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Proposed Reforms to Chicago Pensions

What's At Stake and How Much it Will Cost

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I. Executive Summary

Under defined benefit pension plans, an employer can minimize costs by estimating future benefits for current employees and retirees and setting aside enough money to cover those obligations. For years, local governments in Chicago, including the City of Chicago, Cook County, and Chicago Public Schools, have failed to do so for hundreds of thousands of workers. As a result, city residents face a collective unfunded liability that exceeds \$30 billion.

To partially address the problem, Mayor Rahm Emanuel proposed, and the state legislature passed, a set of reforms to pension benefits for municipal employees and laborers in the City of Chicago. Governor Quinn has yet to sign the bill. In the long run, employers have only two ways to resolve an unfunded liability, and the recently-passed reforms include both. They reduce future benefits for active employees and current retirees. They also considerably increase the contribution by employees and the City government into the fund each year.

PURPOSE

In this report, we analyze the proposed reforms to pensions for City of Chicago municipal employees and laborers as written in Senate Bill 1922, passed by the Illinois House and Senate on April 8, 2014. In addition to discussing the components of the bill and the current status of City pensions, we present the following:

- The estimated net cost to the City, over time, of the proposed reforms.
- The estimated net cost to active municipal employees and laborers due to higher contribution rates.
- The estimated net cost to active and retired municipal employees and laborers due to lower retirement benefits.

KEY FINDINGS

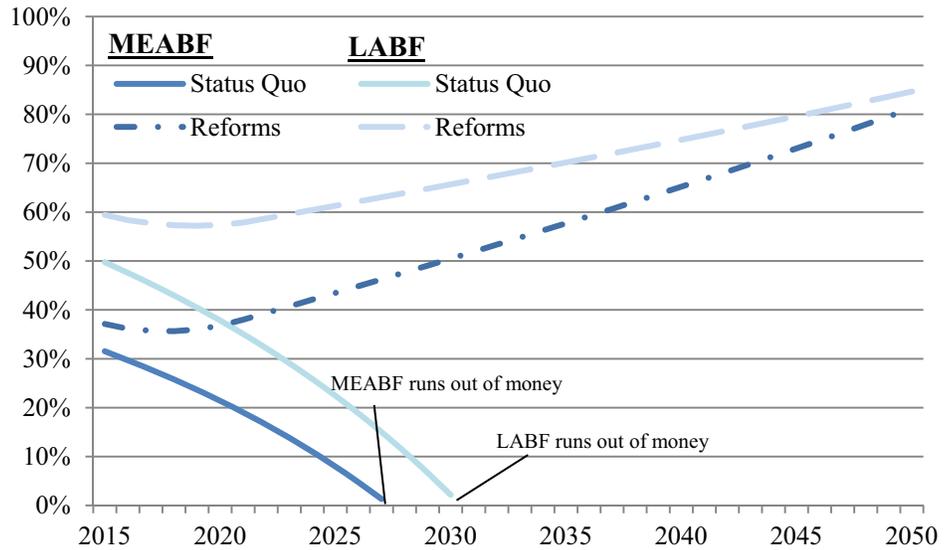
Our research and analysis led to the following findings.

- 1. City pension funds are running out of money under the current funding formula. The proposed plan to reform pensions would result in significant progress toward fully funding pension plans for city workers.*

The municipal employees' pension fund (MEABF) and the laborers' pension fund (LABF) were underfunded by a combined \$9.6 billion at the beginning of 2013. We estimate that the total underfunded liability now exceeds \$10 billion. This shortfall is largely due to the fact that, under current law, the money that the City of Chicago sets aside for municipal workers' and laborers' retirement is insufficient and in no way connected to the amount of retirement benefits that each fund is required to pay in the future.

If the current funding formula continues, we estimate that the MEABF will be out of money in 2027 and the LABF will be out of money in 2030. If that occurs, it is not clear how the City of Chicago would pay the over \$1.3 billion in annual benefits for retirees in those and future years.

FIGURE 1. Funding Ratios Under Status Quo and Reforms, 2015 to 2050



Source: MEABF and LABF Actuarial Reports; AEG Estimates
 Analysis: Anderson Economic Group, LLC

Under the proposed plan, the City of Chicago would commit to putting sufficient funds into the plan in order to achieve 90% funding by the year 2055. This would significantly reduce the risk of even greater tax hikes or benefit cuts in the future.

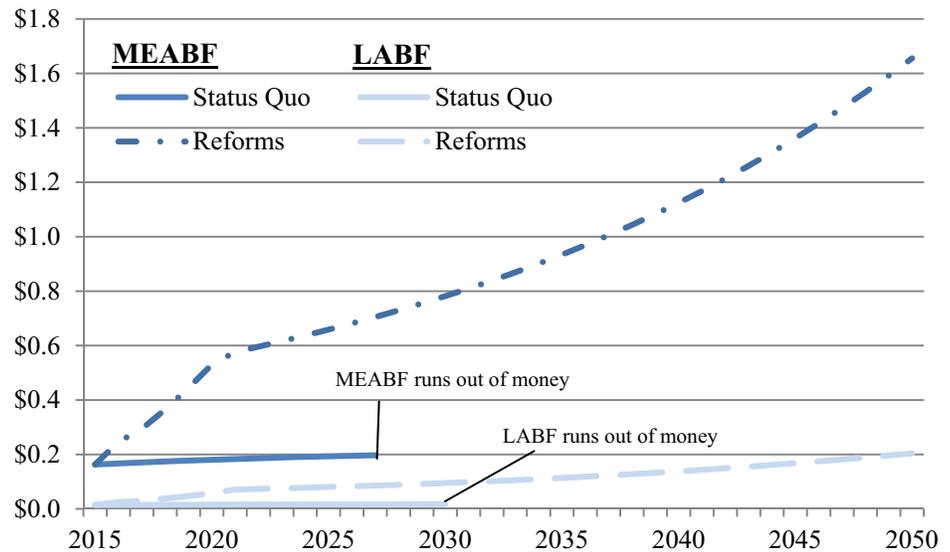
2. These reforms would result in \$450 million more in annual payments from the City and \$50 million more in annual payments from City employees by the year 2021.

