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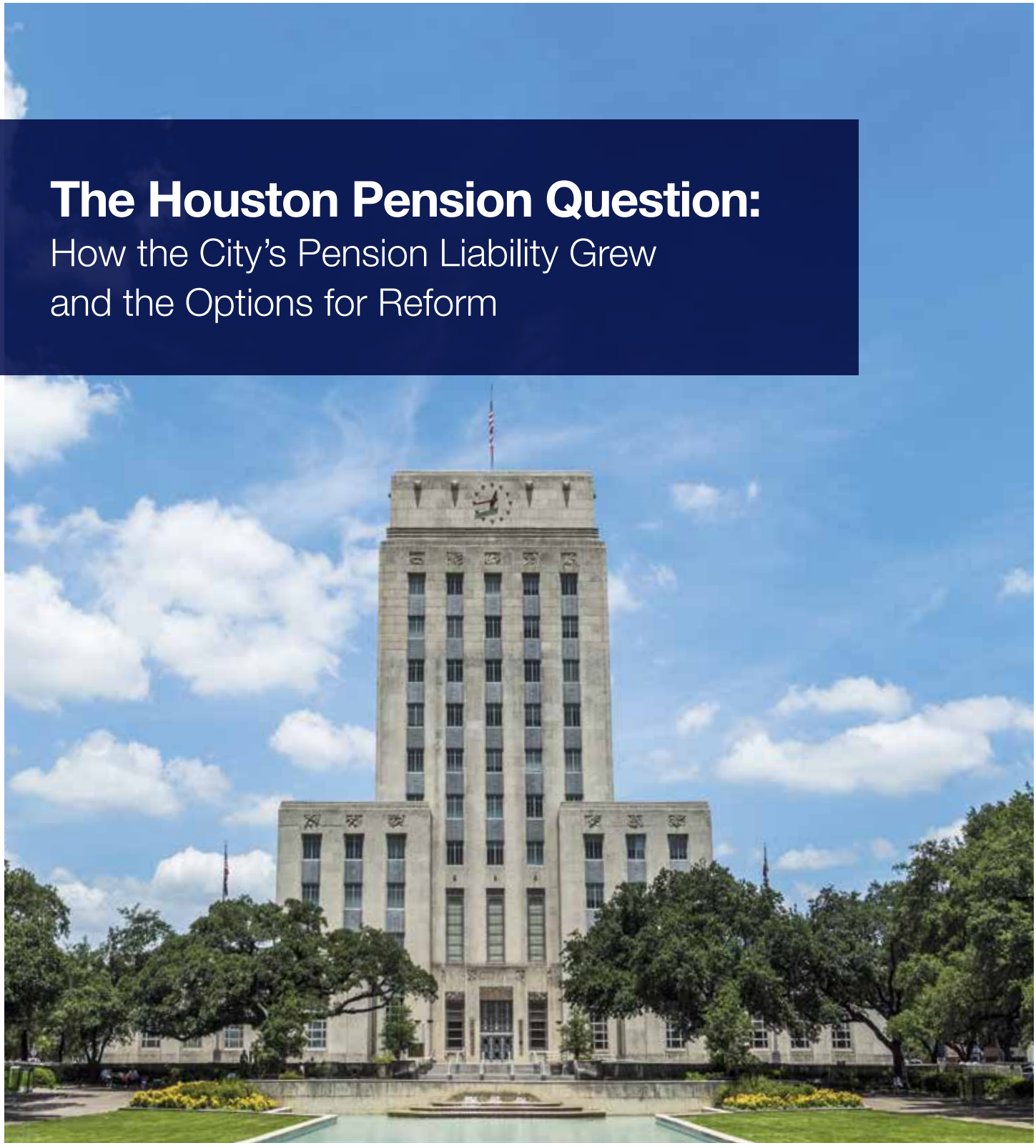
Building Better Cities

The Houston Pension Question:

How the City's Pension Liability Grew and the Options for Reform



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Executive Summary

Houston today faces an increasing unfunded liability for its employee pensions that totals at least $3.9 billion, as of 2015, up from $212 million in 1992. If no action is taken, that unfunded liability (officially known as the unfunded actuarial accrual liability, or UAAL) is expected to continue growing. However, the city has some options—however painful—that can reduce the unfunded liability and restrain its future growth.

Background

As public discussion about Houston's pension issues grows, this report is designed to provide the public and policymakers with basic information about the city's pension systems and potential reform options. In this report, we seek to provide an overview of the current financial state of Houston's pensions; explain why the city's unfunded liabilities are growing; put Houston's pension situation in a national context; and provide insights on potential options for reform. We neither assign blame for the current situation nor make recommendations about specific steps to take.

Methodology

This study is based largely on an analysis the Kinder Institute commissioned from the Center for Retirement Research at Boston College, widely considered one of the country's most respected experts on public pensions. The Center's findings are based on an analysis of financial data about the pension plans from 1992 to 2014 because 1992 is the first year for which complete data is available on all three of Houston's plans. This report also draws on data from the Center's Public Plans Database, a database of information for 109 large state-run and 128 large locally-run pension systems around the country. In addition, this report draws upon a background paper prepared by John Diamond, the Edward A. and Hermena Hancock Kelly Fellow in Public Finance at the Baker Institute for Public Policy at Rice University. (Both underlying reports are available separately as appendices to this report.)

Summary

- Houston faces a pension challenge. Costs as a percentage of the city's revenue have doubled since the turn of the century and are likely to continue to increase if no action is taken.
- The city currently contributes approximately $350 million per year to the three pension funds combined, but this is not enough to stop the growth in unfunded liability.
- All three of Houston's pension systems are underfunded, with the Houston Municipal Employees Pension System (HMEPS) being the most severely underfunded.
- Underfunding has arisen from a variety of sources, including (1) annual payments that do not ensure full funding and (2) assumed rates of investment returns that are higher than the national average and higher than recent experience.
- Each of the three city plans will require a separate set of solutions because of the source of their costs. The greatest costs of the municipal workers plan are mainly to make up for the underfunding of previous promises (unfunded actuarial accrued liability, or UAAL), while the greatest cost of the police and firefighters plans are driven by year-to-year promises (normal cost).
- If Houston assumes a lower rate of return on investments going forward and chooses a fixed date by which its pension systems must be fully funded, as other cities have done, the city's required annual pension payment will increase significantly for the next 20–30 years.
- The reform experience of other cities suggests that, in order to pay down the unfunded liability and prevent that liability from growing, the city and the pension boards will have to find ways to substantially increase payments to the pension systems and also restrain future growth in the unfunded liability.
- The ideas contained in this document represent reforms that are likely to be painful but helpful. Raising the revenue cap would increase property taxes up to previous levels but has the potential to raise $40 million to $60 million per year or more if the economy picks up and property values rise. Increasing HMEPS employee contributions could generate $30 million per year at first, rising to $100 million per year over time, but would reduce workers' take-home pay. Reducing the COLA to 1 percent could save close to $100 million per year by some estimates at first but would put retirees at risk of falling behind inflation. Changes to the DROP program and the introduction of a defined contribution system would likely result in smaller savings but could be part of an overall solution.
- All of these options would generate different amounts of funding in different time frames. None would likely solve the problem alone.

Introduction to the Municipal Pension Issue

Like most major cities, Houston today faces an increasing unfunded liability for its employee pensions. Estimates of this unfunded liability vary depending on the accounting techniques used, but our estimate is that the figure was at least $3.9 billion as of 2015, up from $212 million in 1992. This liability represents approximately 76 percent of the city's current total annual revenue, including both the general fund and enterprise funds.

If no action is taken, that unfunded liability is expected to continue growing. In 2015, the city paid approximately $350 million into the city's three pension funds—and even that was not enough to keep the unfunded liability from growing.

Though Houston's unfunded pension liability has been growing rapidly, the city's situation is not unusual. Over the last decade, most major public pension systems in the United States have faced both increasing costs and increasing unfunded liabilities.

As awareness of Houston's unfunded pension liabilities has increased, the pension question has emerged as one of the most important and widely discussed political issues in Houston. The issue was at the center of last year's mayoral campaign. New Mayor Sylvester Turner has made pension reform a high priority. In his first State of the City address in April 2016 he said, "The increasing costs to the City simply cannot be sustained. If we do not reach an agreement this year, come Fiscal Year 2018, City services will be adversely affected, hundreds of employees will be laid off and our credit rating will likely suffer."

The public debate over municipal pensions in Houston has often been heated and contentious. This report aims to provide basic information and context to this debate. Part of the Kinder Institute's mission is to serve as a neutral party that can provide information to inform the public debate on major issues and assist elected and appointed leaders in making decisions.

This report is intended to serve as a broad overview of Houston's three pension systems, detailing their current financial status and how they arrived there. This report also offers insight into potential solutions to the city's pension challenges. We do not assign blame for the current pension situation to any single player, nor do we provide a specific set of recommendations for pension reform. This report does not address the question of the city's financial liability for retiree health and medical care.

Specifically, this report is designed to contribute to the ongoing discussion of the future of Houston's pensions by:

- Clarifying the specific nature of the challenges affecting each of Houston's three pension systems.
- Putting Houston's pensions in greater budgetary context.
- Comparing and contrasting the position of Houston's pensions to those of other large U.S. cities.
- Identifying potential options for reform and explaining the advantages and disadvantages of each of those approaches.
- Highlighting the experience of several large U.S. cities that have pursued strategies to address their pension systems' liabilities.

This report is based primarily on two underlying reports commissioned by the Kinder Institute on Houston's pensions: one from the Boston College Center for Retirement Research and one from John Diamond, the Edward A. and Hermena Hancock Kelly Fellow in Public Finance at the Baker Institute for Public Policy at Rice University. (These two reports are available separately as appendices to this report.)

This report is not intended to be a comprehensive analysis of all aspects of Houston's pension situation. Many other reports and documents have been prepared over the last few years that have sought to provide insight into the situation. In many cases, these reports go into more detail, especially regarding demographic actuarial assumptions. The pension plans themselves regularly conduct "experience studies" that make and explain actuarial assumptions, based in part on past experience and future projections. In 2014, Retirement Horizons Incorporated published a report commissioned by the City of Houston which estimated cost-savings associated with possible changes to each of the three pension plans. In 2015, the Laura and John Arnold Foundation published a report that proposed strategies for reforms, with a focus on paying down pension debt and increasing transparency.

With this report, the Kinder Institute hopes to foster more fruitful discussion about Houston pensions that may ultimately lead to a better long-term financial position for the city.

What is a "Defined Benefit" Pension?

Generally, employees of city governments, including Houston, receive multiple forms of compensation: income; benefits such as health care, vacation and sick days; and—most relevant to this discussion—post-retirement benefits, including a guaranteed pension.

Public sector employees' post-retirement benefits are usually categorized as **defined benefit plans** because the benefit level employees receive is "defined" by a formula based on the employee's salary and years of government service, regardless of the government's future financial situation or the performance of investments associated with that pension.

Defined benefit plans have largely been seen as a way of attracting and retaining workers who will have long careers with a single employer, given that benefits are backloaded. In defined benefit plans, employers, rather than employees, assume the risk associated with the benefit. Thus, employers may be forced to provide additional funding to plug gaps if insufficient funding is available for retirees as a result of poor investment returns or other factors.

By contrast, most retirement plans available to private-sector employees are **defined contribution plans**, in which the *contributions* to retirement accounts are defined, but a specific guaranteed future *benefit* is not. The risk associated with insufficient funds at retirement falls on the employee, not the employer. These plans are generally more portable and thus may be more attractive to those employees who only intend to work for a particular employer for a short period.

While defined benefit plans were once common in the private sector, since the mid-1970s, private employers have increasingly favored defined contribution plans. Today,

401(k) plans are the most common type of retirement plan offered within the private sector. However, most public sector employees are still covered by defined benefit plans.

How Municipal Pensions Are Funded

The benefits promised to municipal employees through defined benefit plans are funded by several sources. These include:

1. Contributions from both employers and employees to an investment fund established for the benefit of retirees.
2. Investment returns from such a fund.
3. Additional contributions from employers and employees that may be necessary to cover any shortfall in funds.

Measures of Financial Health for a Defined Benefit Pension Plan

The financial health of a defined benefit pension system is usually assessed by comparing existing assets to the money needed today to fully pay for future benefits already promised for past service.

The money needed today to pay for all past service benefits is called the **actuarially accrued liability** (AAL).

The pension plan's assets are called the **actuarial value of assets** (AVA).

The two common methods of comparison are the **funded ratio** and **unfunded liability** (technically, the unfunded actuarially accrued liability, or UAAL). The unfunded liability is the dollar difference between the assets and the liabilities (the AAL and AVA), while the funded ratio is the ratio of liabilities to the assets (the AVA over the AAL). For example, if a pension system has liability of $1 billion and assets of $800 million, its **funded ratio** will be 80 percent and its **unfunded liability** will be $200 million.

While the unfunded liability provides an absolute measure of the shortfall, the funded ratio—because it is a ratio or percentage—is a useful way to compare the fiscal health of different plans, regardless of their size.

The AAL—the money needed today to pay for past service benefits—used by public pension plans is not a hard and fast number. It involves making several assumptions.

First, in order to estimate the future benefits that must be paid by the pension fund, plans use **actuarial assumptions** regarding how long employees will work for the city, how much their salaries will grow, when they will retire, and when they will die.

Then, to estimate the amount of money needed today to pay for those promised future benefits—the AAL—plans must also assume an **investment return**. The higher the assumed investment return, the less money that is needed today to pay for future promised benefits—i.e. the lower the liability (AAL).

This is one of the reasons why there has been so much debate in Houston about the true size of the liability of the pension systems—it depends on the assumptions. If the assumed rate of return is unrealistically high, this has the effect of making the liability appear lower. (Obviously the reverse is also true: A lower assumed rate of return could result in a liability that appears larger.) In Houston, each of the three plans assumes a rate of return of 8 percent to 8.5 percent. The national average for municipal pensions systems is somewhat lower at 7.6 percent.

The AVA also includes some actuarial adjustments. To calculate the AVA, public pension plans actuarially "smooth" current market assets by spreading the impact of short-term market volatility over several years. At any given moment, the resulting AVA will differ from the current market assets in the fund. However, the smoothed assets should track the market assets relatively closely over three- to five-year periods.

Up until 2015, public pension plans used the AVA and AAL methods described above when reporting the unfunded liability and the funded ratio. However, a recent rule change from the Government Accounting Standards Board (GASB 68) requires state and local governments to make some changes to pension reporting.

First, plans must report their assets based on the current market value rather than actuarially smoothed values.

Second, in calculating the liability, plans must use a discount rate that is a blend of the plan's own assumed investment return and, if the plan is projected to run out of money, the interest rate on a high-grade municipal bond.

The changes mean that reported assets are subject to short-term volatility, and liabilities may rise if they are calculated using a blended rate that combines the assumed return on assets and the lower interest rate on municipal bonds.

This new GASB 68 accounting change is the main reason why, in its 2015 Comprehensive Annual Financial Report, the City of Houston Controller's Office valued the city's total unfunded pension liability at $5.6 billion rather than the $3.9 billion found in the plans' actuarial reports.

Today, many plans carry two sets of numbers on their books. For purposes of funding, they use actuarially smoothed assets and their liability calculated using the assumed investment return. For reporting in financial statements, they use GASB 68 standards that require market assets and a liability calculated using a potentially lower discount rate. In this report, we have generally chosen to use numbers based on the pre-GASB 68 methods.

The Houston Pension Situation

Overview of Houston Pension Systems

Houston, the fourth-largest city in the country, has a population of 2.2 million. The municipal government has revenue of approximately $5.1 billion annually (with a general fund of $2.5 billion).[1] It administers its own defined benefit pension plans to employees, the overwhelming majority of whom are members of one of the city's three different pension programs. Altogether, the three pension systems have approximately 43,000 members.

The city's three retirement plans are:

- The Houston Police Officers' Pension System (HPOPS);
- The Houston Firefighters' Relief and Retirement Fund (HFRRF); and
- The Houston Municipal Employees Pension System (HMEPS), which covers the vast majority of city employees.

