby violating State labor laws. Ongoing litigation has ensued.

In 2015, PERB ordered the City to restore its traditional pension structure and to retroactively create pensions for new employees hired since 2012. In addition, PERB ruled that the City is responsible for paying a 7 percent interest penalty and the sum of all legal fees. In January 2016 the City appealed this decision, and the ruling is pending a hearing with the Fourth District Court of Appeals. Depending on the outcome, Proposition B may end up costing the City more than if it had continued to administer its 2012 defined benefit plan.

Baltimore, Maryland

Reforms

- Increase employee contributions
- Reduce benefit obligations
- Hybrid plan

Background

The City of Baltimore administers three pension plans for its employees: The Employees' Retirement System, the Elected Officials' Retirement System, and the Fire and Police Employees' Retirement System. Teachers employed by the City of Baltimore participate in a State administered plan, which up until 2013 did not require City contributions. Of the three City-administered plans, virtually all employees participate in the general and police and fire plans.

In the early 2000's, the three City administered plans were fully funded and in surplus. Despite consistent City payments, the system's funded ratio dropped to 80 percent by 2010. The unfunded liability grew to \$941 million, which, although representing 55 percent of City revenue, still ranked below the national average. However, its required contributions grew from 1.5 percent of revenue in 2001 to 8.4 in 2010 (about the national average). In response, the City began a series of pension reforms in 2010, starting with the Police and Fire System, its most expensive plan, in an effort to reduce overall system costs.

Description of Reforms

A. Fire and Police Employees' Retirement System

In 2010 the Fire and Police Employees' Retirement System was 83 percent funded. The City's annual required contribution to the plan had grown to 31 percent of payroll, 56 percent of which was dedicated to normal costs. In June 2010 the City passed Ordinance 10-306, which was shortly followed by Ordinance 10-357 in August 2010 to clarify the changes that were made to the Fire and Police Employees' Retirement System. These bills increased employee contributions and reduced benefit obligations, among other reforms. The reforms also increased the assumed rate of return to 8 percent (from a liability-weighted assumed return of about 7.4 percent).

Several reforms affected all participants:

Increased Employee Contributions (2010): Before the passage of Ordinance 10-306/357, members contributed 6 percent of payroll to the pension plan, while the City contributed almost three times that amount to cover accruing benefits (the normal costs). Generally, in most plans, employees are responsible for half of the normal cost. Therefore, effective July 1, 2010, all current and new employees increase contributions by 1 percentage point each year, until reaching

10 percent of payroll in fiscal year 2014. Although 10 percent of payroll is slightly higher than the national average for the employee contribution rate (about 7.5 percent of payroll), it still falls far below the national average when presented as a proportion of the total normal cost.

Reduced Benefit Obligations for Current Members (2010): While employees were required to pay increased contributions, the City passed reforms to reduce the generosity of benefits. Prior to the 2010 reforms, the Fire and Police plan offered a variable benefit to its participants that increased benefits to retirees when the fund's investment returns exceeded a rate of return of 7.5 percent. This variable benefit, once compounded over time, amounted to an average annual increase in benefits of 3 percent. The variable benefit was eliminated and replaced with a tiered COLA, which provided a 2 percent increase for retirees aged 65 or older and a 1 percent increase for retirees age 55 to 65, while those under age 55 received no increase.

Reduced Benefit Obligations for New Hires and Non-vested (2010): The 2010 reforms changed normal retirement eligibility from age 50 or 20 years of service, to age 55 and 15 years of service, or 25 years of service. The City also lengthened the period of time used to determine final average salary from 18 to 36 months.

B. Employees' Retirement System

Although the 2010 reforms curtailed the employer cost of fire and police benefits, the City's total pension costs to its three plans – in addition to new required contributions to the State teacher's plan – grew to 12 percent of revenue by 2013. In addition, as the 2010 reforms reduced the unfunded liability of the police and fire plan only slightly, the City's overall unfunded liability continued to grow dramatically. In 2013 the City turned to its Employees' Retirement System (ERS), at only 68 percent funded, to identify areas necessary for reform.

Prior to 2013, the Employees' Retirement System (ERS) was divided into two plans: Class A and Class C. The Class A plan is a contributory option for employees hired prior to 1979 that do not choose to transfer to Class C. The Class A plan was closed to new members in 1979. The Class C plan is a non-contributory option for employees hired after 1979, or Class A transfers. Virtually all ERS employees participate in Class C. In 2013 the mayor and City Council enacted Ordinance 13-144, which required contributions for current Class C employees and reduced benefit obligations to current employees. In 2014, after a year of negotiations with its unions, the City passed Ordinance 14-216 which closed the ERS Class C plan to new hires, and enrolled new employees in a defined contribution or hybrid plan.