The proposed reforms will result in a gradual increase of required annual contributions from the City between the years 2016 and 2020. By the year 2021, we estimate the City of Chicago will need to contribute \$450 million more into these two funds than under the current funding formula in that year alone. By 2025, that annual amount will increase to \$530 million.

For context, the 2025 payment amount is equivalent to over 9% of City governmental revenues (excluding sewer, water, tollway, and airports) in 2012. Figure 2 on page 3 shows the projected annual contributions from the City of Chicago under the status quo and under the proposed reforms.

By 2021, employees also will be contributing more—over \$50 million per year, in total. This represents 2.5% of their salary and wages, or an increase of 29% in their contributions.

FIGURE 2. Annual Contributions by the City of Chicago Under Status Quo and Reforms, 2015 to 2050 (billions of \$)



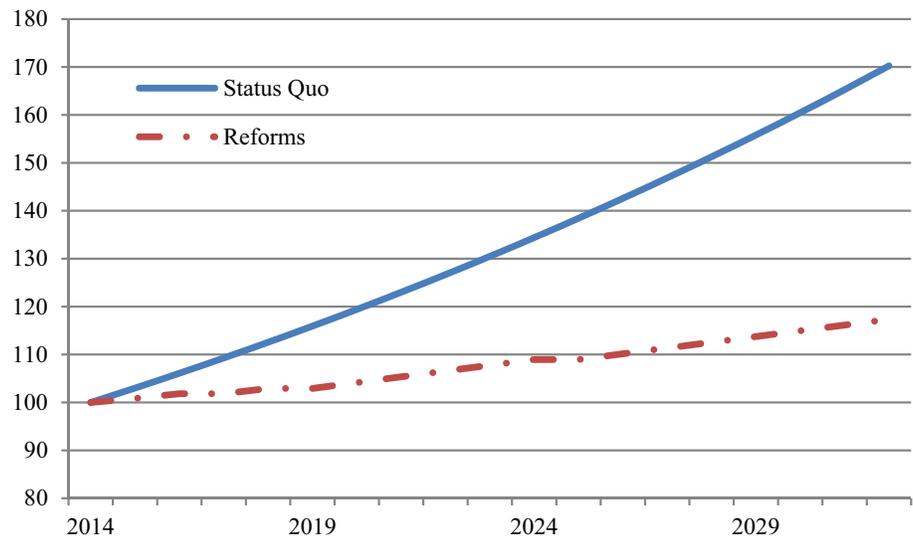
Source: MEABF and LABF Actuarial Reports; AEG Estimates
 Analysis: Anderson Economic Group, LLC

3. *Within ten years, these reforms will result in significantly lower benefits for current and future retirees compared to what they would receive under the status quo.*

The proposed pension reforms would considerably reduce the rate at which retiree benefits increase from year to year. As a result, ten years from now, annual benefit payments would be 14% lower under the proposed reforms than under the status quo. Twenty years from now, annual benefit payments under the proposed reforms would be 20% lower than under the status quo.

This is accomplished by reducing the rate at which benefit checks rise for current, as well as future, retirees. In ten years, a current retiree’s annual benefit check would be 9% higher than it is today under the proposed reforms, as opposed to 34% under the status quo. Similarly, for future retirees (current employees who have not yet retired), annual benefit checks would be 10% higher ten years after retirement under the proposed reforms, as opposed to 34%. Figure 3 on page 4 shows the different growth rates for those who are already retired. The trajectory for those who have yet to retire is similar.

FIGURE 3. Increase in Annual Retiree Benefits After 2014, Under Status Quo and Reforms (100 = benefit level in 2014)



Source: Senate Bill 1922, as passed on April 8, 2014; Congressional Budget Office Baseline Economic Forecast, February 2014; AEG Estimates
 Analysis: Anderson Economic Group, LLC

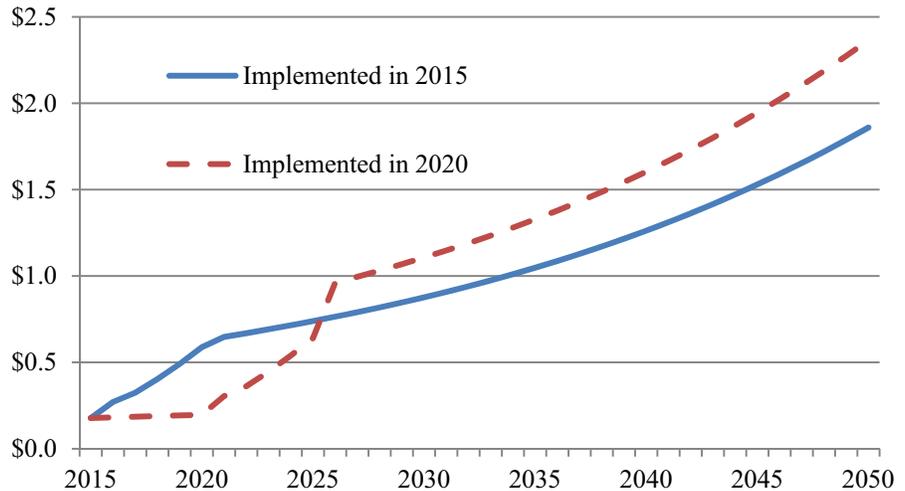
4. Waiting five years to implement these reforms would cost over \$200 million a year in 2026 and beyond.

Any money that is placed into the pension funds today is expected to gain investment returns at an average annual rate of 7.5%. As a result, if the City fails to put \$100 into the fund today in order to pay a given future benefit, on average, the City will have to pay \$107.50 next year in order to cover that same benefit. To put it another way, any unfunded liability left unpaid today will appear next year 7.5% larger.¹

To see the consequences of further delays in altering the pension formula, we estimated how much these exact same reforms would cost if they were implemented starting in 2020, rather than 2015. The 5-year delay would cost the City over \$200 million dollars per year once the reforms are fully phased in.