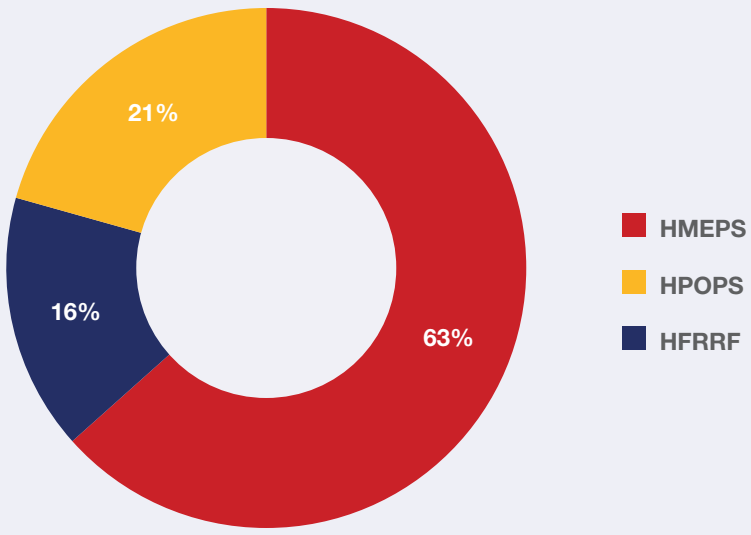
A separate board runs each system. In the case of each system, a majority of the board is made up of current or retired members of that system.

In all three systems, employees may qualify for a defined benefit pension based on a formula that takes into account the employee's salary at the end of his career, as well as his years of service with the city. Thus, as employees age, they gain more years of service and larger salaries, increasing the value of their pension, which is paid annually after retirement.

1 Census (2014); and Census (2013).

FIGURE 1:

Percent of Membership by Retirement System, 2014



Source: CRR calculations based on actuarial (AVs) and financial (CAFRs) reports for HMEPS, HPOPS, and HFRRF.

In simplest terms, a defined benefit pension is often determined by multiplying the number of years worked times a percentage of the employee's highest salary (sometimes the highest year, sometimes the average of the highest three or five years). For example, an employee's pension might be calculated as 30 years times 2 percent of his highest salary, or approximately 60 percent of his highest salary.

Formulas for Houston pensions are more complicated because, as with many other pension systems, past reforms have created different tiers of workers and different tiers of benefits. For the municipal workers system, the largest of the three, there are different rules depending on when workers were hired. New members hired after 2008 are eligible for normal retirement at age 62 and five years of service with the city, and they're eligible for early retirement at age 55 with 10 years of service. Although the rules are complicated, generally speaking Houston municipal employees receive between 1.8 percent and 2.5 percent of their salary for each year of service. Police are also eligible for normal retirement at age 55 with 10 years of service. Police officers are divided into tiers depending on when they were hired, but generally speaking, police officers receive a pension based on a multiplier of 2.25 percent and a cap of 80 percent of final salary. Firefighters are also eligible for retirement after 20 years of service. They receive 50 percent of final average salary plus an additional 3 percent for every year past 20 years of service. Like police, benefits are capped at 80 percent of final salary. More detail is contained in Appendix A.

In addition, most Houston employees also receive a regular Cost Of Living Adjustment (COLA) after retirement, and many employees also have the option of leaving the regular retirement system at some point and entering the Deferred Retirement Option Program, or DROP. In the DROP program, employees have additional pension benefits deposited into an account while they continue working but accrue no more service credit in the retirement system. Both COLA and DROP are common plan features nationwide. However, in Houston the actual COLA increase is guaranteed (at 2 to 3 percent for some employees and tied to the Consumer Price Index for others). Though DROP is closed to most new employees, those who participate receive an assured rate of return that fluctuates depending on investment returns.

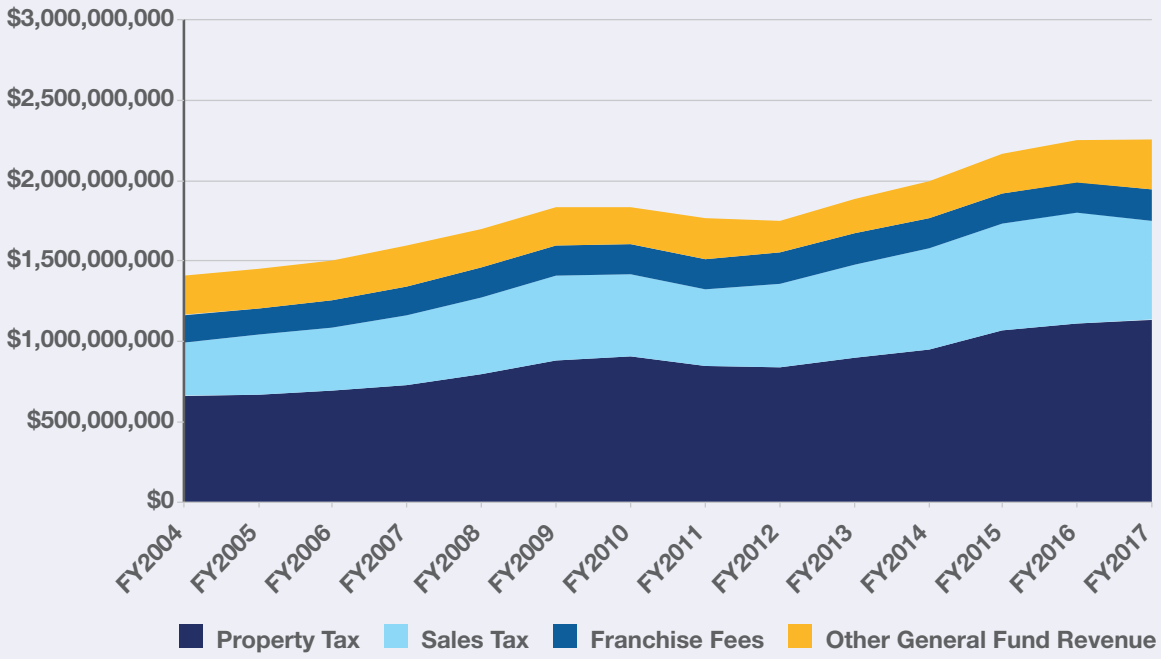
City employees are typically vested in the system and therefore eligible for defined benefit pensions after five years of service.

In general, the City of Houston's employee benefits are generous but not out of line compared to national norms. Most pension systems used a 1.75 percent to 2.5 percent multiplier. A five-year vesting requirement is common nationally. Approximately 40 percent of local systems nationwide provide a guaranteed COLA, while 26 percent tie COLA to the CPI and the remainder either provide no COLA or determine the COLA yearly. Houston employees eligible to do so appear to use the DROP program more frequently than employees in other cities.

The process for changing the plans—and possible reforms to the pension system—is different for the different systems. Amendments to the police and municipal workers' plans can be made (and have been made) via "meet and confer" agreements between the pension systems and the city—essentially, a negotiation between the two parties. However,

FIGURE 2:

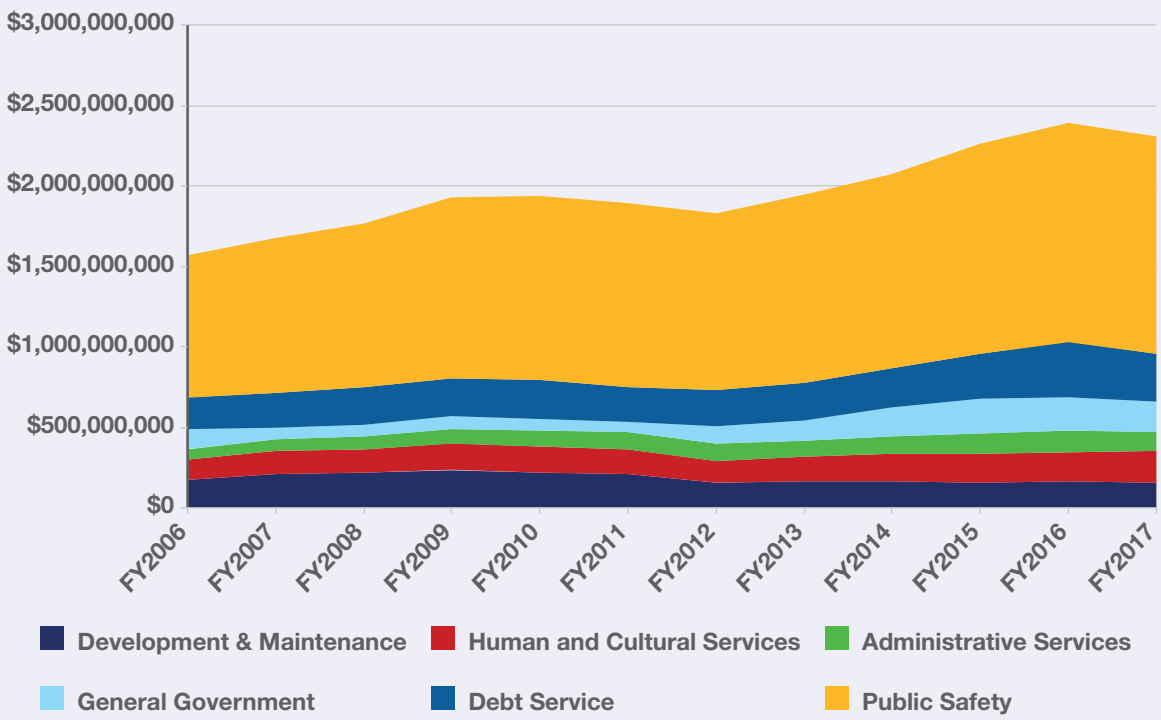
General Fund Revenue, City of Houston, 2004–2017



Source: City of Houston Operating Budgets, FY2004–FY2017, http://www.houstontx.gov/budget/

FIGURE 3:

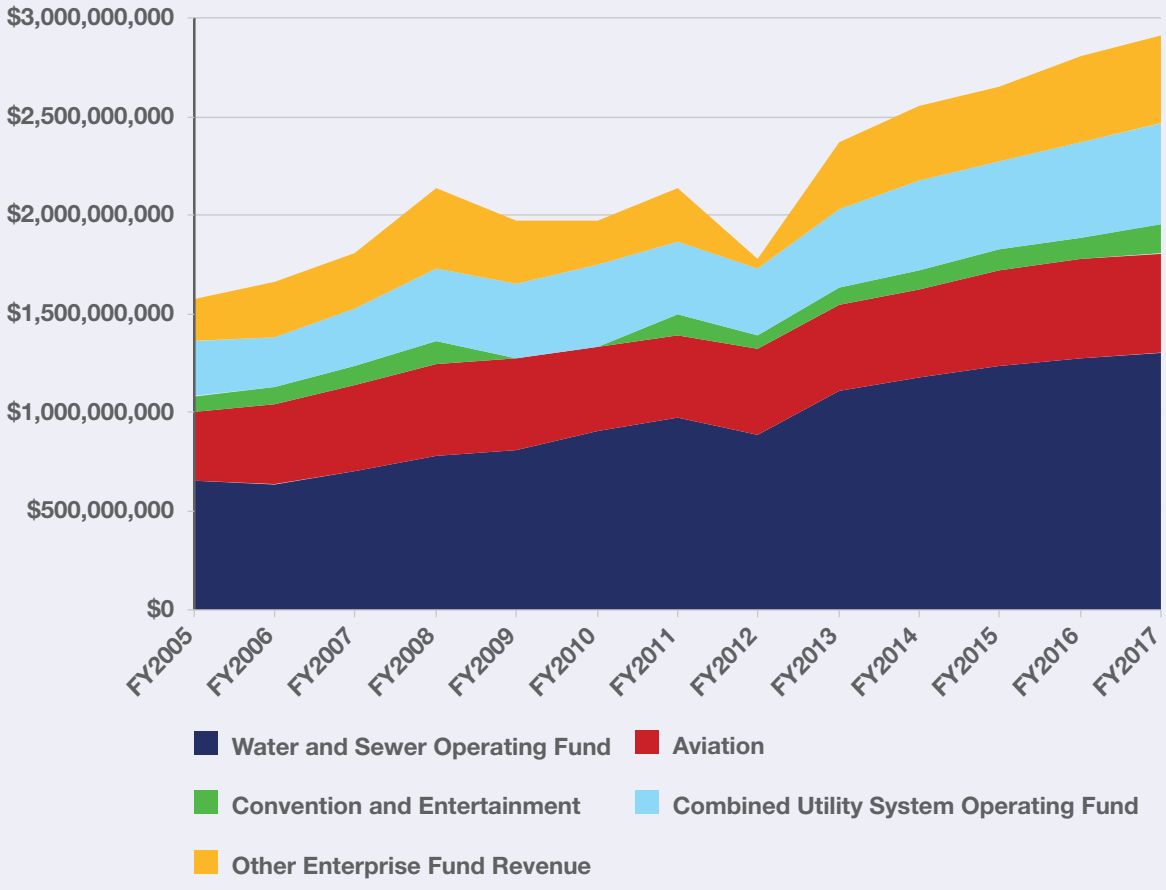
City of Houston General Fund Expenditures, 2006–2017



Source: City of Houston Operating Budgets, FY2004–FY2017, http://www.houstontx.gov/budget/

FIGURE 4:

Enterprise Fund Revenue, City of Houston, 2005–2017



Note: data is missing for convention revenue in FY2009 and FY2010, and for "other" in FY2012.

amendments to the firefighters' plan require state statute in order to take effect. State control of the firefighters' pension has been a contentious issue in Houston, and attempts by the city to regain control have been unsuccessful.

Houston's Budget Picture

In FY 2015, the City of Houston had general fund revenues (funds available for any purpose) of approximately $2.5 billion and enterprise fund revenues (funds restricted for specific purposes) of approximately $2.6 billion. Since that time, enterprise fund revenues have continued to grow significantly, but the general fund has leveled off. General fund revenues took a significant hit in FY 2011 and 2012, then grew steadily until FY 2016.

Property tax revenues account for slightly more than $1 billion in general fund revenues, while sales tax revenues account for more than $600 million. The next-biggest source of general fund revenue is franchise fees.

Property tax revenues are now stagnant, in part because the city's revenue cap has become an important factor. In 2004, city voters approved a proposal to limit future property tax revenue increases to the combined rates of inflation and population growth, or 4.5 percent, whichever is lower. If revenue exceeds the cap, the city must reduce the property tax rate until the cap is met, though a 2006 amendment to the cap permits an additional $90 million for public safety. For both FY 2016 and 2017, the city had to reduce the property tax rate from approximately 63 cents per $100 of assessed value to approximately 60 cents, which is costing the city between $40 million and $60 million per year.

At the same time, sales tax growth has also stagnated because of Houston's slowing economy.

The city expends approximately 54 percent of the general fund on public safety—about $1.4 billion per year. HPOPS and HFRRF members fall under this budget. The next-largest general fund expenditure is debt service, at approximately $300 million per year. Together, public safety and debt service expenditures approximately equal property and sales tax revenue combined.

The vast majority of the city's $2.6 billion in enterprise funds is raised from and spent on public works, utilities and stormwater protection. Many HMEPS members work for enterprise departments and therefore enterprise funds absorb some pension expenses.

Houston's Unfunded Liabilities

As we noted above, in its 2015 Comprehensive Annual Financial Report, the Houston City Controller's Office estimated Houston's unfunded liabilities at $5.6 billion under the new GASB 68 standards, which require using the current market value of assets and liabilities using a blended rate.

For the sake of consistency, however, this research report continues to focus on the pre-GASB 68 standard, which uses actuarially smoothed assets and liabilities calculated using the assumed return on assets only. We use old standards because they allow us to track the change in unfunded liability over a very long period of time and because they are the basis for calculating the **Annual Required Contribution**, which informs the city's contribution to the pension systems.

FIGURE 5:

City of Houston, Unfunded Pension Liability, 1992–2015

Source: Actuarial and financial reports for HMEPS, HPOPS, and HFRRF.