Increase Employee Contributions (2013): Prior to 2013, Class C employees did not contribute to the pension fund, while City contributions grew to 20 percent of payroll, half of which was dedicated to the normal costs. Ordinance 13-144 required current employees to start contributing 1 percent of payroll to the fund in 2013, growing at 1 percent increments annually until reaching 5 percent in 2018.

Reduce Benefit Obligations (2013): Before the passage of Ordinance 13-144, ERS employees received a variable benefit increase in addition to the 1.5 percent increase for retirees under age 65 and 2 percent increase for retirees over age 65. The variable benefit increased retiree benefits

when the fund's investment returns exceeded the assumed rate of return of 6.55 percent. The variable increases were eliminated as of June 30, 2013.

New Hybrid/Defined Contribution Plan for New Hires (2014): In 2014, t introduced the new Retirement Savings Plan (RSP), which provides a hybrid and non-hybrid option to new employees. The RSP-Hybrid option combines a 401(k)-style defined contribution plan with the new ERS Class D pension plan, while the RSP-Non Hybrid option is a pure defined contribution plan. Those who do not make a choice between the two plans within the 150 day enrollment period will default into the hybrid option.

Under the RSP-Hybrid, the DB benefit multiplier was reduced to 1 percent compared to a benefit multiplier for Class C members of 1.6 percent for the first 30 years of service, and 1.85 percent for every additional year. New employees contributes 5 percent to the DB portion of the RSP-Hybrid, which covers the total normal cost of the decreased benefit. Employers contribute an additional 3 percent to the 401(k) portion of the RSP-Hybrid. For the RSP-Non Hybrid, the employer pays 4 percent and the employee 5 percent.

Assessment

A. Fire and Police Employees' Retirement System

The 2010 reforms to the Fire and Police Plan increased employee contributions resulting in a more equitable distribution of benefit cost between employees and employer, and freeing up a larger portion of employer contributions to meet the growing UAAL costs. But, this shift may not be costless. Any increase in the employee contribution rate without a commensurate increase in benefits or wages is a decrease in the total compensation to the employee. If the total compensation package was competitive prior to reforms, it is less competitive now. Additionally, while reforms redistributed the costs of the system, they did not do much in the way of addressing the unfunded liability of the plan, which grew from 30 to 43 percent of payroll between 2010 and 2013.

Legal Obstacles: In 2010, the police and fire unions sued the City alleging that these reforms were unconstitutional. In 2012, the U.S. District Court of Maryland agreed with the unions and declared that the elimination of the variable benefit impaired members' contract rights without a reasonable or necessary public purpose. Yet in 2014 the U.S. Court of Appeals overturned the 2012 court decision, and ruled that the reforms were permissible under Maryland State law.

B. Employees' Retirement System

The 2013 reform increased the employees' contribution rate from 0 to 5 percent. From the employer-cost standpoint, the contribution increase shifts most of the normal cost contribution to employees, freeing up a greater portion of employer contributions to be directed towards paying down the growing UAAL. And, given that the average employee contribution rate for state and local pension plans in the US is about 7.5 percent of payroll, a 5-percent contribution rate is not unreasonable. However, the bottom line is that the savings for the employer come from shifting

more of the costs to employees without raising their wages to help them pay for the additional costs, thus lowering the net-benefit to members.

Prior to the reform, ERS members received from their employer – in addition to wages – 7 percent of payroll in retirement benefits. Following the reform, employees receive from their employer – in addition to wages - only 2 percent of payroll. The 2-percent employer normal cost contribution falls far below the national average of about 7 percent. Unless wages were increased to offset the lower contributions provided by the employer, the total compensation package for members of ERS is less competitive than it was prior. Whether or not this is problematic for recruiting and retaining employees, depends on if total compensation for public employees was much greater than the private sector prior to the reform.

For new hires, an increase in the employee contribution rate was coupled with a shift to hybrid or DC plan. The hybrid 2014 RSP plan reduced DB pension benefits for new hires by about 40 percent. And, the contributions to the DC plans are not likely to make up for the difference. Under the new RSP plan, assuming that returns equal the assumed return, new hires receive from their employer – in addition to wages – 3 and 4 percent of payroll from the RSP-Hybrid and RSP-Non Hybrid respectively. Again, this compares poorly with the 7- percent national average. And, under the new RSP plans, employees are facing much more risk. Before, if the 7 percent payment was not enough to pay for the expected benefit level the employer would pay more. Under the Hybrid or DC structure the responsibility for making up investment losses are the employees’.