1. Of course, there are other reasons why an unfunded liability might increase from year to year. For example, misestimation of the average age of retirement, the longevity of retired employees, future payroll, market returns, and other factors can also result in underfunding the pension fund.

Annual Contributions by the City of Chicago Under Proposed Reforms if Implemented in 2015 and 2020, Respectively (billions of \$)



Source: MEABF and LABF Actuarial Reports; AEG Estimates
Analysis: Anderson Economic Group, LLC

5. Progress toward fully funding pensions will only be achieved if city and state policymakers can resist the temptation to defer City contributions.

Nearly \$500 million dollars in increased annual contributions will be very difficult to carry out, in practice. This increase imposes a big burden and will likely occur shortly after similar commitments have been made to the policemen's, firemen's, and schoolteachers' retirement funds. The temptation to delay City contributions will be even greater than usual.

While it is occasionally appropriate to defer payments in special circumstances, failure of the City to follow through on these higher contribution levels would result in even greater costs down the road. The proposed reforms contain enforcement mechanisms—the State of Illinois can redirect grants for the City into pension funds, and either fund's retirement board can sue the City—but these are statutory requirements. It is difficult to predict how often the City will request a statutory change that reduces its obligations, and how willing the State will be to grant such a change.

OUR APPROACH

We performed an actuarial analysis in order to estimate the potential impact of the pension reforms. Our primary sources were the annual actuarial reports and comprehensive financial reports for the Laborers' and Retirement Board Employees' Annuity and Benefit Fund (LABF) and the Municipal Employees' Annuity and Benefit Fund (MEABF). These reports provide only summary information, so we were required to make certain assumptions in order to carry out our analysis. As a result, our estimates may moderately differ from those of actuaries who have access to more detailed information.

Executive Summary

Using, where possible, the same actuarial assumptions that these funds' actuaries used, we first predicted the number of retirees in future years and their expected benefits, under the status quo and under the reforms. We then used this information to estimate a change in the system's unfunded liability due to these reforms. Finally, we used this new unfunded liability and new requirements for funding to estimate the required funding changes for the city and employees in the short and medium term. For more information on our methods and important assumptions, see "Methodology" on page 22.

II. Status of City Pension Plans

In a defined benefit pension plan, the employer sets an annuity (or annual benefit) to pay employees upon retirement. The size of this annuity is usually based on tenure, salary upon retiring, age, and/or duration of retirement. In order to minimize the cost of the benefit plan to the employer, it is common practice to set aside enough money now to pay benefits in the future. Essentially, the employer calculates how much it will owe in the future to current and retired employees, and figures out how much should be set aside and invested in order to pay that amount.

The estimated amount of future benefits discounted by the expected rate of return on assets is the *actuarial accrued liability*. When the money set aside to pay for these benefits is less than the actuarial accrued liability, the pension plan is *underfunded*. Pension plans can become underfunded for several reasons, including a drop in the rate of return on fund assets; failure by the employer to pay the required contribution; and misestimation of employee tenure, salary and lifespan. The current unfunded liability for Chicago's retirement plans is due primarily to a combination of the first two.

CHICAGO'S RETIREMENT FUNDS

There are four separate retirement plans for City of Chicago employees. They are the Municipal Employees' Annuity and Benefit Fund (MEABF), the Laborers' and Retirement Board Employees' Annuity and Benefit Fund (LABF), the Policemen's Annuity and Benefit Fund (PABF), and the Firemen's Annuity and Benefit Fund (FABF). As of the end of 2012, these pension plans had a combined unfunded liability of \$19 billion.²

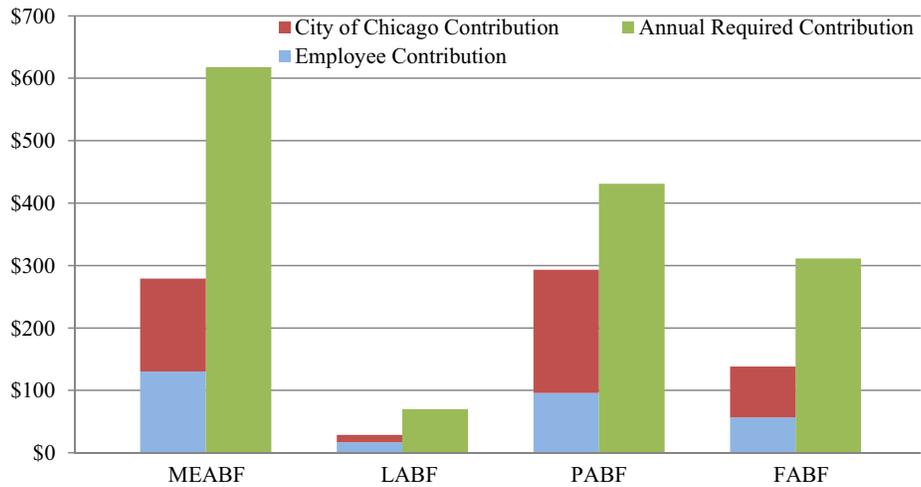
Until recently, all of these plans were funded using a formula that did not take into account how many benefits they needed to pay in the future. The City would determine its contribution each year by multiplying employee contributions made two years previously by a set "multiplier." This is still the case with the MEABF and the LABF. For each fund, the City takes employee contributions from two years previously, multiplies them by 1.25 and 1.0, respectively, and pays that amount.