By that measure, the city's combined unfunded pension liability totaled **$3.9 billion** as of 2015 up from **$212 million** in 1992 (approximately $358 million in 2016 dollars). Thus, even accounting for inflation and using the pre-GASB 68 method, the unfunded liability of the city's three pension systems grew by more than 1,000 percent over a 21-year period. Much of the growth occurred in the early 2000s, but it has accelerated again in the last few years.

Funded Ratio

As we explained previously, the funded ratio is the asset value held by the pension system divided by the total liability of the pension system. The three pension systems have different funded ratios though none of them are fully funded. As of 2015:

- The fire pension system was funded at 92 percent (latest data as of 2013).
- The police pension system was funded at 81 percent.
- The municipal pension system, to which most city employees belong, was funded at 54 percent.

Figure 6 shows the funded ratio of the three plans compared to the national average for large state and local plans since 1992. Since the financial crisis, the police and firefighters pension systems have been funded above the national average, while the municipal employees' pension system has consistently lagged behind.

The Boston College Center for Retirement Research in conjunction with the Center for State and Local Government Excellence maintains a database of state and local public pension plans. Its analysis of large state and local plans found an average funded ratio of 74 percent as of 2014.

Our analysis was conducted by the Center for Retirement Research (CRR) using more than 20 years (1992–2015) of actuarial variations provided to us by the three Houston pension plans. When making comparisons to other cities and/or plans, we stop at 2014 because that is the last year of complete data on other cities and plans that is maintained by the CRR.

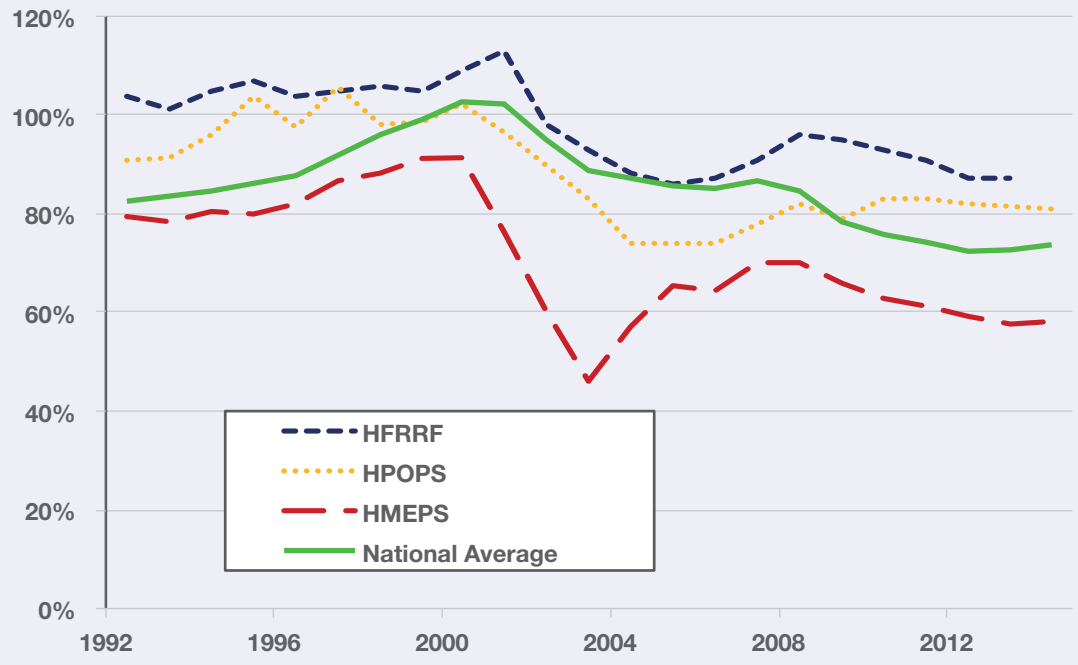
Annual Required Contribution

As stated previously, the Annual Required Contribution, or ARC, is the amount of money that the employer should pay into the pension system each year to meet the "employer normal cost" (the funds needed to meet the current year's obligations) and to pay down the unfunded liability, or UAAL, based on an amortization schedule. ARC payments are necessary to maintain or return a pension plan to a fully funded state.

In Houston, the UAAL has been growing in large part because the city has both underestimated the necessary ARC, and in the case of two of the three pension systems, underpaid the ARC. In 2015, the city paid approximately $350 million toward the ARC, though full funding of the ARC would have required a payment of approximately $400 million. Because of the way the ARC has been calculated in recent years, even $400 million would not stop the unfunded liability from growing.

FIGURE 6:

Funded Ratio of HMEPS, HPOPS, and HFRRF Compared to the National Average, 1990–2014

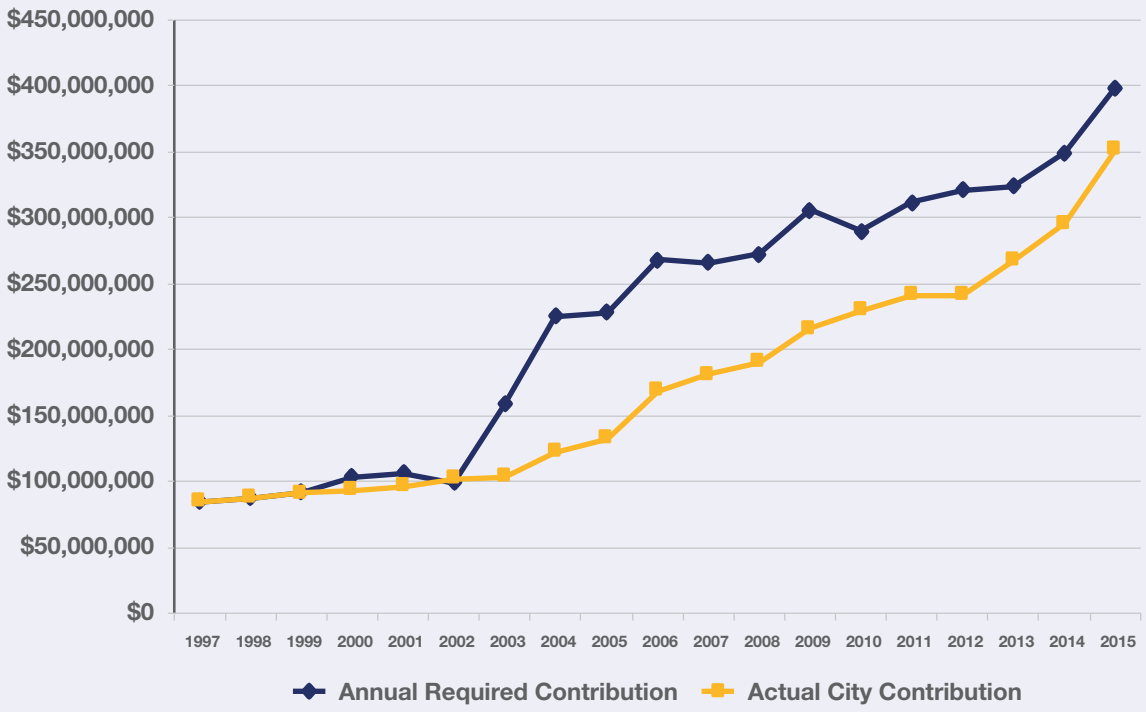


Source: CRR calculations based on plan AVs; CAFRs; PENDAT (1990–2000); and *Public Plans Database* (2001–2014).

FIGURE 7:

ARC v. Actual Contributions, All Three Houston Pension Systems, 1997–2015

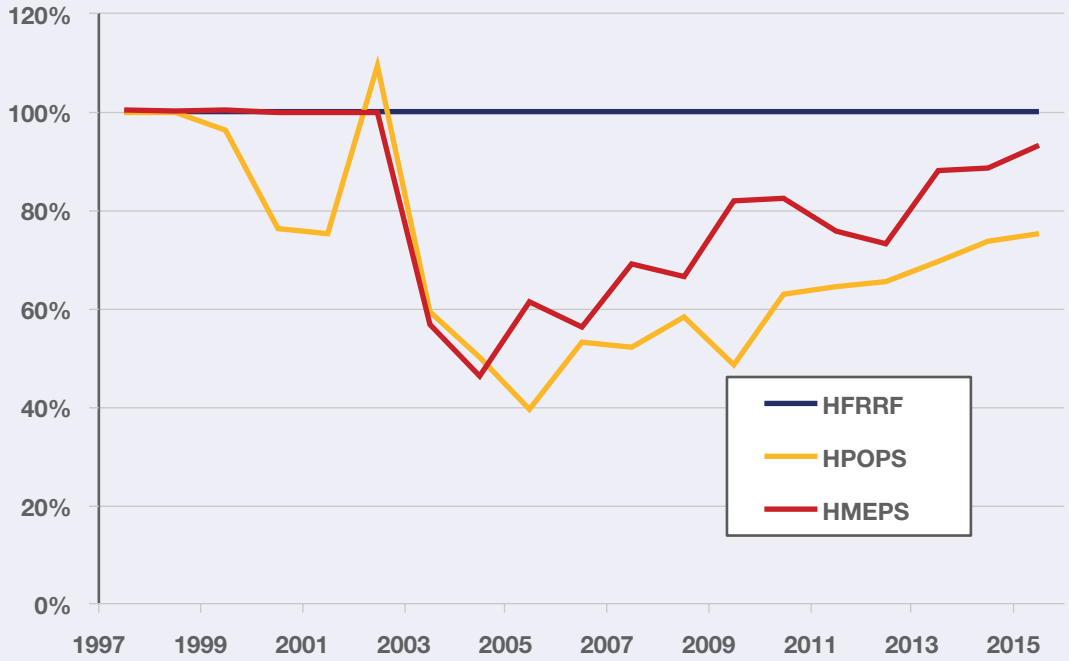
Does not include Pension Bond Revenue



Source: CRR calculations based on AVs and CAFRs for HMEPS, HPOPS, and HFRRF.

FIGURE 8:

Percent of ARC Paid by City to HMEPS, HPOPS, and HFRRF, 2000–2015



Source: CRR calculations based on AVs and CAFRs for HMEPS, HPOPS, and HFRRF; U.S. Census of Governments.

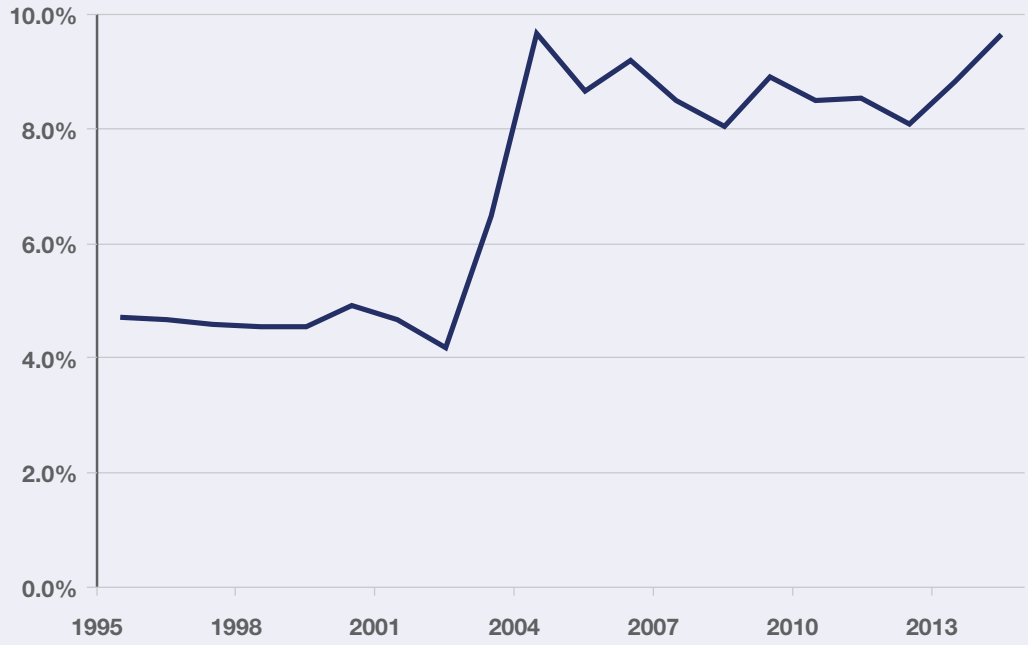
The city has also contributed bond proceeds to the ARC for both HMEPS and HPOPS, but we have not included those figures in Figures 7 and 8 for reasons we describe below.

The city currently pays its ARC based on terms set forth in its meet-and-confer agreements with two of the pension plans and based on state law for the third, yet the UAAL continues to grow due to a combination of two factors.

The ARC agreed upon in the meet-and-confer process is based on a methodology that backloads costs, calling for lower payments in the initial portion of a 30-year time frame and larger payments at the end. That strategy is not inherently problematic. However, the 30-year payment schedule resets annually. If this continues, the city will never actually reach the point where it makes the larger payments intended to offset smaller payments earlier in that 30-year time frame. Thus, the UAAL continues to grow even if the ARC payments are made in full.

FIGURE 9:

HMEPS, HPOPS, and HFRRF ARC as a Percent of Revenue, 2000–2014



Source: CRR calculations based on various AVs and CAFRs; U.S. Census of Governments.

FIGURE 10:

Large Cities: ARC as a Percent of Revenue, 2014

Source: CRR calculations based on various FY2014 plan and government financial reports and actuarial valuations.

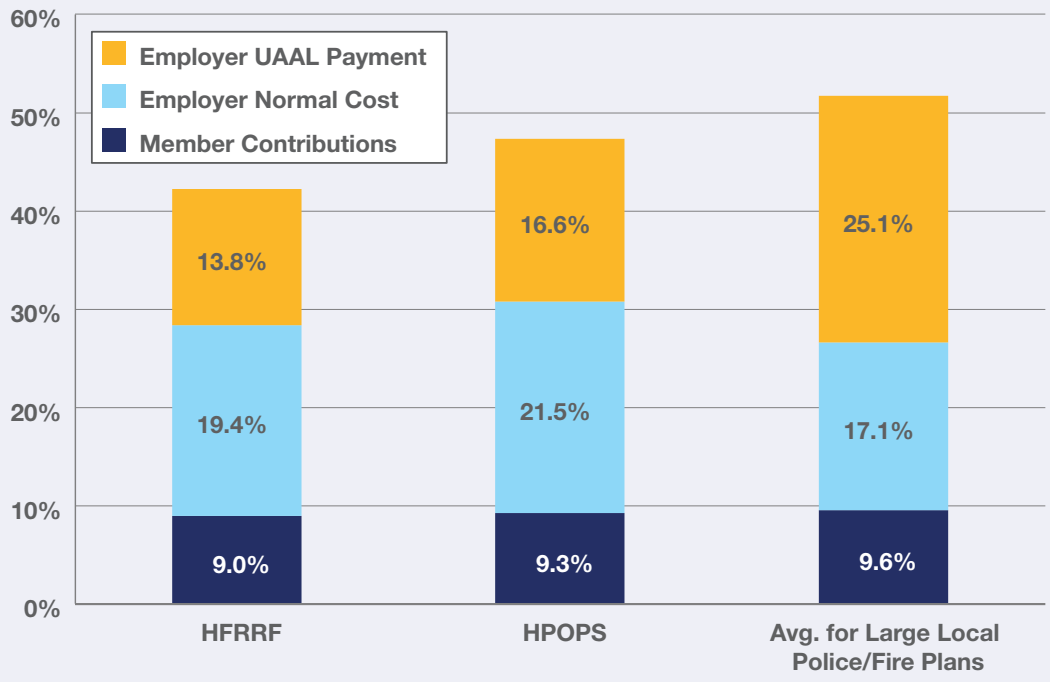
The city fully paid the ARC to the firefighters' pension—Houston's most well-funded plan—from 2000 to 2015. However, it has not paid the full ARC to the police or municipal workers plans since 2003, though it has steadily increased its contribution in that time. In 2015, the city paid the municipal workers plan 93 percent of ARC and the police plan 75 percent of ARC.