For example, in the year 2010, municipal employees paid \$133 million into the pension fund (each year, municipal employees contribute 8.5% of their salaries and wages). Two years later, in 2012, the City put 1.25 times that amount, a total of \$167 million, into the municipal fund. Only a portion of that amount—\$158 million—went toward pensions, while the other \$9 million went to cover retiree health benefits. Meanwhile, according to the fund's actuaries, the annual

2. This is the total unfunded liability for pension benefits alone. The retirement funds also pay benefits for retiree health insurance, an obligation for which there is also an unfunded liability. That amount is not included here.

required contribution the City needed to pay in 2012 in order to eventually achieve full funding in the pension plan was \$487 million.³

FIGURE 4. Actual Contributions Compared to Annual Required Contribution for City Pension Plans, 2012 (millions of \$)



Source: 2012 and 2013 Actuarial Reports for the MEABF, LABF, PABF and FABF

Analysis: Anderson Economic Group, LLC

Note: "Annual Required Contribution" refers to the contribution recommended by actuaries in order to achieve a fully-funded system at a level share of payroll within 30 years. It is considerably higher than the statutorily required amount.

In other words, the City of Chicago, by paying the statutorily required amount in 2012, paid over \$300 million less than actuaries would recommend to achieve full funding in the system. This was not only true for the municipal employees' pension plan. In that same year, the City paid \$41 million less than the recommended amount in the LABF, \$137 million less in the PABF, and \$173 million less in the FABF. When these payments are not made, they add to the unfunded liability and compound from year to year. After several years of underfunding its pension plans, the City of Chicago now has a considerable gap to close.

REFORMS TO POLICEMEN'S AND FIREMEN'S PENSIONS

In 2010, the state legislature passed sweeping reforms to all city pension plans, reducing the benefits for all employees hired on or after January 1, 2011. For those employees, among other measures, the legislature pushed back the retirement date, capped the salary base for benefits, and reduced the rate at which benefits would increase from one year to the next. These reforms greatly reduced the required payments for all future employees. Importantly, however,

3. Municipal Employees' Annuity and Benefit Fund of Chicago, "Actuarial Valuation Report for the Year Ending December 31, 2012," Gabriel Roeder Smith and Company, April 2013. The \$487 million figure is found by using a 30-year, level-share-of-payroll funding schedule for paying down the unfunded liability and subtracting the amount already covered by employees.

an unfunded liability arises from benefits *already accrued*. These reforms did not significantly reduce the unfunded liability in these plans because they did not reduce benefits for current employees and retirees.

For the policemen's and firemen's annuity funds, the 2010 reforms went even further. For these two funds alone, the City of Chicago abandoned its "multiplier" financing method and instead was required to adhere to an annual funding requirement that would result in a 90% funding ratio by the year 2040. This requirement goes into effect in 2015. The City was granted permission to levy a tax in order to fund this payment. If the City fails to meet this requirement in any year, the State has permission to redirect grant funds for the City directly into the pension funds.

These reforms will strengthen the solvency of these pension funds, but it will be difficult for the City to meet their new obligations. The estimated annual required contribution from the City for these two pension funds combined was \$660 million in 2013. The requirement for 2015 is not yet publicly available, but it is likely to be at least that amount, a considerable increase over the estimated 2013 payments of \$250 million.⁴

FUNDING STATUS OF THE MUNICIPAL AND LABORERS' FUNDS

For the two remaining funds, MEABF and LABF, the multiplier financing requirement remains. Under the current trajectory, this could lead to insolvency of both funds within the next fifteen years. According to our projections, the MEABF will run out of money in the year 2027 and the LABF will run out of money in the year 2030 under current statutory funding requirements and benefits. See Figure 5 on page 10 for the projected funding ratio (ratio of total plan assets to total plan liabilities) for both plans.

If the funding ratio were ever to reach 0%, it is unclear what would occur next. Ultimately, the City of Chicago is statutorily and constitutionally required to pay agreed-upon pension benefits to retired workers. In the year 2027, the year in which the MEABF will run out of funds, we estimate that retired municipal employees will be entitled to \$1.2 billion in annual benefits. We estimate that contributions from employees would only cover about \$220 million of that total, so the City would be on the hook for an additional \$1.0 billion.

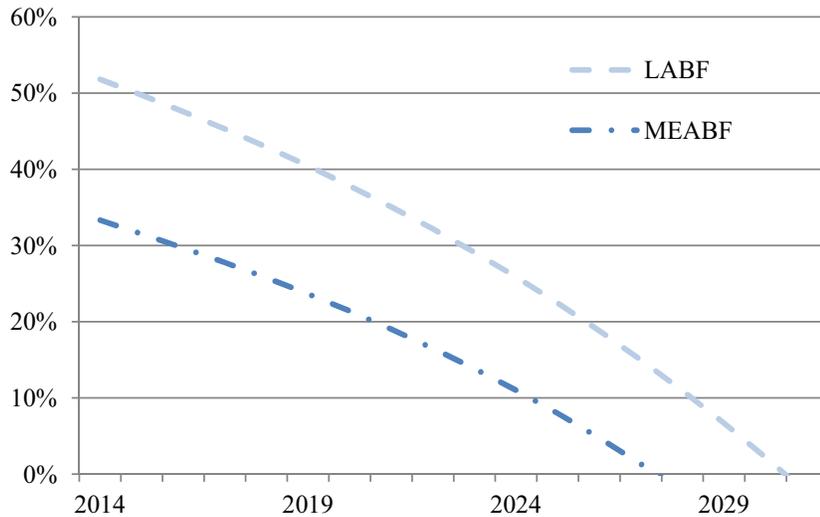
Similarly, when the LABF is projected to run out of funds in 2030, retirees would be owed \$240 million, only \$50 million of which would be covered by contributions from employees. Again, it is unclear how this situation would be resolved. The City could convert to a pay-as-you-go system where they just pay out these benefits as they arise, but this would be highly unusual and perhaps unsustainable in the long run. Another possible outcome would be a negotiated

4. Estimated required contribution and payments for 2013 are from the actuarial valuation reports for the year ending December 31, 2012, for both the Policemen's Annuity and Benefit Fund and the Firemen's Annuity and Benefit Fund, prepared by Gabriel Roeder Smith & Company.

Status of City Pension Plans

default and an eventual effort by the City to reinstate prefunding of benefits for future years.

FIGURE 5. Projected Funding Ratio for the MEABF and LABF Under Current Funding Requirements



Source: Actuarial Reports and Comprehensive Financial Reports for MEABF, LABF; AEG Estimates

Analysis: Anderson Economic Group, LLC

III. Proposed Pension Reforms

The proposed reforms that we analyze in this report were passed by both chambers of the state legislature on April 8, 2014, as Senate Bill 1922 (SB 1922). In brief, the reforms reduce benefits for retirees in the Municipal Employees' Fund and the Laborers' Fund, while committing the City of Chicago and employees to make sufficient contributions to nearly fully fund the plans.

The reforms in SB 1922 consist of the following measures, primarily. Each of these applies to members of both the MEABF and the LABF.

CHANGES TO RETIREE BENEFITS

- Retiree benefits will be reduced by lowering annual cost-of-living adjustments from 3%, compounded, to the lesser of 3% or half of the inflation rate, non-compounded.⁵ (Since benefits would no longer be compounded, the increase will be based on the original annuity upon retirement for future retirees and the annuity in the year 2014 for current retirees.)
- Retirees will no longer receive an increase in their first year of retirement, nor will they receive an increase in the years 2017, 2019, or 2025. This measure applies to current and future retirees.
- An exception to the above two points will be made for a retiree whose total annuity is \$22,000. For those retirees, the minimum increase is 1% of their original annuity upon retirement for future retirees and the annuity in the year 2014 for current retirees.
- Beginning in January 2015, employees hired since January 1, 2011, will be able to retire two years earlier. Their new retirement age will be 65 (rather than 67) for a full pension and 60 (rather than 62) for a reduced pension.

CHANGES TO EMPLOYEE CONTRIBUTIONS

- Employee contributions will increase from 8.5% to 11% by the year 2019. This change will be phased in, such that employees must pay an additional 0.5% of their income in each year until 2019, as shown in Table 1 below.

TABLE 1. Employee Contribution to Pension Plans Under Proposed Reforms

Year	2014	2015	2016	2017	2018	2019 and later
Share of Pay Contributed Under Pension Reforms	8.5%	9.0%	9.5%	10.0%	10.5%	11.0%

Source: Senate Bill 1922, as passed on April 8, 2014

- If the funded ratio for a plan ever exceeds 90%, the employee contribution rate for the following year will drop to 9.75%. If, at any point after this drop, the funded ratio again goes below 90%, the employee contribution rate will revert to 11%.

5. The inflation rate is defined in the bill as the change in the consumer price index for all urban consumers (CPI-U).

CHANGES TO CITY OF CHICAGO CONTRIBUTIONS

- In fiscal years 2016 through 2020, the City of Chicago will ramp up its contributions to each plan by steadily increasing the “multiplier” from 1.25 to 3.05 for the MEABF and 1.00 to 2.80 for the LABF. The City is permitted to increase property taxes in the prior year in an amount sufficient to cover the additional cost of these contributions. See Table 2 below for details. In order to determine the City contribution each year, the City will multiply the multiplier by employee contributions in the base year.

TABLE 2. Increased City of Chicago Contributions Under Pension Reforms, FY 2015 to FY 2020

		FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
MEABF	Multiplier	1.25	1.85	2.15	2.45	2.75	3.05
	Base Year	2013	2013	2014	2015	2016	2017
LABF	Multiplier	1.00	1.60	1.90	2.20	2.50	2.80
	Base Year	2013	2013	2014	2015	2016	2017

Source: Senate Bill 1922, as passed on April 8, 2014

- In fiscal years 2021 through 2055, the City will be required to pay an amount into each fund that is sufficient, on a level payroll basis, to reach a funding ratio of 90% by the year 2055.
- For each fiscal year after 2055, the City will be required to pay whatever amount is necessary to maintain a funding ratio of 90%.
- If in any year the City fails to make required payments into the pension funds, the State may redirect state grants to the City into the pension funds, up to the amount that the City is required to pay. The amount of grants that can be redirected are capped at one-third of the total state grants to the City in 2016, two-thirds of the total state grants to the City in 2017, and all of the total state grants to the City in 2018 and later years.
- The Pension Board may take the City of Chicago to court if it finds that the City is failing to properly pay its obligations.
- Contributions to the funds for the purposes of prefunding pension benefits may not be used to fund retiree health care benefits.

IV. Net Cost of the Proposed Reforms to the City of Chicago and Active Employees

The reforms proposed in SB 1922 would commit the City of Chicago and its employees to making considerably higher payments into the pension funds for municipal employees and laborers.

NET COSTS FOR ACTIVE EMPLOYEES

The proposed reforms would increase the active employee contribution to pensions from 8.5% to 11% of employee salaries over the course of five years. There is a provision in the law that would lower this contribution to 9.75% if the fund ever becomes 90% funded; however, we project that it will be a very long time before either fund reaches this ratio.

In Table 3 below, we show the estimated increase in employee contributions due to this law from the years 2015 to 2025. The costs ramp up to a total net annual cost of \$55 million. Since this cost is directly proportional to the size of payroll, it will grow as the City payroll grows over time.

TABLE 3. Annual Employee Contributions Due to Proposed Reforms, 2015 to 2025 (millions of \$)

		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
MEABF	Status Quo	\$145	\$148	\$151	\$154	\$157	\$159	\$161	\$163	\$165	\$167	\$169
	Reforms	\$153	\$165	\$178	\$190	\$203	\$206	\$209	\$211	\$214	\$216	\$219
	Net Increase	\$9	\$17	\$27	\$36	\$46	\$47	\$47	\$48	\$49	\$49	\$49
LABF	Status Quo	\$18	\$18	\$18	\$19	\$19	\$19	\$20	\$20	\$20	\$20	\$21
	Reforms	\$19	\$20	\$21	\$23	\$25	\$25	\$25	\$26	\$26	\$26	\$27
	Net Increase	\$1	\$2	\$3	\$4	\$6	\$6	\$6	\$6	\$6	\$6	\$6
Net Annual Cost of Reforms to Active Employees		\$10	\$20	\$30	\$41	\$52	\$52	\$53	\$54	\$54	\$55	\$55

Source: MEABF and LABF Actuarial Reports; AEG Estimates

Analysis: Anderson Economic Group, LLC

Note: Numbers may not sum to totals due to rounding.