ARC vs. Revenue

The ARC can also be viewed relative to city revenue as a way of understanding the annual cost of city pensions. From about 1995 to 2000, Houston generally contributed just over 4 percent of its total revenue to workers' pension plans. However, the city increased benefits in the early 2000s. After that, the pension contributions amounted to about 8 percent of revenue annually. By 2014, the ARC payments for the combined systems represented about 9 percent of city revenue.

FIGURE 11:

Actuarial Costs as a Percent of Payroll for HPOPS, HFRRF, and Large Locally-Administered Police and Fire Plans, 2014



Source: CRR calculations based on plan AVs; CAFRs; and *Public Plans Database* (2014).

This is about 2 percentage points above the typical ratio of ARC to city revenue found nationally. By this measure, Houston ranks 15th among major U.S. cities in terms of ARC relative to revenue. The previous chart shows Houston's ARC as a percent of its revenue, and it compares this ratio to that of other cities. Notably, this chart shows that ratio based on their actuaries' own assumptions that go into calculating ARC. Each city follows different standards. (This national comparison is based on revenue figures from the Census of Governments, which differ slightly from Houston's actual revenue figures.)

If a more standardized model across cities is used, Houston's pension cost relative to other cities is greater. More detail on this analysis is contained in Appendix A.

Member Contributions

As of 2014, members of both Houston's firefighter and police pension plans paid slightly less than their counterparts at other large, local police and firefighter systems. On average, participants in the Houston firefighters' plan contribute 9 percent of their city income to their retirement plan, while members of the police plan contributed 9.3 percent. Nationally, employee contributions for large local police and fire plans equal about 9.6 percent of income.

However, Houston's municipal workers contribute less than their peers nationwide. On average, participants in the Houston municipal worker plan contribute 2.77 percent of their city income. Longtime workers pay 5 percent, while Group D new hires make no contribution—a condition that was part of a pension reform agreement in which new workers were not eligible for certain benefits. (This arrangement is explained in more detail below.) Nationally, participants in large local plans contribute at almost three times that rate—7.6 percent.

Benefits

From 1992 to 2015, each of the three pension plans—HMEPS (municipal workers), HPOPS (police), and HFRRF (firefighters) have made several important changes to their plan benefits that have affected the financial status of their pension systems.

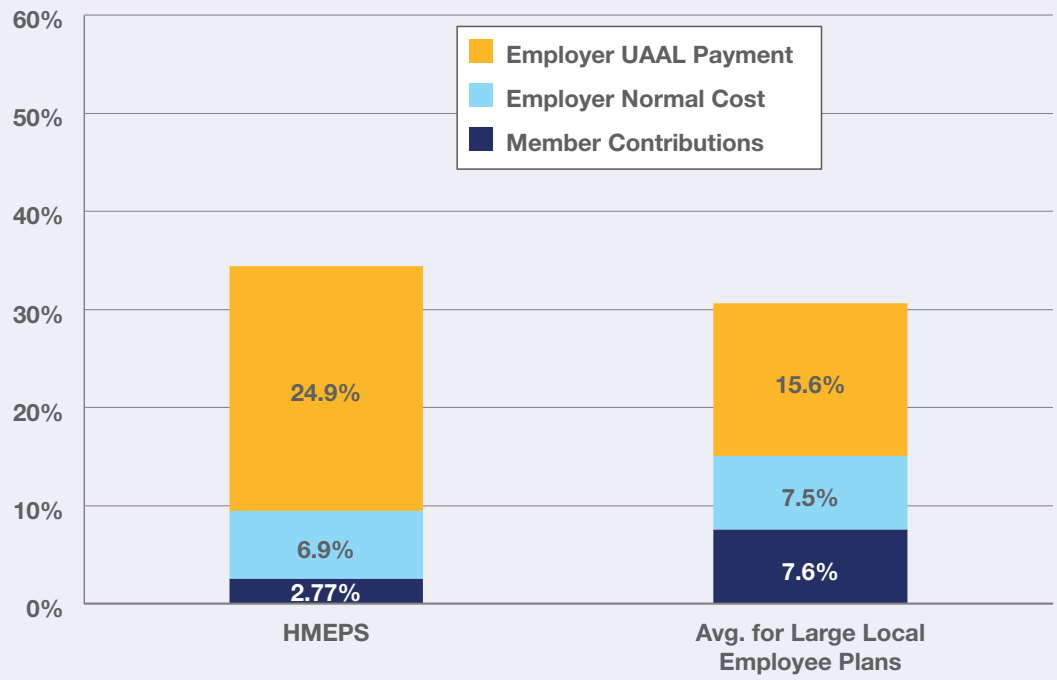
HMEPS

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

FIGURE 12:

Actuarial Costs as a Percent of Payroll for HMEPS and Large Locally-Administered Plans, 2014



Source: CRR calculations based on plan AVs; CAFRs; and *Public Plans Database* (2014).

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 percent annual COLA (regardless of inflation), while members hired in 2005 or later receive a 2 percent 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 five 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 five 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, benefit 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 percent for each year under 20 years of service and 3.25 percent for each year past 20. The Group B benefits formula uses a 1.75 percent rate for each year under 10 years of service, 2 percent for each year between 10 and 20 years and 2.5 percent for each year past 20 years. Group D members have the lowest benefit accruals, with 1.8 percent for the first 25 years and 1 percent 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 three years of compensation, excluding overtime. Benefits are subject to a COLA set to 80 percent of the CPI-U, with a minimum of 2.4 percent and maximum of 8 percent.

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 percent of final average salary for the first 20 years of service, with 2 percent for every additional year, capped at 80 percent 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 percent 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 percent of final average salary for the first 20 years of service and 2 percent for every additional year,

capped at 80 percent of final average salary. Post-2004 members contribute 10.25 percent of payroll to the fund and are not eligible for DROP.

HFRRF

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

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. However, in fiscal years 2005 through 2008, the city issued four additional pension obligation bonds worth about $220 million (roughly $100 million to HMEPS and $120 million to HPOPS). In 2009, 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. It also issued a new pension bond worth $20 million to fund HPOPS. In total the city issued about $585 million in municipal debt to finance pensions from 2004 to 2009.

Due to the backloaded structure of the principal payments on the Pension Obligation Bonds, the bonds have played an important role in providing the city with cash-flow flexibility. However, the issuance of POBs 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 $18 million less than the principal owed to bondholders. Given that there is $575 million in POB debt still outstanding, the city has so far taken a relatively small loss on this "arbitrage."

For these reasons, we view the existing Pension Obligation Bonds as essentially irrelevant to the calculations of the growth in the overall unfunded liability.

How Houston's Unfunded Liability Grew

As we explained previously, the city's UAAL grew from approximately $212 million in 1992 to $3.9 billion in 2015, in part because the city did not make large enough ARCs to avoid increasing the unfunded liability. However, inadequate ARC payment was only one of several factors that led to the increased unfunded liability. This section will diagnose all of the reasons why the unfunded liability went up. The drivers are different for each pension system.

This section examines five factors that can impact a UAAL:

1. Inadequate contributions (ARC)
2. Actual vs. assumed investment returns
3. Actuarial experience
4. Benefit changes
5. Changes to assumptions/methods

In particular, the first two factors had the greatest impacts on the growth of each system's unfunded liability. Benefit increases made in the late 1990s and early 2000s were also a significant contributor to the increase in the unfunded liability for all three plans. However, in the case of the municipal workers plan, a major reduction in benefits in 2004 ultimately more than offset the effect of previous increases.

By examining each of these factors, year-to-year, within each of the three pension systems, we can provide a more complete understanding of decisions and actions in the past that led to the situation at present. This analysis began with a look at data from 1992, the earliest year for which data is available on all three plans.

HMEPS

Most of the increase in unfunded liability over the past 20 years has come in the HMEPS pension system. Between 1992 and 2015, the HMEPS unfunded liability increased by slightly over $2 billion—from $157 million to $2.2 billion—due to a wide range of factors, including inadequate contributions, low investment returns relative to expectations, poor actuarial experience relative to expectations and changes to plan assumptions and methods.

- *Inadequate contributions* were responsible for $760 million growth in growth of the unfunded liability. This was due to a failure to appropriately calculate an ARC that would keep the unfunded liability from growing, as well as a failure to sufficiently pay that ARC.
- *Investment returns* fell well short of what was assumed, resulting in a $467 million growth in the liability. During this period, the HMEPS increased its expected rate of return from 8 percent to 8.5 percent before reducing it to 8 percent again in 2015. By contrast, the plan's actual rate of return from 2001 to 2015 was 6.25 percent annually. Nationally, the average rate of return assumption during this period dropped from 8 percent to 7.6 percent.

FIGURE 13:

Sources of Change to HMEPS' UAAL, 1993–2015

Source: CRR calculations based on HMEPS AVs.

- *Actuarial experience* added $380 million to the unfunded liability in the study period. Actuarial experience refers primarily to three factors: when people leave work, when they retire and how long they live. The system possibly introduced volatility around retirement habits –meaning the timing of employee retirements became less predictable as a result of changes made to its deferred retirement option program (DROP).
- *Changes to plan actuarial assumptions and methods* were responsible for $1.0 billion of the increased liability. Revisions were made to assumed rates of DROP participation, DROP entry data, retirement assumptions, salary growth, and changing inflation assumptions. Importantly, the assumed return was lowered in 2015.
- *Benefit changes* actually *decreased* the liability by $300 million in the period. Initially, benefit expansions in 2001 increased the liability, but benefit cuts in 2004 reduced the liability. Those changes included a decreased benefit multiplier, increased retirement age and a decrease in the DROP credit and COLA.

HPOPS

Most of the rest of the city's increase in unfunded liability came in the HPOPS system, which covers police personnel. HPOPS' unfunded liability increased by $1.1 billion from 1992 to 2015—from $79 million to $1.2 billion—due primarily to inadequate contributions.

- *Inadequate contributions* increased the liability by $840 million. As with the municipal workers' pension plan, this was due to both an ARC calculation that would not have kept the unfunded liability from growing and not paying that ARC in full. The city contributed 100 percent of ARC until 1999 but then fell behind. As a result of meet-and-confer agreements in 2004 and 2011, the city gradually increased its ARC payments from 43 percent to 75 percent, though paying the meet-and-confer ARC would not sufficiently prevent growth of the liability.
- *Investment returns* that fell short of the assumed rate of return contributed $150 million to the unfunded liabil-

FiGURE 14:

Sources of Change to HPOPS' UAAL, 1993–2015

Source: CRR calculations based on HPOPS AVs.

FIGURE 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.

ity in the study period. As with the municipal workers, the police pension plan increased its assumed rate of return from 8 percent to 8.5 percent, and back down to 8 percent, as its peers nationwide steadily reduced their assumed rate of return. From 2001 to 2015, HPOPS' actual rate of return was 6.4 percent.

- *Actuarial experience* accounted for $140 million in UAAL growth. This is possibly a result of 2004 plan changes that might have introduced volatility around retirement habits, including a closure of DROP to new members.
- *Changes to actuarial assumptions and methods* accounted for a $300 million *decrease* in liability, as assumptions were updated to better coincide with experience.
- *Changes to benefits* increased the unfunded liability by $250 million. This is the net effect of benefit increases made from 1998 to 2001, and benefit cuts following a 2004 meet-and-confer agreement.

HFRRF

HFRRF is the best-funded of the city's three pension systems. HFRRF's unfunded liability increased by $556 million—from being overfunded by $24 million to an unfunded liability of $532 million—from 1992 to 2013. Investment returns and changes in benefits account for most of the underfunding, but these were offset in large part by changes to assumptions. Notably, this analysis stops at 2013 because that was the most recent year an actuarial valuation was performed.

- *Inadequate contributions* increased the liability by $130 million. The firefighters plan is the only Houston plan that consistently made its ARC payments, in part because the city is required by statute to make these contributions. The unfunded liability still grew, however, because the ARC itself was not calculated in a way to prevent unfunded liability growth.
- *Investment returns* that fell short of the assumed rate of return contributed $255 million to the unfunded liability in the study period. During the entire study period, the plan assumed an 8.5 percent rate of return, even as nationally, this assumption declined to 7.6 percent. From 2001 to 2015, HFRRF's annual rate of return was 7.5 percent—below the assumed rate of return but more than 1 percentage point better than those of the other pension funds.
- *Actuarial experience* accounted for $90 million in UAAL growth. The biggest change due to this factor occurred in 2002, following major changes to actuarial assumptions and methods.
- *Changes to assumptions* accounted for a $192 million *reduction* in liability, in particular due to 2001 changes to assumptions regarding retirement, salary increases and DROP.
- *Changes to benefits* increased the unfunded liability by $260 million. The largest benefit expansion occurred in 2001; since then, there have been no major changes to benefits.

Conclusion

As we discussed above, the unfunded liabilities across all three pension systems grew primarily because of two factors.

First, in all these cases, the Annual Required Contribution (ARC)—the amount the city is required to pay each year—**is calculated in such a way that even if the city pays the full amount, the unfunded liability continues to grow.**

Second, all three pension systems use assumed investment returns that are **higher than the national average and higher than their own actual investment returns over the past 15 years.**

Potential Solutions

In speaking publicly of the pension issue, Mayor Turner has emphasized the need for "shared sacrifice." However, only a handful of steps are legally available to Houston—or any other community—in order to address its growing pension obligations. Each one of these steps involves sacrifice on the part of at least one of the major constituencies with something at stake: city taxpayers, recipients of city services, current employees, retirees and future employees. Any solution will most likely require a combination of sacrifice from all these constituencies.

It's also important to note that the problem of unfunded liability is different in both scope and size for the three pension systems. Therefore, the solution is likely to be different for each system.

In the course of preparing this report, we have identified four potential reforms that could be part of a solution to Houston's pension issues. Although we will address them individually, it is important to reiterate that a solution probably involves some combination of them. It is worth noting that some of these reforms have been applied to some employees in past Houston reform efforts.

After we have introduced these reforms, we will provide case studies from five large cities that have used these techniques to address their own pension finance issues. Finally, we will provide examples of how these reforms might assist in solving Houston's pension issues—though we will discuss each of them individually, rather than proposing a preferred combination.

Here are the four potential reforms:

1. The City of Houston increases its financial commitment to the pension systems in order to meet current obligations and fully pay down the unfunded liability over time.

In theory, the city could simply increase the amount of money it commits to the pension system, allowing it to fully fund the ARC as it should and pay down the UAAL on a pre-determined amortization schedule. However, this would require that the city either increase its revenue (possibly through a repeal of the revenue cap, as Mayor Turner has suggested) or divert funds from other uses, which could affect the city's ability to provide other public services.

Pros: Employer honors promises it has previously made to its workers.

Cons: Today's taxpayers make up the difference of previous generations' failure to fund retirements.

2. Employees increase their contributions to the pension systems.

Another possible source of revenue to cover the cost of Houston's pension obligation is larger employee contributions. This technique has been used elsewhere and appears able to withstand legal challenge. In Houston's case, the police and fire employees already pay close to the national average, while the HMEPS members on average pay far less.

Pros: Increasing employee contributions is a common way of reducing employer costs and avoiding many legal challenges associated with reducing benefits.

Cons: Without a compensatory increase in wages, this amounts to a decrease in employee compensation and may eventually reduce the quality of worker a government can attract.

3. Switch to a defined contribution system or a "hybrid" DB/DC system for new hires.

Many municipalities have considered closing the existing defined benefit plan to new workers and providing them instead with a defined contribution system or a "hybrid" system that reduces the defined benefit promise. This change shifts the financial risk from the employer to the employee for the new hires. Generally, legal protections prevent moving existing employees from defined benefit to defined contribution plans, though in some cases, their future accruals can be shifted.

Pros: May be attractive to short-term or younger workers, since typical pensions are backloaded. Defined contribution plans accrue evenly over a workers' career and are more portable, which is potentially attractive to today's workforce. Limits future uncertainty around retirement plan costs for employer.