NET COSTS FOR THE CITY OF CHICAGO

The proposed reforms would dramatically increase the amount of funding going to both the LABF and the MEABF. As described in “Chicago’s Retirement Funds” on page 7, the City has consistently failed to provide adequate funding for both of these pension funds. These reforms would commit the City to providing sufficient funds to ensure that the plans will be 90% funded by the year 2055.

As shown in Table 4 on page 14, the extra costs of these reforms to the City would ramp up quickly through the year 2021, as required by the law. They would continue to increase at a rate of about 4% even after they have ramped up, due to the nature of the funding plan. By the year 2021, the City will need to provide nearly \$450 million in annual contributions above what the current

Net Cost of the Proposed Reforms to the City of Chicago and Active Employees

funding formula dictates. By the year 2025, that additional annual cost would grow to \$530 million.

TABLE 4. Annual City of Chicago Contributions Due to Proposed Reforms, 2015 to 2025 (millions of \$)

		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
MEABF	Status Quo	\$163	\$166	\$170	\$174	\$177	\$181	\$184	\$186	\$189	\$191	\$193
	Reforms	\$163	\$246	\$294	\$365	\$444	\$530	\$577	\$596	\$616	\$637	\$659
	Net Increase	\$0	\$79	\$124	\$191	\$266	\$350	\$393	\$410	\$427	\$446	\$465
LABF	Status Quo	\$15	\$15	\$15	\$15	\$15	\$16	\$16	\$16	\$16	\$16	\$17
	Reforms	\$15	\$25	\$30	\$38	\$47	\$57	\$71	\$73	\$75	\$78	\$80
	Net Increase	\$0	\$10	\$15	\$23	\$32	\$42	\$55	\$57	\$59	\$61	\$64
Net Annual Cost of Reforms to City of Chicago		\$0	\$89	\$139	\$214	\$298	\$391	\$448	\$467	\$487	\$507	\$529

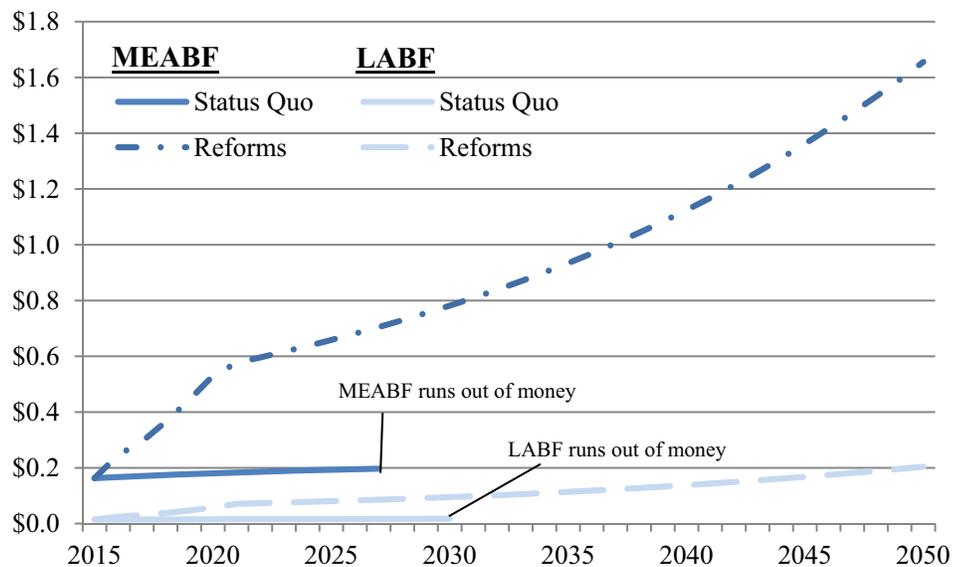
Source: MEABF and LABF Actuarial Reports; AEG Estimates

Analysis: Anderson Economic Group, LLC

Note: Numbers may not sum to totals due to rounding. These contributions do not include supplemental contributions to fund retiree health care benefits.

Figure 6 below shows the long-term trajectory of the reforms compared to the status quo for both pension funds. We have only projected the impact out to the year 2050; however, if this funding plan is followed, the payment from the City would drop considerably in the year 2055, once the plan has reached 90% funding. As shown in Figure 7 on page 15, these additional contributions would effectively resolve the majority of the funding shortfall.

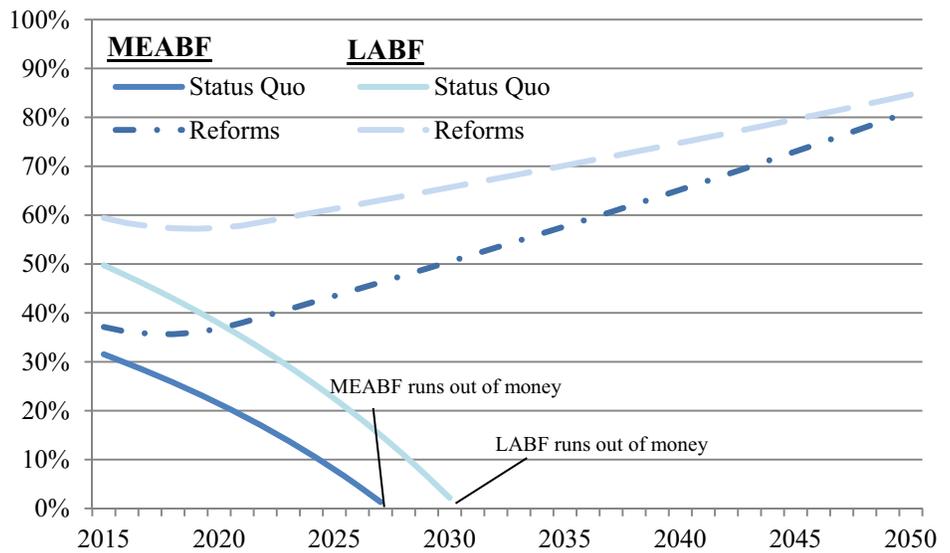
FIGURE 6. Annual Contributions by the City of Chicago Under Status Quo and Reforms, 2015 to 2050 (billions of \$)