Cons: Does not address previous unfunded liability that has accumulated over time and takes a long time to show a real financial benefit to the employer.

4. Reduce benefits for current employees.

Generally, cities are legally prohibited from simply cutting benefits for current and former employees. The areas where they have flexibility are with annual Cost of Living Adjustments (COLAs) and reforms to Deferred Retirement Option Plans (DROP).

A reduction in COLA can immediately reduce the existing unfunded liability. The technique has also withstood court challenges.

Pros: Because COLA/DROP is often the only area where a reduction in benefits for current employees is legally available, it is a promising method to reduce financial obligations over time.

Cons: As with increased employee contributions, a change to the COLA and/or DROP formulas is really a decrease in compensation to employees. A change to the COLA could mean that retiree income loses ground to inflation over time.

Case Studies of Reform in Other Cities

Houston, of course, is not alone as it works to rein in its pension costs. Across the country, cities have taken a variety of steps—some successful, some still works in progress—to address the growing costs of worker retirement benefits.

This section of the report focuses on five cities—Phoenix, Jacksonville, San Diego, Baltimore and Fort Lauderdale—and explores the techniques they've utilized to address the same challenge Houston faces. These cities were chosen because of their geographic and political diversity, as well as the variety of different techniques they employed as they all sought to address the same basic challenge. Our analysis assumes all plan assumptions are met, including assumed return.

It is unlikely that Houston would or should adopt the exact same reform package as any of these five cities. The drivers of pension challenges and the solutions differ from city to city and system to system. Rather, these case studies are meant to stimulate discussion about the potential desirability and impact of different combinations of reform actions in Houston.

Phoenix

Reforms

Increased employee contributions	X
Introduced 401(k)	X
Introduced Hybrid Plan	X
Reduced benefit obligations	
City bears burden	

With more than 1.5 million people, Phoenix is the sixth-largest city in the nation. Like Houston, it is geographically large and growing rapidly in terms of population. Phoenix also has had a reputation for many years as one of the best-managed cities in the country.

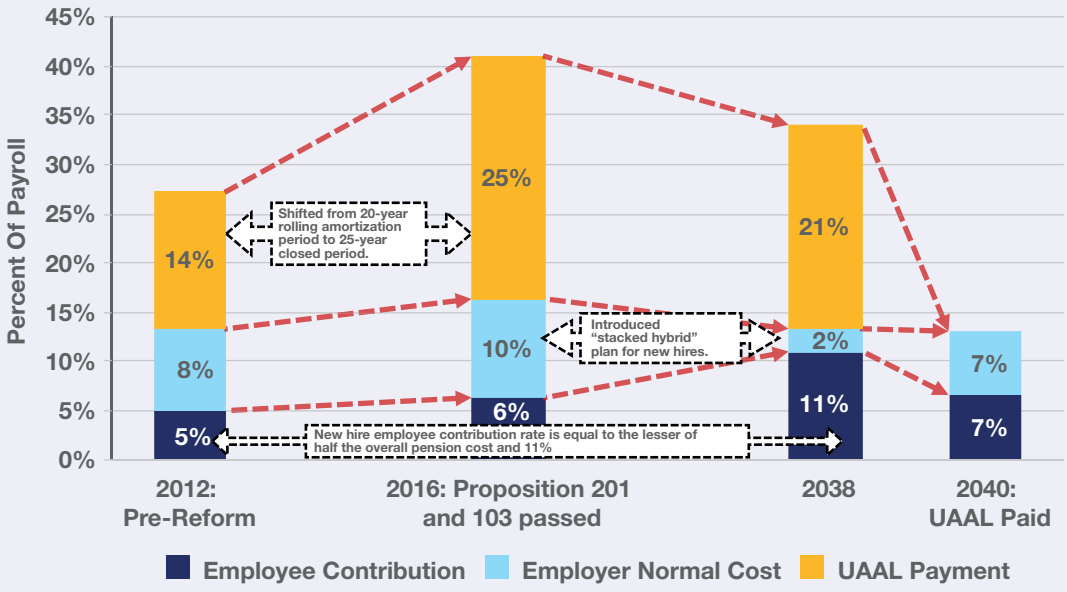
From 2013 to 2015, Phoenix introduced a slew of reforms intended to improve the funding status of its public employee retirement system, known as COPERS, the only of its three pension systems that is administered by the city itself.

In 2012, the city was paying about 4 percent of its revenue to COPERS, and although it fully paid the system's ARC from 2000 to 2012, the system's funded ratio fell from 102 percent to 62 percent—approximately the same as the current funded ratio for HMEPS.

In 2013, the city adopted Proposition 201, which increased employee contributions for new hires. Previously, employees' contributions were capped at 5 percent of payroll, but the reform requires new workers to split pension costs with the city evenly. By 2015, workers were contributing 16 percent of payroll. As a result of concerns that this level was too high, 2015's Proposition 103 capped these employees' contributions at 11 percent. Prop. 103 also limited the portion of compensation covered by the defined benefit pension to $125,000 and provided a defined contribution for pay above that threshold under a program known as a "stacked hybrid."

FIGURE 16:

Projected Pension Costs as a Percent of Payroll, City of Phoenix ERS, Pre- and Post-Reform, 2012–2040



Source: CRR calculations based on City of Phoenix ERS AVs.

In 2013, the city also switched from a rolling, 20-year amortization method for its unfunded liability—similar to the amortization system Houston uses—to a closed funding schedule. Essentially, the city has committed to closing this gap in a finite period of time and increasing its annual amortization payments that pay for previously accrued liabilities. This represented a major increase in the city's annual contribution to the pension system.

In 2014, Phoenix sought to pass Proposition 487, which would have created a 401(k)-style plan for new employees and would have kept employer contributions at 8 percent of an employee's salary or less. Taxpayers, however, rejected this plan.

Impacts

Proposition 103 does little to reduce the previously accrued unfunded liability but it does limit that growth. Also, because the average employee over age 60 earns less than $100,000, the ability of "stacked hybrid" plans to slow the growth of pension liabilities is limited. Phoenix kept most existing employees at a 5 percent contribution rate, leaving the city responsible for the majority of pensions costs for the next 15 to 20 years. However, its contribution rate is expected to level out by 2020.

As the accompanying chart shows, the net effect of Phoenix's reforms is that the city and, to a lesser extent, the employees will make greatly increased annual contributions for the next 20-plus years, with payments gradually declining from a high of 40 percent of payroll over the next few years to 32 percent by 2038. By 2040, however, the unfunded liability will have been completely paid off, while both the city and the employees will pay a modest 7 percent of payroll each year.

Jacksonville

Reforms

Increased employee contributions	X
Introduced 401(k)	X
Introduced Hybrid Plan	
Reduced benefit obligations	X
City bears burden	X

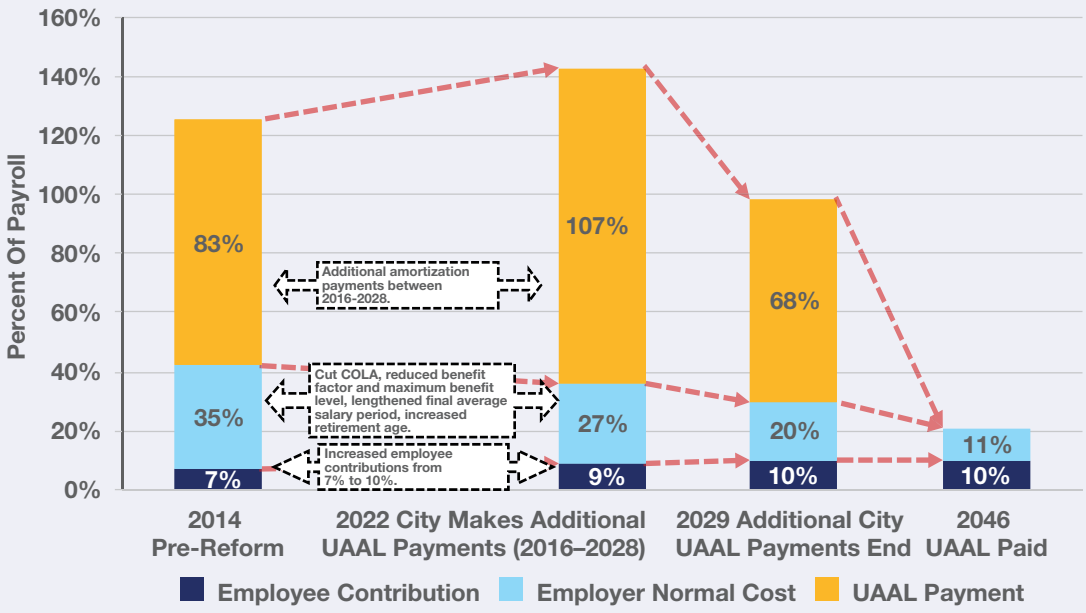
With almost 1 million residents, Jacksonville is the 12th most populous city in the United States, and geographically it is even bigger than Houston. Jacksonville is also experiencing significant population growth.

Jacksonville has two main retirement systems—one for general employees alongside corrections officers and one for police and firefighters. Their combined unfunded liability is $3.7 billion, or 74 percent of the city's annual revenue, and both plans are funded at levels below the national average. In 2014, the city's ARC was about 7 percent of revenue, most of which was associated with the police and firefighters plan, so its reforms efforts have focused on that system.

In 2015, the city passed an ordinance to increase the police/fire employee contributions from 7 percent of payroll to an eventual 10 percent, reduce benefits earned after 2015 and reduce benefits for new employees. The city also agreed to accelerate its payment schedule, committing to spending an additional $350 million—approximately 8 percent of revenue—over the next 13 years to decrease its unfunded liability. A proposal exists to use a sales tax to help pay down the pension's unfunded liability but requires further approvals to move forward. The city has also discussed moving new employees to a defined contribution plan, with details to be determined through collective bargaining.

FIGURE 17:

Projected Pension Costs as a Percent of Payroll, Jacksonville Police and Fire, Pre- and Post-Reform 2014–2046



Source: CRR calculations based on Jacksonville Police and Fire, and Jacksonville General Employees AVs and other actuarial reports.

Impacts

Most of the benefit cuts in the reform package only apply to future accruals, and thus do not lower the existing unfunded liability. Similarly, benefit cuts and defined contribution plans for new employees would not reduce previous liabilities. However, those reforms would result in decreased costs for new benefits, freeing up more employer funds in the future to reduce the unfunded liability.

As it currently exists, the pension reform package requires the city to pay more than 100 percent of payroll for 13 years (due to the scheduled additional payments) and then 68 percent of payroll for the next 15 years in order to pay down the unfunded liability. As mentioned, employee contributions grow from 7 percent of pay to 10 percent. However, the plan may undo some of its progress if it extends is amortization schedule in concert with the creation of a dedicated funding stream, as it has discussed. If that happens, it could take 45 years to pay down the unfunded liability.

San Diego

Reforms

Increased employee contributions	
Introduced 401(k)	X
Introduced Hybrid Plan	
Reduced benefit obligations	X
City bears burden	X

With a population of approximately 1.3 million people, San Diego is the eighth-largest city in the United States. In the early 2000s, the city's pension liability rose rapidly, resulting in a scandal that led to the resignation of the city's mayor in 2005.

From 2000 to 2015, the city pension fund's funded ratio fell from 97 percent to 74 percent, as its ARC nearly tripled to $264 million, the equivalent of 9 percent of city revenue. By 2015, 80 percent of the city's pension payments were going not toward normal costs, but to deal with the city's $2 billion unfunded liability.

In 2009, the city passed reforms that reduced benefits for all new employees, including both general employees and police. In 2012, voters passed Proposition B, which reduced the maximum pensions for new public safety workers and put new non-police employees into a defined contribution plan. Under the defined contribution plan, general employees contribute 9.2 percent post-tax to their retirement, and the city matches that contribution pre-tax. For current employees still in the DB, proposition B temporarily froze inflation-based salary increases and eliminated some other forms of pay from pension calculations. Proposition B also amortizes the annual unfunded liabilities for the non-police plan into a single UAAL amortized over a closed, 15-year period.

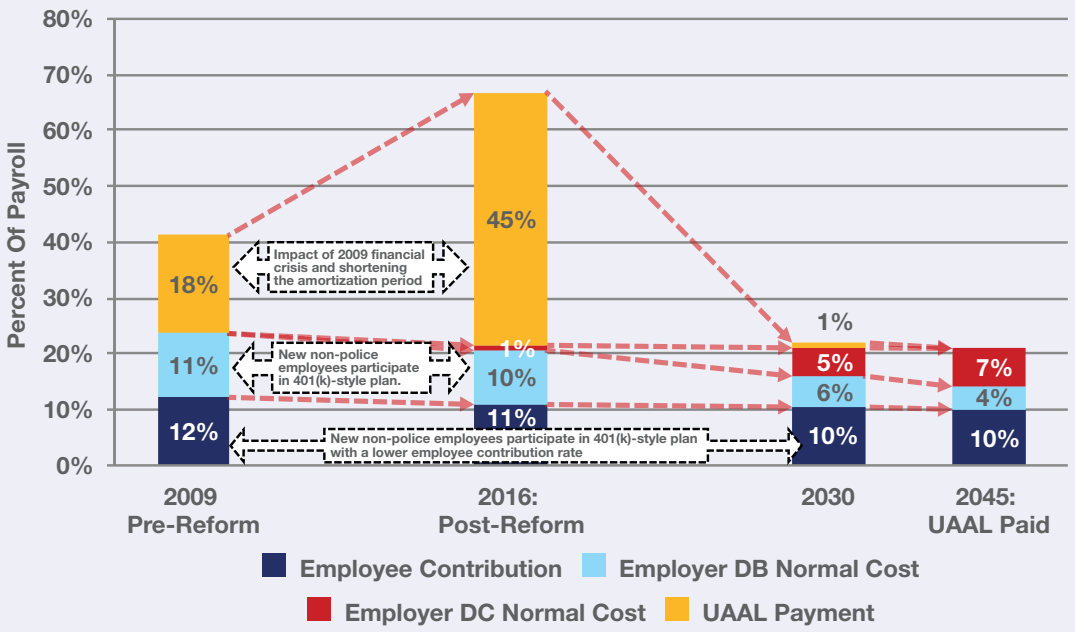
Impacts

Prior to the 2009 reforms, the benefits for city employees were considered greater than the national average, but strong protections for California employees prevented more benefit reductions for current workers. As a result, the city focused on reducing benefits for new hires, though that makes little impact on employee costs over the next 20 to 30 years.

Though the reforms don't reduce the unfunded liability on their own, they increase the city's commitment to paying it by shortening the period for paying it down. As the accompanying chart shows, the city's unfunded liability

FIGURE 18:

Projected Pension Costs as a Percent of Payroll, San Diego City ERS, Pre- and Post-Reform, 2009–2045



Source: CRR calculations based on San Diego City ERS AVs.

payments are 45 percent of payroll in 2016. Fortunately, this cost declines as a percent of payroll to about 30 percent near the end of the 15-year period, and is virtually zero afterward. Overall costs should stabilize thereafter, in part because Proposition B closed the defined benefit system to new employees.

However, Proposition B is facing a series of legal challenges. If the city loses, it could ultimately cost the city more than if it had continued to operate its 2012 defined benefit plan.

Baltimore

Reforms

Increased employee contributions	X
Introduced 401(k)	X
Introduced Hybrid Plan	X
Reduced benefit obligations	X
City bears burden	

Baltimore is an older city whose population has decreased in recent decades from almost 1 million residents to approximately 600,000 residents, thus leaving the city with a reduced tax base.

The city operates pension plans for its general employers, elected officials and fire and police employees. In the early 2000s, each was fully funded, but despite consistent payments, their funded ratio fell to 80 percent by 2010. Meanwhile, required contributions grew from 1.5 percent of revenue in 2001 to 8.4 percent in 2010, prompting reforms.

In 2010, the city passed an ordinance requiring that employee contributions for the fire and police plan increase gradually from 6 percent to 10 percent of payroll. Simultaneously, the city reduced benefits by replacing the "variable benefit," which was paid to retirees whenever investment returns exceeded a certain threshold, with a tiered COLA. Also, for new hires and non-vested employees, the ordinance increased retirement eligibility requirements and lengthened the number of years included in the average salary.

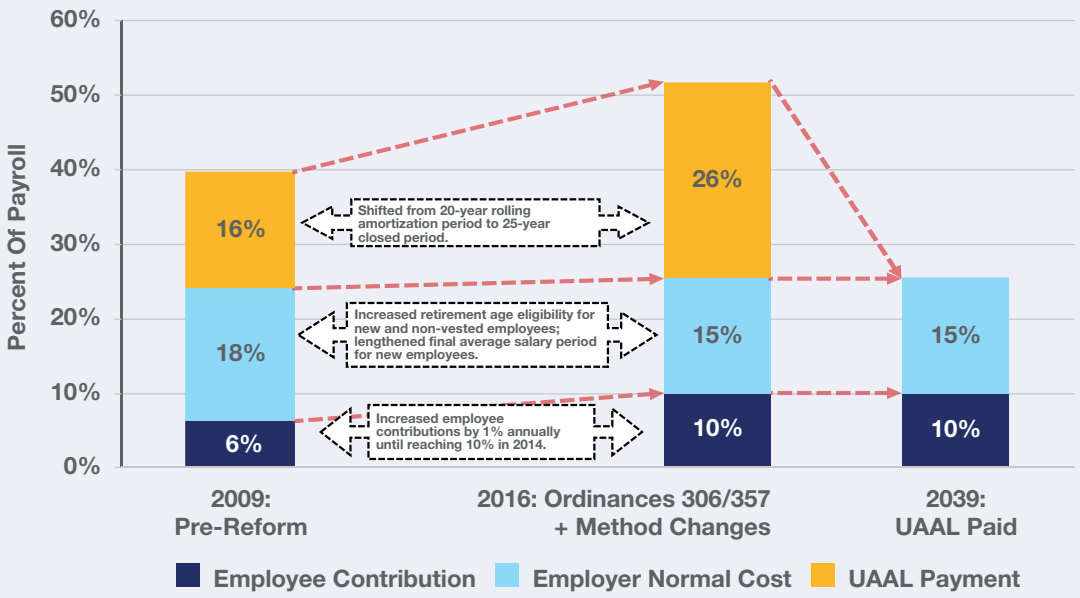
In 2013, the city began reforms to its general employee system, which was only 68 percent funded. The city enrolled new employees in a defined contribution or hybrid plan. Additionally, most workers in the employee retirement system had previously contributed nothing to their pension, while the city's contributions swelled to 20 percent of payroll. Reforms required employees to gradually start contributing until reaching 5 percent of payroll in 2018. It also eliminated the system's variable benefit which, on top of a COLA, was paid to retirees whenever investment returns exceeded a certain threshold.

Impacts

The 2010 reforms to the police and fire plan free up a bigger portion of employer contributions to meet the UAAL costs, though it effectively reduces employee compensation, making the city a less competitive employer. The police and fire unions filed a lawsuit and alleged those 2010 reforms were unconstitutional—but ultimately a federal appeals court ruled the reforms were allowed. Notably, the reforms don't immediately address the system's unfunded liability costs, which grew from 30 percent to 43 percent of payroll from 2010 to 2013.

FIGURE 19A:

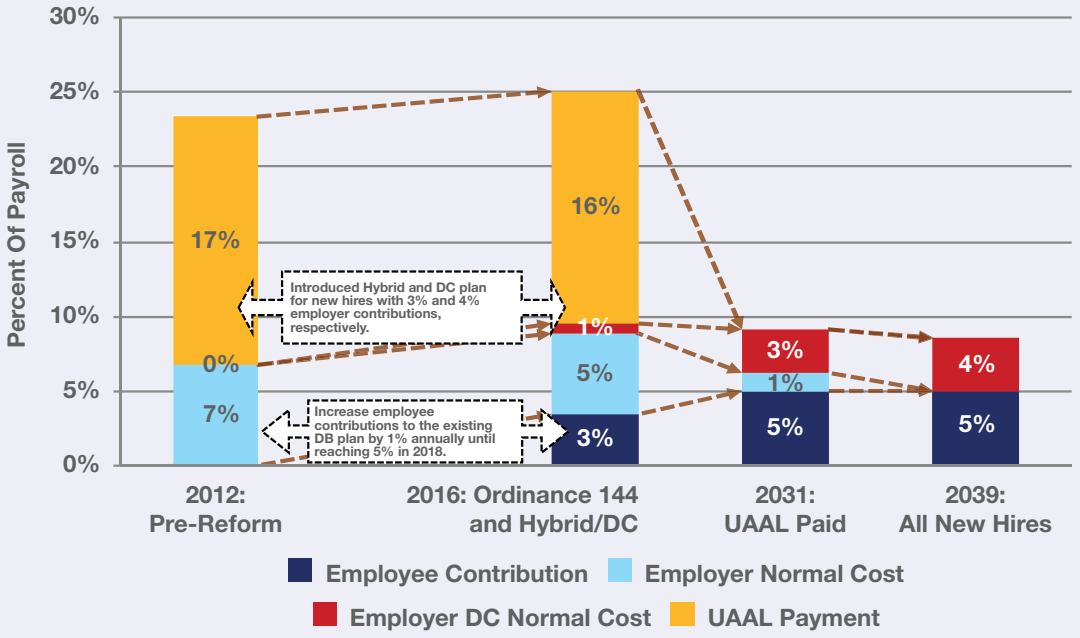
Projected Pension Costs as a Percent of Payroll, Baltimore Fire and Police, Pre- and Post-Reform, 2012–2039



Source: CRR calculations based on Baltimore Fire and Police AVs.

FIGURE 19B:

Projected Pension Costs as a Percent of Payroll, Baltimore ERS, Pre- and Post-Reform, 2012–2039



Source: CRR calculations based on Baltimore ERS AVs.

Similar to the police and fire plan, the general employee reforms increased employee contributions and freed up more employer contributions to pay the UAAL. By 2031, the city's UAAL is expected to be paid, assuming the city continues to contribute approximately 16 percent of payroll each year to pay it down. However, that shift effectively reduced employees' total compensation by having the employer contribute less to the employee's retirement. And, under the new defined contribution plan, new employees are unlikely to obtain the same of level of benefits that workers enjoyed in the past, because they shoulder more of the risk.

Fort Lauderdale

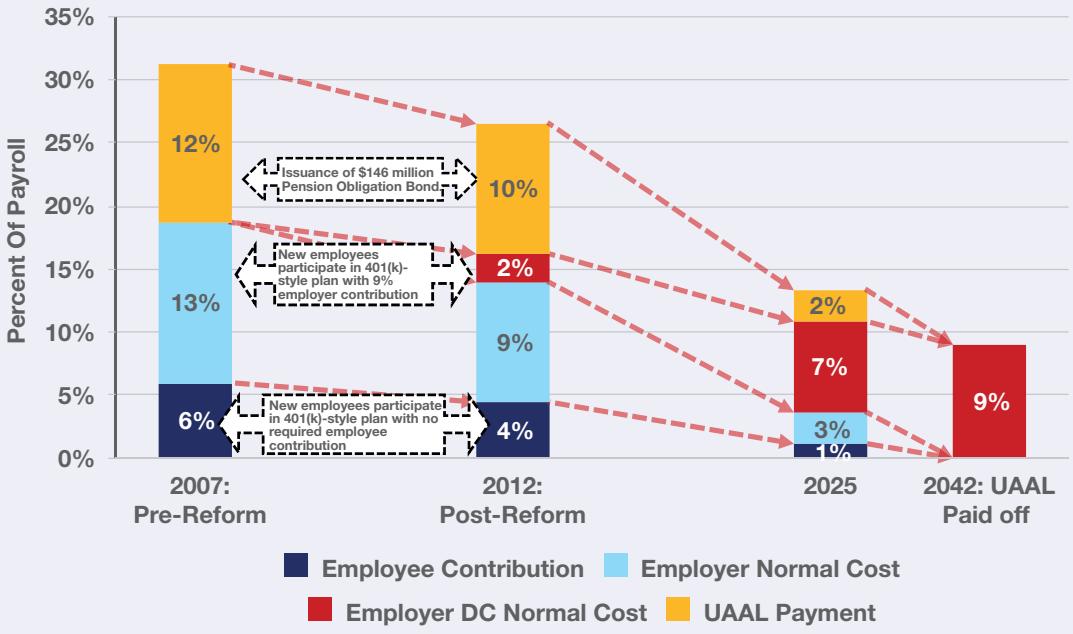
Reforms

Increased employee contributions	
Introduced 401(k)	X
Introduced Hybrid Plan	
Reduced benefit obligations	
City bears burden	

With a population of 170,000, Fort Lauderdale is much smaller than any of the other case study cities. However, it is the capital of Broward County and an important regional center.

FIGURE 20:

Projected Pension Costs as a Percent of Payroll, Fort Lauderdale General Employees, Pre- and Post-Reform, 2007–2042



Source: CRR calculations based on Fort Lauderdale General Employees AVs.

The city administers two defined benefit plans—one for general employees and one for police and firefighters. In 2007, the city's ARC totaled $37 million, or 9 percent of revenue. Its unfunded liability represents 65 percent of revenue, well below average.

However, the state imposed tax reductions across municipalities that year, reducing cities' ability to collect property taxes. The city's contribution to the general employees plan increased from 8 percent of payroll to 24 percent from 2000 to 2007, while its police and fire contributions rose from 10 percent to 42 percent. However, its reform efforts focused on the general employee program, due to state regulation of police and fire benefits.

In 2008, the city closed the general employees' pension plan to new workers; those hired after 2007 were put in a separate 401(k)-style plan. The city contributes 9 percent of payroll to the plan, and participants are prohibited from making contributions. In 2011, the city also passed an ordinance that incentivized early retirement in order to shift higher-paid workers off the payroll. Separately, it introduced a $146.4 million pension bond to pay down its unfunded pension liability.

Impacts

The reforms were intended to address the employer normal costs—the year-to-year ongoing costs—as opposed to the plan's unfunded liability, which was seen as manageable. While the city's reforms will accomplish this, it also reduces employee benefits. Under the pension plan, 16 to 18 percent of payroll was put into the pension fund to pay for new benefit accruals each year, compared to 9 percent for the defined contribution plan. Without an increase in wages, the defined contribution plan results in a reduction in wages, which will likely attract lower quality workers in the long-term.

In terms of the UAAL, as the accompanying chart shows, contributions towards the unfunded liability start at 10 percent in 2012. However, they quickly drop to 3 percent by 2016 and then decline steadily to 2 percent by 2025. Ultimately, the unfunded liability is paid off in 2042.

Impact of Possible Houston Pension Reforms

As explained above, Houston's increasing unfunded liability has come about in large part because (1) the pension boards have assumed a higher rate of return on investments than actual experiences reveal over the past 15 years; (2) the agreed-upon ARC has been too low to prevent increases in unfunded liability; and (3) in some cases, the city has not paid even that level of ARC.

Therefore, if the city hopes to reduce or eliminate its unfunded liability, all parties must deal with three sequential questions:

First, are the rate of return assumptions reasonable going forward, or should they be changed?

Second, what should the Annual Required Contribution be in order to reduce or eliminate the unfunded liability?

And third, where should the city find the money to pay the ARC, which will likely be significantly increased?

Rate of Return Assumptions

The rate of return assumption is an enormously important calculation in determining the unfunded liability. The higher the rate of return assumption is, the lower the unfunded liability will be. The lower the rate of return assumption is, the higher the unfunded liability will be. In purely political terms, therefore, the city and the pension boards—like their counterparts around the country—often feel tremendous pressure to assume a high rate of return. Such an assumption will lower the unfunded liability, at least on paper, and the Annual Required Contribution.

The three Houston pension boards use annual rate of return assumptions of 8 percent or 8.5 percent. Other public pension systems have been reducing their rate of return assumptions in recent years. Nationally, the average rate of return assumption has declined from 8 percent to 7.6 percent over the past few years. Last year, the California Public Employees Retirement System—the largest public pension fund in the nation—decided to gradually reduce its assumption from 7.5 percent to 6.5 percent over a long period of time.

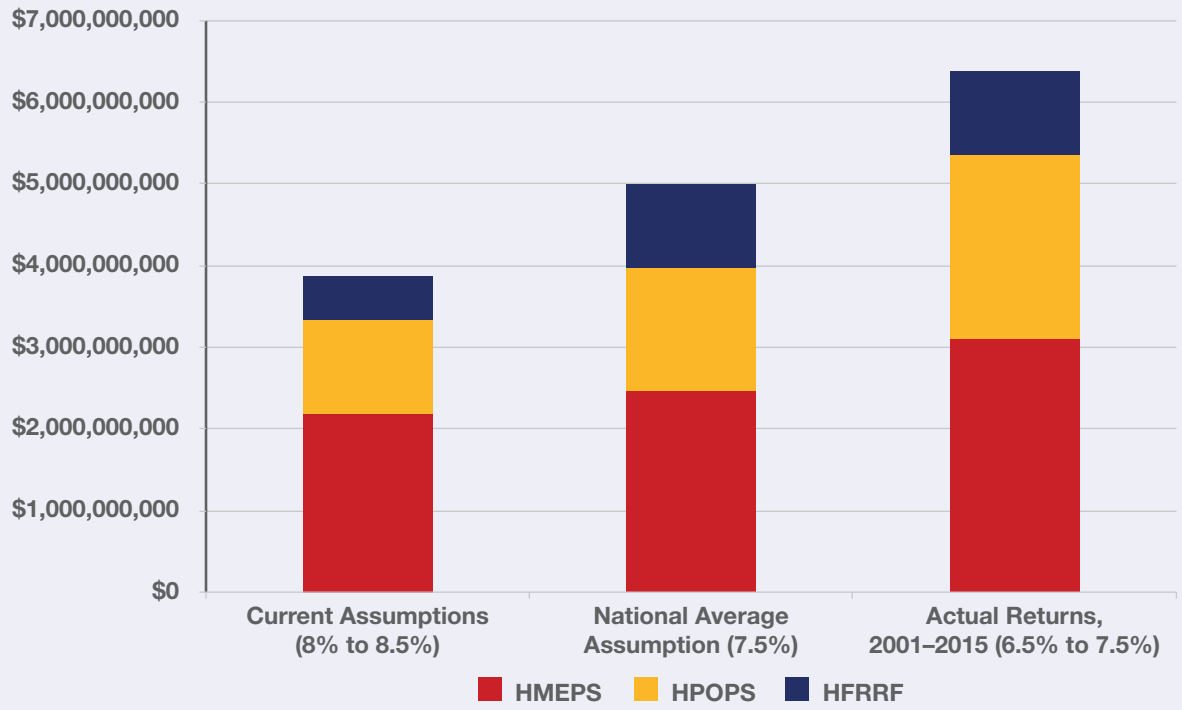
Furthermore, the actual experience of the three Houston pension boards in recent years has been different from their assumptions. From 2001 to 2015—a 14-year period that included the Great Recession—the actual rate of return was 6.2 percent for HMEPS, 6.4 percent for HPOPS, and 7.5 percent for HFRRF (2001 to 2013, in that system's case).

Therefore, the city and the pension boards must make rate of return assumptions that are realistic. But this decision has enormous consequences for the unfunded liability.

For example, the accompanying chart shows the impact of different rate of return assumptions on HMEPS's unfunded liability, or UAAL. The current unfunded liability based on the current rate of return assumption is $2.2 billion. But for every half-point that the rate of return assumption is reduced, the unfunded liability increases by approximately $300 million. So, for example, if the rate of return assumption is reduced to 7.5 percent—approximately the current national average—the unfunded liability grows from approximately $2.2 billion to approximately $2.5 billion. If the rate of return assumption

FIGURE 21:

Unfunded Liability Based on Different Return Assumptions



Source: CRR calculations based on AVs and CAFRs for HMEPS, HPOPS, and HFRRF.

is reduced to 6.5 percent—approximating HMEPS's actual return over the last 15 years of 6.2 percent—the unfunded liability grows even further, to approximately $3.1 billion.