Source: MEABF and LABF Actuarial Reports; AEG Estimates

Analysis: Anderson Economic Group, LLC

FIGURE 7. Funding Ratios Under Status Quo and Reforms, 2015 to 2050



Source: MEABF and LABF Actuarial Reports; AEG Estimates
 Analysis: Anderson Economic Group, LLC

The statute does not specify how the City shall fund these additional contributions, though it does permit the City of Chicago to increase property taxes up to the incremental amount necessary to pay for them. The options actually adopted by the City Council to fund these increased payments would likely include some combination of expenditure cuts and revenue increases.

THE COST OF WAITING

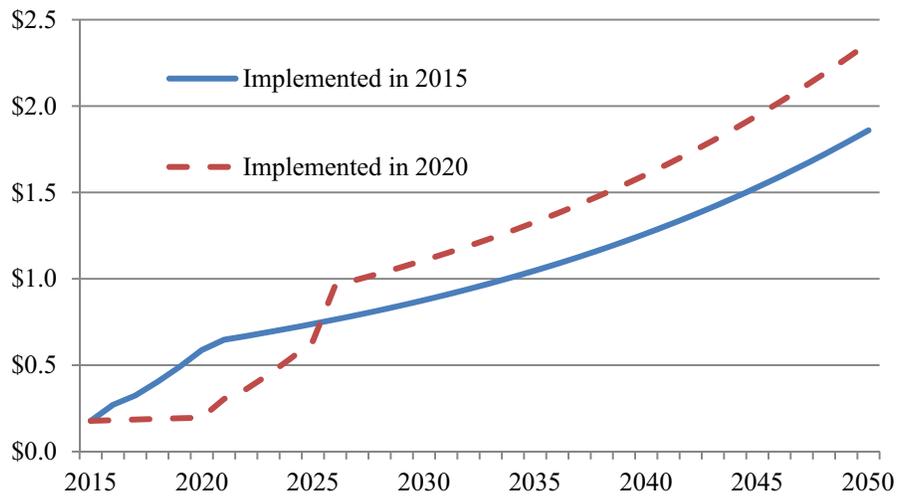
The general motivation for prefunding pension benefits stems from the ability to gain investment returns on money set aside today. The earlier that an employer sets aside money to pay for future benefits, the more investment returns that employer will realize and the less that employer will have to spend overall. Some might question the urgency of these pension reforms, but the foregoing logic suggests that waiting is costly.

We performed the same analysis assuming that the reforms would go into effect five years into the future. Thus, the first year of the changes would be 2020, and the plans would be 90% funded by the year 2060 instead of 2055.

As shown in Table 5 on page 16, the costs of the reform would be considerably higher. Once the reforms are fully phased in (year six), the City would pay \$960 million if it waits five years to begin implementing this reform, rather than \$650 million if the reform is implemented in this coming year. Figure 8 on page 16 shows the costs of both scenarios over time. Note how the reform, if implemented in 2020, becomes considerably more expensive in the year 2026 than it would be if the City were to implement it starting in 2015. The cost of delay in years 2026 and beyond exceeds \$200 million per year.

Net Cost of the Proposed Reforms to the City of Chicago and Active Employees

FIGURE 8. Annual Contributions by the City of Chicago Under Proposed Reforms if Implemented in 2015 and 2020, Respectively (billions of \$)



Source: MEABF and LABF Actuarial Reports; AEG Estimates
 Analysis: Anderson Economic Group, LLC

TABLE 5. City of Chicago Annual Contributions in the First 10 Years Following Reform if Reforms Are Implemented in 2015 and in 2020, Respectively (millions of \$)

Year of Implementation	Years Since Reform										
	0	1	2	3	4	5	6	7	8	9	10
2015	\$178	\$271	\$324	\$403	\$491	\$588	\$647	\$669	\$691	\$715	\$739
2020	\$196	\$304	\$362	\$446	\$539	\$640	\$961	\$996	\$1,031	\$1,068	\$1,107

Source: MEABF and LABF Actuarial Reports; AEG Estimates
 Analysis: Anderson Economic Group, LLC

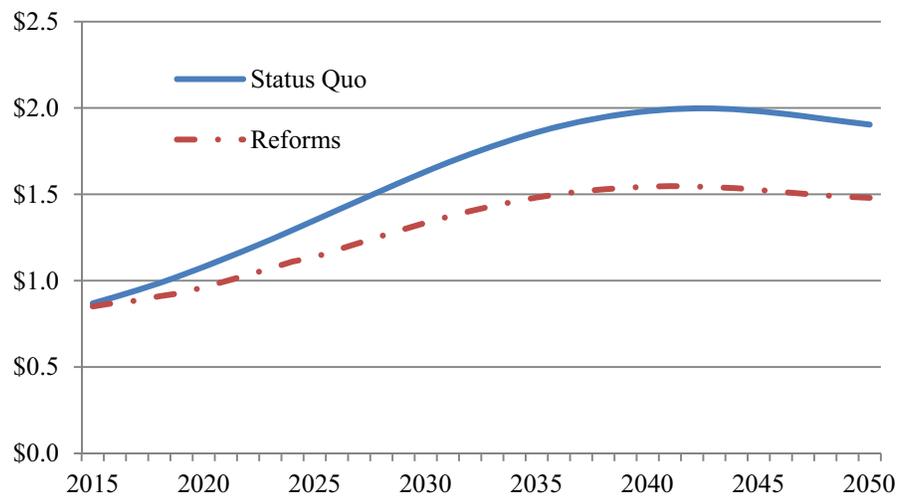
Note: These contributions do not include supplemental contributions to fund retiree health care benefits, which are unaffected by these reforms.