For HPOPS, the story is similar. As of 2015, HPOPS had an unfunded liability of approximately $1.16 billion. As with HMEPS, for every half-point that the rate of return assumption is reduced, the unfunded liability increases by approximately $350 million. So, for example, if the rate of return assumption is reduced to 7.5 percent—approximately the current national average—the unfunded liability grows from approximately $1.16 billion to approximately $1.5 billion. If the rate of return assumption is reduced to 6.5 percent—approximating HPOPS's actual return over the last 15 years of 6.4 percent—the unfunded liability grows even further, to approximately $2.26 billion.

For HFRRF, the story is a little different but the overall pattern is similar. As of 2013, the last year for which numbers are available, HFRRF had an unfunded liability of approximately $530 million, using HFRRF's 8.5 percent return assumption instead of an 8 percent assumption. As with HMEPS, for every half-point that the rate of return assumption is reduced, the unfunded liability increases by approximately $250 million. So, for example, if the rate of return assumption is reduced to 7.5 percent—close to HFRRF's actual rate of return over the last 15 years—the unfunded liability grows from approximately $530 million billion to approximately $1 billion.

Summing these three scenarios shows how much changing the investment return assumption changes the unfunded liability. If the current investment return assumptions are retained, the unfunded liability is $3.9 billion. If the national average assumption of approximately 7.5 percent is used, the unfunded liability rises to $5 billion. If the actual investment returns over the past 15 years (6.5 percent for HMEPS and HPOPS, 7.5 percent for HFRRF) are used, the unfunded liability rises to $6.4 billion.

Obviously, therefore, these assumptions have enormous implications for the Annual Required Contribution, or ARC, that would be required to reduce or eliminate the unfunded liability for each pension system.

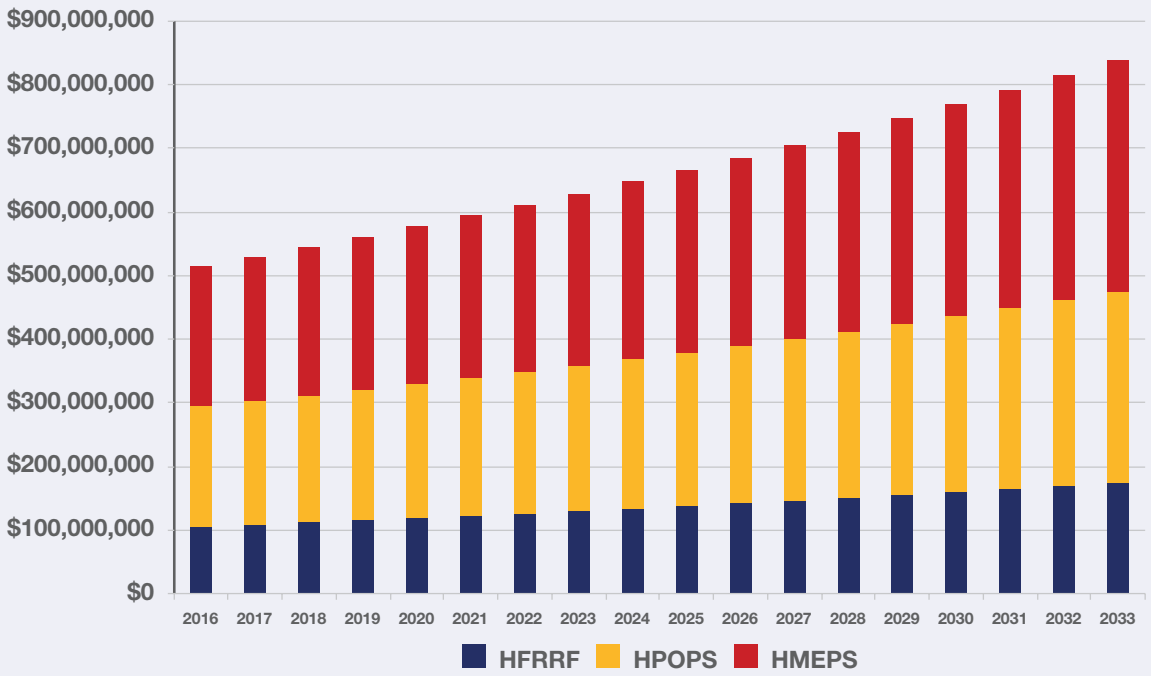
Annual Required Contribution

One of the most important conclusions from the five case studies is that, in order to reduce or eliminate an existing unfunded liability and prevent the unfunded liability from growing in the future, a city must be willing to significantly increase the payments made each year to the pension system. Both Phoenix and San Diego, for example, had to commit to more or less double the contributions devoted to paying down the unfunded liability and maintain that commitment for 20 years or more. Most cities structured this paydown by creating a hard-and-fast 20- to 30-year amortization schedule, rather than creating a rolling amortization schedule, such as Houston uses, that is unlikely to ever result in a complete elimination of the unfunded liability. Essentially, by using closed amortization period, these cities created a "bubble" of funding obligation for the next 20 years.

If Houston were to switch to such a closed amortization structure, the ARC would rise more dramatically over time compared to a rolling method, but eventually the unfunded liability would be completely eliminated.

FIGURE 22:

Future ARC Based on 20-Year Closed Payoff Period



Source: CRR calculations based on AVs and CAFRs for HMEPS, HPOPS, and HFRRF.

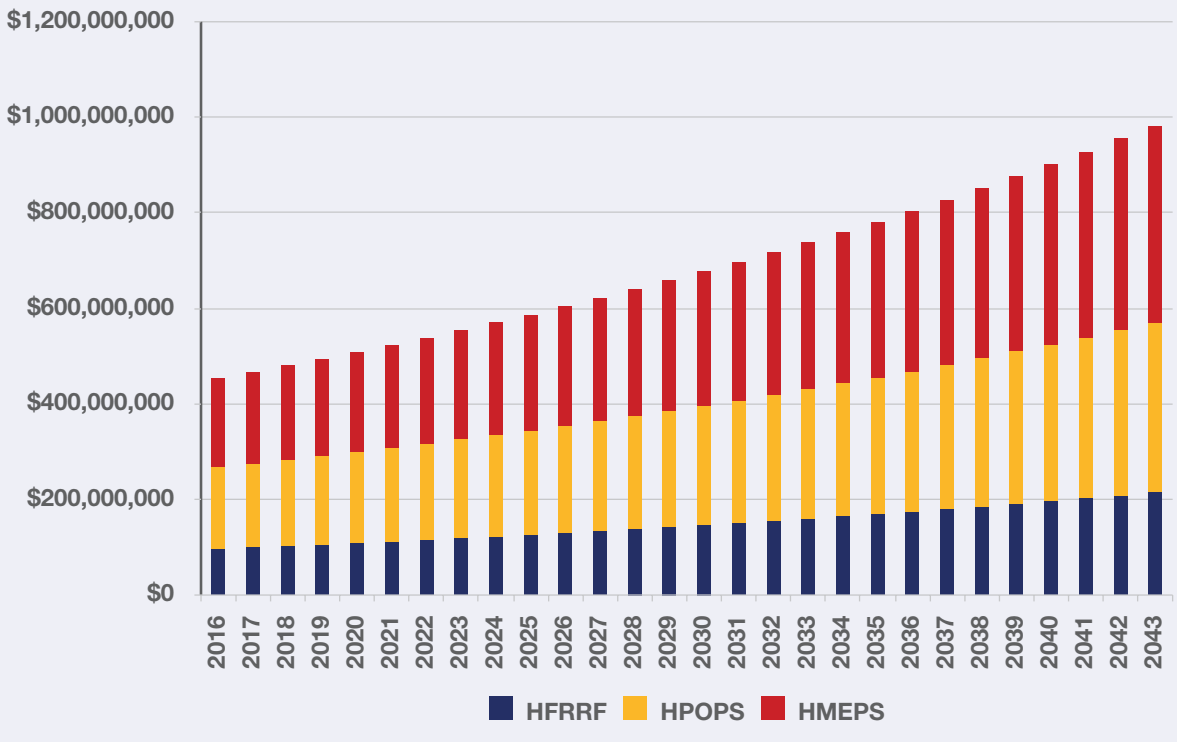
As stated above, the city's current ARC is approximately $400 million, although in 2015 the city only paid $350 million. The city's ARC scheduled for 2017—estimated from the most recent valuations—is about $450 million. As Figure 22 shows, if the city switched to a 20-year closed amortization schedule as other cities have done, the ARC scheduled for 2017 would be approximately $500 million and grow to more than $800 million before the unfunded liability is paid off in the 2030s.

As Figure 23 shows, if the city switched to a 30-year closed amortization schedule, the scheduled ARC would still be approximately $450 million but would grow to almost $1 billion before the unfunded liability is paid off in the 2040s.

These figures are based on the current assumed return on investment of 8 percent for HMEPS and HPOPS and 8.5 percent for HFRRF. If the assumed rate of return were lowered, as the previous section discussed, these figures would rise accordingly.

FIGURE 23:

ARC Based on Closed 30-year Amortization Schedule



Source: CRR calculations based on AVs and CAFRs for HMEPS, HPOPS, and HFRRF.

Sources of Revenue and/or Savings to Pay ARC

There is no question that any plan to pay down the unfunded liability over time will require increased contributions from the city itself and/or the employees, as well as savings that will reduce the normal cost and thereby free up more of the ARC money to pay down the unfunded liability.

As we explain above, the only viable steps the city could take would be:

1. Increase taxes or at least repeal the revenue cap in order to free up additional funds for the ARC.
2. Divert funds from other city expenditures.
3. Increase employee contributions.
4. Reduce employee benefits, focusing on COLA and DROP.
5. Switch new hires to a defined contribution plan.

Because each of these options is sensitive to a wide variety of plan-specific factors and assumptions, it is not easy to quantify the impact of these options. However, in the following section we will describe these options as best we can.

1. *Increase taxes or at least repeal the revenue cap in order to free up additional funds for the ARC.*

As stated earlier in this report, the city's property tax revenue growth is currently constrained by the 2004 revenue cap, which limits such growth to the rates of inflation and population growth, or 4.5 percent, whichever is lower; if revenue exceeds this formula, the property tax rate must be reduced. Although the cap did not affect the city much in past years, for FY 2016 and FY 2017 the property tax rate had to be reduced from approximately 63 cents for $100 of assessed value to approximately 60 cents, which reduced property tax revenue by almost $60 million in FY 2016 and will likely reduce revenue by more than $40 million in 2017. This represents approximately 4 to 5 percent of city property tax revenue.

Some property tax that otherwise would have to be returned to residents under the revenue cap is diverted to the city's Tax Increment Reinvestment Zones. TIRZ revenue exceeds $100 million per year.

Repealing the revenue cap would require a vote of city residents, which cannot occur before November 2017.

The city might also consider issuing a Pension Obligation Bond backed by either the increased property tax revenue or another new revenue source. As with the previous pension bond, such a bond issue would give the city much more cash flexibility to pay the ARC, but again the city would be gambling that the return on investment on the bond proceeds would be greater than or equal to the interest rate paid to bondholders, unless the bonds are backed by a new source of revenue that the city currently does not have.

2. *Divert funds from other city expenditures.*

Another option to better fund the pension payments would be to divert funds from other city activities. But this would be a difficult and painful task.

As stated above, slightly more than half of the general fund ($1.4 billion) currently goes to the public safety departments, where HPOPS and HFRRF members are employed. The vast majority of enterprise fund expenditures go to public safety, utilities, and stormwater. HMEPS members work for both general fund and enterprise fund departments. Diverting funds to cover increased pension payments would most likely involve cuts in all these services.

3. *Increase employee contributions.*

An increase in employee contributions has been part of the pension reform package in many cities. Among our five case study cities, three—Phoenix, Jacksonville, and Baltimore—featured increased employee contributions as part of their package.

In Houston, police officers and firefighters already pay approximately the national average in employee contributions for public safety employees—between 9 percent and 9.5 percent of payroll. However, HMEPS employees pay a much smaller percentage than the national average for non-public safety employees—2.77 percent, on average (5 percent for older tiers and none for recent hires), as opposed to 7.6 percent.

Figure 24 shows the reduction in the HMEPS-related ARC annually if HMEPS employees paid the national average in employee contributions. The initial savings would be close to $30 million per year and would eventually grow to almost $100 million per year. In a 30-year rolling amortization calculation, it would save $1.9 billion over the life of the amortization. The savings are similar under various assumed rates of return and amortization methods.

Of course, all of this revenue would come from employees. It would essentially represent a shift of payment from the city to HMEPS members and would reduce the take-home pay of new HMEPS members, who gave up other benefits in a previous meet-and-confer negotiation as part of the reform that relieved them of the obligation to contribute to the pension system.

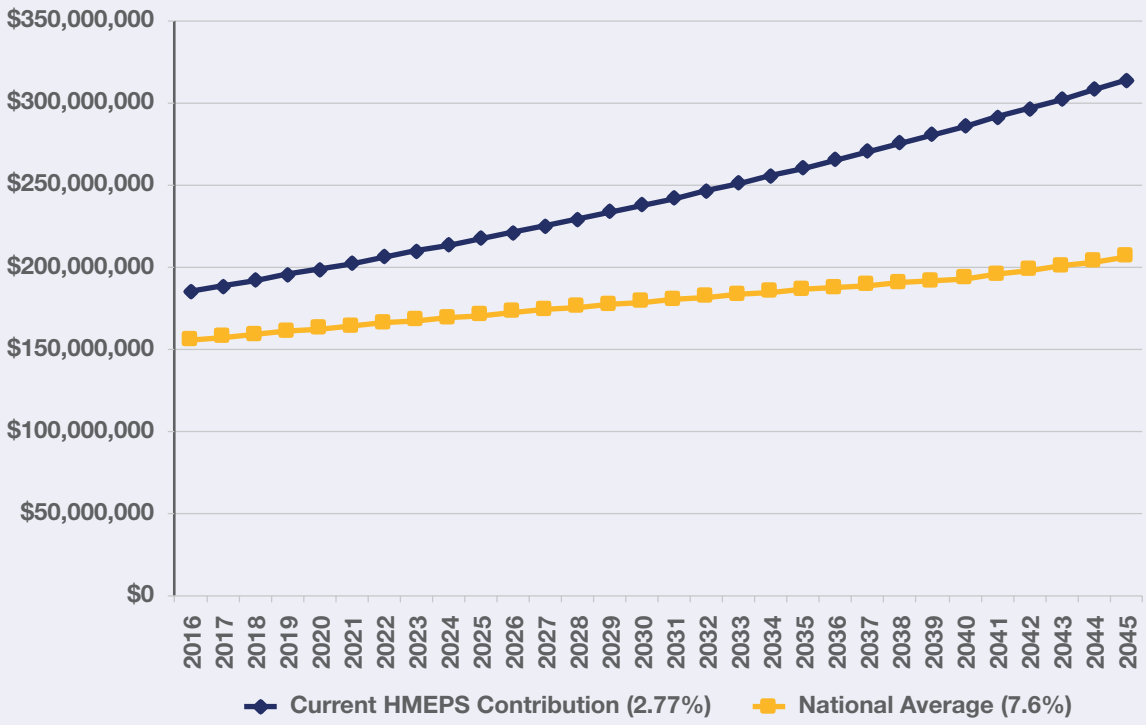
4. *Reduce employee benefits, focusing on COLA and DROP.*

Some employee benefits have been reduced in recent years as a result of the meet-and-confer process, especially benefits for new employees. However, additional savings could be realized from further cuts, especially cuts to COLA and DROP.

In 2014, the City of Houston commissioned Retirement Horizons to estimate possible savings that could be obtained from reducing or eliminating COLA and DROP benefits—virtually the only benefits that could be reduced and not be subject to a likely successful legal challenge. The scenarios

FIGURE 24:

ARC Change With Increased HMEPS Employee Contributions



Source: CRR calculations based on AVs and CAFRs for HMEPS, HPOPS, and HFRRF.

contained in the Retirement Horizons report included (1) reducing the COLA to 1 percent from 3 percent and (2) eliminating it altogether; as well as (1) freezing the DROP accounts and (2) eliminating the guaranteed return for DROP funds.

Currently, HPOPS retirees get a COLA based on the inflation rate, while other retirees get a guaranteed COLA, although the amount varies depending on which group or tier the retiree is in.

Such changes would, obviously, reduce the amount of money retirees would receive from the pension systems, and that reduction would grow considerably over time. Among other things, Retirement Horizons examined the possibility of reducing the COLA to 1 percent and eliminating it altogether, whereas the inflation rate over the past 20 years has been approximately 2.2 percent per year.

The Retirement Horizons report was subject to considerable criticism from the pension boards, especially HMEPS, which challenged a variety of assumptions. The report also assumes an 8.5 percent discount rate in all of its calculations and estimated the total unfunded liability as of 2014 to be $3.9 billion.

Nevertheless, the Retirement Horizons report gives a good sense of the potential savings that such steps could take.

Eliminating the COLA for both current and future plan member would result in a savings of $170 million in the first year (2014 in Retirement Horizons' report), rising to $621 million by year 30 (2044). Using a net present value calculation that includes the 8.5 percent discount rate, this step would reduce the overall unfunded liability as of 2014 for all three plans to less than $1 billion total.

This step would benefit the police and fire pension systems far more than the HMEPS system. Two-thirds of the unfunded liability decrease would occur in the police and fire systems. The fire system would be more than fully funded and the police system would be almost fully funded. However, HMEPS would still be only 69 percent funded as a result of this step.

Reducing the COLA to a 1 percent increase annually for both current and future plan members would result in savings of $90 million in the first year (2014 in Retirement Horizons calculations) growing to $474 million in 30 years (2044). Using a net present value calculation that includes the 8.5 percent discount rate, the step would cut the overall unfunded liability for all three plans combined in half, to about $1.9 billion. The distribution of the benefit among the three plans would be similar, with HMEPS still being less than 60 percent funded as a result of this step.

Obviously, the use of a lower discount rate than 8.5 percent would alter these calculations and increase the overall unfunded liability. Additionally, applying the COLA reduction or elimination formula only to new plan members would greatly reduce the savings.

Although some of the assumptions in the Retirement Horizons report are subject to criticism, overall the report reveals that eliminating or capping the COLA could result in significant savings, thus freeing up funds to pay down the unfunded liability. However, such a move would limit future retirement income increases for Houston retirees and as a result their retirement income may not keep up with inflation.

Changes to the DROP accounts had a much less dramatic impact on the unfunded liability.

Freezing DROP credits at current levels for both current and future members resulted in a savings of $66 million in year 1, increasing to $355 million in year 30. Overall, such a step would reduce the unfunded liability by $1.4 billion, with more than half of that savings coming in HPOPS, the police pension system.

Eliminating the guaranteed DROP interest credits had a much smaller impact. This step would reduce the unfunded liability by less than $600 million, with more than half of the savings again coming from HPOPS.

Houston's DROP experience suggests a more basic reform might be appropriate. DROP programs were originally intended as a human resources tool to help retain valued employees who would otherwise leave because they are incentivized to do so by the pension system's structure. If pension benefits are designed to properly meet the average worker's retirement needs, DROP should be used by few employees and only for a few years.

However, DROP usage in Houston has been high. A 2010 actuarial experience study by the HFRRF actuary showed about a third of eligible employees with 20 years of service—and over 80 percent with 30 years—participated in DROP. And, almost half of them participated for nearly 10 years. The significant savings that HPOPS could accrue through changes in the DROP program suggests that police officers also take advantage of DROP in large numbers.

In Houston, DROP is closed to most new employees, which is consistent with the national trend. However, the high usage and long participation suggest that a significant number of employees are willing and able to work many years longer than the pension system is currently designed to accommodate. Most systems that offer DROP place a limit of no more than five years on participation. In Houston, however, HPOPS and HMEPS place no limit on the time of participation, and HFRRF's limit is 13 years.

If employers want to keep their employees working longer, a later normal retirement age would be more cost effective. Ultimately, with a well-designed pension system that better aligns with employee and employer work/retirement desires, a DROP would be used by only a few employees to stay on the job for a few additional years with the understanding that they would be retiring shortly after joining the DROP.

The Retirement Horizons study found that delaying the retirement age, which could provide incentives to allow valued employees to continue working, could also reduce the city's unfunded liability, though not significantly. Most of that benefit would accrue to HMEPS.

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5. *Switch new hires to a defined contribution plan or a "hybrid" plan*

Especially since the Great Recession, much of the debate about public pensions has revolved around the possibility of switching to defined contribution plans or "hybrid" plans (partly defined benefit, partly defined contribution) for newly hired employees. A similar option is a so-called "cash balance" plan, which provides a defined benefit but encourages more employee contributions and does not focus so much on backloaded benefits that can increase the unfunded liability. In the past decade, several states have authorized such a switch, though the actual number of plans and amount of assets being switched to defined contribution or hybrid plans is limited.

As with any reform that affects new hires only, a switch to a defined contribution plan or a hybrid system will have little effect on the current unfunded liability. The main benefit is to limit future unfunded liability, as the employer does not owe the employee a guaranteed benefit upon retirement decades in the future. Such a switch may help to confine a city's current unfunded liability problem to a "bubble" lasting a couple of decades—a problem that can be solved (if painfully) by increases in the ARC that will reduce the unfunded liability.

It is also possible that a switch to a defined contribution plan will affect recruiting, especially if the employer is competing for workers who have the option of working for other public agencies that still have defined benefit plans. This may require the employer to offer higher salaries or greater defined contribution payments in order to make up for the absence of a guaranteed pension. Even if this is the case, however, it does limit the possibility of future increases in unfunded liability, as employees receive all compensation and retirement payments at the front-end.

One option would be to offer a hybrid system to current employees as an alternative to the traditional defined benefit system. Obviously, this would result in more savings that could be applied to the unfunded liability, because employees who opt into the hybrid system would not accumulate as much pension credit under the defined benefit system.

The experience of Orange County, California, suggests that such an option might be attractive to some employees, especially younger employees. The employee contribution to a hybrid system is typically less than the contribution to a defined benefit system, meaning employees will receive more take-home pay now, although they will not receive as large of a guaranteed pension at retirement.

Conclusion

The challenge of Houston's pension finances has taken a long time to materialize, and there is no "magic bullet" solution. As Mayor Turner has suggested, a solution will likely require shared sacrifice.

The biggest concern for Houston and other cities is how to pay down the existing unfunded liability and how to structure the pension system and the payment system so the unfunded liability problem will not occur again in the future.

In the case of all three pension systems, the assumed rate of investment return is higher than the national average and also higher than recent experience. In all three cases, the current Annual Retired Contribution is not sufficient to avoid increasing unfunded liability in the future. In the case of HPOPS and HMEPS, the city has not made the ARC for many years. Especially in the case of HMEPS, the unfunded liability is a driver of the pension costs.

The reform experience of other cities suggests that, in order to pay down the unfunded liability and prevent that liability from growing, the city and the pension boards will have to find ways to substantially increase payments to the pension systems and also restrain future growth in the unfunded liability. If the stakeholders continue to assume optimistic rates of return and use a rolling amortization schedule, it is likely that the unfunded liability will continue to grow.

The ideas contained in this document represent reforms that are likely to be painful but helpful. Raising the revenue cap would increase property taxes up to previous levels but has the potential to raise $40 million to $60 million per year or more if the economy picks up and property values rise. Increasing HMEPS employee contributions could generate $30 million per year at first, rising to $100 million per year over time, but would reduce workers' take-home pay. Reducing the COLA to 1 percent would save close to $100 million per year at first but would put retirees at risk of falling behind inflation. Changes to the DROP program and the introduction of a hybrid system would likely result in smaller savings but could be part of an overall solution.

Any solution will likely require not just shared sacrifice, but patience and persistence as well. The other cities that we examined in this report all adopted multiple strategies and committed themselves to a period of approximately 20 years as the "bubble" of unfunded liability is paid down. But if a combination of revenue sources, revised assumptions, and reforms is adopted, Houston can put the question of pension finances to rest once and for all.

Glossary

This glossary contains common definitions of terms used in this report and in Appendices A and B.

Actuarial Assumptions: The factors actuaries use to estimate the cost of funding a defined benefit pension plan. Examples include: the rate of return on plan investments, mortality rates and the rates at which plan participants are expected to leave the system because of retirement, disability, termination or other reasons.

Actuary: A financial professional who evaluates and advises pensions, taking into account factors such as investments, contribution levels, risks, plan benefits, mortality rates and life expectancy.

Actuarial Accrued Liability (AAL): The portion of the present value of future benefits that can be attributed to previous service.[2]

Actuarial Value of Assets (AVA): The value of assets used to determine a pension plan's recommended funding level. The AVA might be adjusted to smooth the effect of short-term market volatility.[3]

Amortization: The paying off of an interest-bearing liability through a series of installments, as opposed to paying it off in one lump sum payment.

Amortization Period: The number of years in the future that will be required to amortize, or pay off, a pension system's unfunded accrued liability, based on the employer's contribution rate and the assumption that there aren't future actuarial gains or losses. The amortization period is used to calculate the ARC's amortization payment.[4]

Closed Period: An amortization period based on specific number of years, counted down annually, during which a liability is expected to be fully amortized.

Open Period: An amortization period that is regularly recalculated. Because the amortization period is regularly reset, the liability may take much longer to fully amortize.[5]

2 http://www.osc.state.ny.us/retire/employers/gasb/glossary.php
3 https://www.soa.org/Files/Research/Projects/2015-10-pension-glossary.pdf
4 http://www.retirement.state.wy.us/home/actuarialglossary.html
5 http://www.cde.ca.gov/fg/ac/co/documents/gasb45attha.doc

Amortization Payment: The portion of the pension plan contribution or ARC that is designated to pay interest on and to amortize the present value of earned benefits *not* covered by current assets. The amortization payment is used to pay the Unfunded Actuarial Accrued Liability.

Annual Required Contribution (ARC): The amount of funding that employers must contribute each year to adequately fund a pension system. The ARC includes the cost of pension benefits accrued in the current year, as well as the cost of paying off the pension system's previously accrued unfunded liabilities. The ARC is calculated after accounting for other revenue, such as investment returns and employees' contributions. [6]

Annuity: A series of periodic payments, usually for life, payable monthly or at other specified intervals. The term is often used to describe the part of a retirement allowance derived from a participant's contributions. A deferred annuity is one in which payments do not commence until a designated time in the future.

Actuarial Assumed Rate of Return: An actuarial assumption regarding the expected annual return on assets held in the pension fund.[7]

Cost of Living Adjustment (COLA): A periodic increase in benefits to compensate for loss in purchasing power of money due to inflation. The COLA is commonly pegged to an index such as consumer price index (CPI).[8] There is debate nationwide as to whether employees' COLA increases have the same legal protections as the pensions themselves.[9]

Decrements: The probability that a plan participant enters a new status, such as deceased, terminated, disabled or retired.

6 http://www.nasra.org/files/JointPublications/NASRA_ARC_Spotlight.pdf
7 http://www.mersofmich.com/Portals/0/Assets/PageResources/WorkScenarios/ual-evip-gasb/GlossaryOfTerms.pdf
8 http://www.businessdictionary.com/definition/cost-of-living-adjustment-COLA.html
9 http://www.ncsl.org/documents/fiscal/MonahanNCSL81011.pdf

Deferred Retirement Option (DROP): A program that allows retirement-eligible employees to claim pension benefits while continuing to work. When the employee retires, he or she receives money in the DROP account as a lump sum and annual pension benefits. The program is a way to keep employees working that would otherwise retire in order to receive pension benefits.[10]

Defined Benefit (DB) Plan: A pension plan that is designed to provide participants with a predefined, predictable and guaranteed benefit based on a formula that takes into account an employee's compensation, years of service, age or a combination of those factors. The risks associated with the plan—namely that investment returns are insufficient to pay the benefit—are taken on solely by the employer. Historically, it has been the typical plan offered by public employers.

Defined Contribution (DC) Plan: A retirement plan in which contributions are made to an individual account for each employee. The retirement benefit is not predetermined, and employees take on all of the risk in these plans. For employers, the benefit of a DC plan is it makes planning and budgeting for retirement benefits much easier. In the private sector, 401(k) plans are the most common type of DC plan.[11]

Discount Rate: The rate a pension plan uses to calculate the present value of its future benefit promises—i.e. the liability. If the discount rate is lowered, the present value increases. For state and local pension plans, the discount rate and the assumed investment return on assets are usually the same number.[12]

Experience Study: An actuarial study conducted regularly to evaluate the accuracy of assumptions used to produce annual actuarial valuations.[13] Actual rates of death, retirement, disability, termination and salary increases are compared to the assumed values and modified as appropriate by the actuary.

Funded Ratio: The ratio of the actuarial value of assets (AVA) to the actuarial accrued liability (AAL). The figure is often used by observers as a barometer of a pension system's fiscal health.

Legacy Costs: The costs involved with an employer paying increased healthcare fees and other benefit-related costs for its current employees and retired pensioners.[14]

Net Pension Liability (NPL): The difference between the current value of market assets and the total pension liability.

Normal Cost: The portion of the cost of projected benefits allocated to the current year.[15] The employer normal cost equals the total normal cost of the plan reduced by employee contributions.[16]

Pension Obligation Bond (POB): A debt instrument issued by a state or local government to pay its obligation to the pension fund or system in which its employees are members.[17]

Portability: The ability of an employee who changes jobs and joins a different retirement system to bring his or her retirement assets with him without penalty. Generally, defined contribution plans are considered more portable than defined benefit plans.

Present Value: The current worth of an amount payable in the future, after discounting for interest and the probability of its payment.

Unfunded Actuarial Accrued Liability (UAAL): The difference between the actuarial assets and actuarially accrued liability. This is also described often in more simple terms as a pension system's unfunded liability. The UAAL and NPL are very similar conceptually and are generally close in value. However they differ in the way assets and liabilities are valued.

Valuation Date: A point in time at which an asset is assigned a dollar value. It is a term often used in reference to a periodic determination of worth for reporting purposes.[18]

Vesting: The determination that an employee has reached a defined number of years of service to be eligible to receive a pension benefit based on the benefits he or she has accrued, even if employment under the plan is terminated.

401(k), 403(b), and 457 Plans: A few examples of defined contribution plans which permit employees to save for retirement on a tax-deferred basis. 401(k) plans are found in the private sector and in the public sector in some states. 403(b) plans are for employees of public educational institutions and certain non-profit, tax-exempt organization. 457 plans (also known as deferred compensation plans) are for governmental employees and non- church-controlled, tax-exempt organizations.

10 http://www.trs.state.tx.us/global.jsp?page_id=/global/glossary
11 http://www.governing.com/finance101/gov-finance-101-glossary-items.html
12 http://www.ft.com/cms/s/0/b5e7a3bc-e133-11e1-9c72-00144feab49a.html#ixzz4AMNuoCLw
13 https://www.minnesotatra.org/images/pdf/glossary.pdf
14 http://www.investopedia.com/terms/l/legacycosts.asp
15 http://www.prb.state.tx.us/files/education/terminologyfinal.pdf
16 http://www.texastransparency.org/Special_Features/Reports/Pension_Obligations/pdf/finalbasicsofactmethod.pdf pg. 18
17 https://www.orrick.com/Events-and-Publications/Documents/247.pdf
18 http://definitions.uslegal.com/v/valuation-date/

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Mission

The mission of the Kinder Institute is to:

- Advance understanding of the most important issues facing Houston and other leading urban centers through rigorous research, policy analysis, and public outreach; and
- Collaborate with civic and political leaders to implement promising solutions to these critical urban issues.

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