V. Benefit Reduction for Employees and Retirees

The proposed pension reforms include considerable cuts to retiree benefits. Since these reforms lower the increase in benefits from year to year but do not lower the annuity level in the first year after retirement, the savings are phased in over the course of 30 years after the reforms are implemented.

In 2020, we estimate that annual benefit payments to retirees in the MEABF and LABF plans will be approximately 10% lower than they would otherwise be under these reforms. By 2033, the reduction in annual benefit payments will reach 20%. The reduction in annual benefits reaches a ceiling at around 23% in 2047. After that point, the balance in retirees shifts towards those who were hired in 2011 or later, whose cost-of-living increases had already been lowered by reforms made in 2010. See Figure 9 below for our estimate of annual benefit payments from both plans under the reforms, compared to under the status quo.

FIGURE 9. Combined Annual Benefit Payments to LABF and MEABF Retirees Under Status Quo and Reforms 2015 to 2050 (billions of \$)



Source: MEABF and LABF Actuarial Reports; AEG Estimates
 Analysis: Anderson Economic Group, LLC

SAVINGS FROM PENSION BENEFIT CUTS

These cuts will result in considerable savings to the City. We estimate that the total reduction in the unfunded liability will be \$1.9 billion. The combined unfunded liability in these plans was \$9.6 billion at the beginning of 2013, and likely already exceeds \$10 billion.

In addition to the lower unfunded liability, the normal costs for employees hired before 2011 will decrease. *Normal costs* reflect the payment needed to prefund incremental benefits accrued due to service time in the most recent year. They are the amount that the employer pays if there is no unfunded liability. We estimate that these reforms would decrease normal costs for employees hired prior

Benefit Reduction for Employees and Retirees

to 2011 by 13%. Offsetting these savings somewhat are increased normal costs for employees hired in 2011 and later. Since those employees would now be able to retire two years earlier under these reforms, we estimate that normal costs for these employees would go up by about 7%. These changes are summarized in Table 6 below.

TABLE 6. Normal Costs and Unfunded Liability Under Status Quo and Reforms, 2015

		Status Quo	Reforms
MEABF	Normal Cost, Employees Hired Prior to 2011	17.4%	15.1%
	Normal Cost, Employees Hired in 2011 and Later	10.7%	11.5%
	Unfunded Liability	\$10.6 billion	\$8.9 billion
LABF	Normal Cost, Employees Hired Prior to 2011	20.1%	17.6%
	Normal Cost, Employees Hired in 2011 and Later	14.0%	15.4%
	Unfunded Liability	\$1.3 billion	\$1.0 billion

*Source: MEABF and LABF Actuarial Reports; AEG Estimates
 Analysis: Anderson Economic Group, LLC
 Note: Normal costs are presented as a percent of salary and wages.*

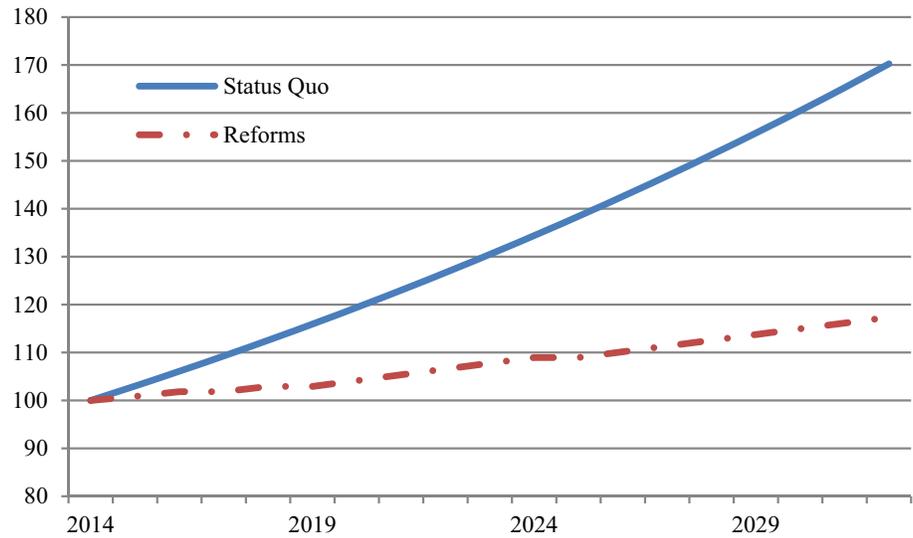
IMPACT ON CURRENT RETIREES

This reform, in percentage terms, will impact nearly all retirees in the same way. Since the benefit cut takes the form of a decrease in annual cost-of-living increases, the benefit cut grows over time relative to what the retiree would earn under the current benefit plan. Figure 10 on page 19 shows the trajectory of annual benefits relative to what they would be in the absence of the reforms, indexed to 100 in the year 2014.

Ten years from now, all current retirees who are eligible for increases will have annual benefits 34% higher than their benefits are this year if there is no change. Under the proposed reforms, the annual benefit level increases by 9% over that same time period. For someone who currently receives about \$36,000 in annual pension benefits (the average annual benefits for a 67-year-old in the municipal employees’ plan), this means a difference of \$9,000 in the year 2024. The difference grows considerably over time.

Note that these reductions mean that retirees’ incomes will be going up at a slower rate than inflation, in any year where inflation is positive. This implies that *real incomes* (incomes adjusted for inflation) for retirees will be decreasing over time. This applies to the employees discussed in the next section, as well.

FIGURE 10. Increase in Annual Retiree Benefits After 2014 for Current Retirees, Under Status Quo and Reforms (100 = benefit level in 2014)



Source: Senate Bill 1922, as passed on April 8, 2014; Congressional Budget Office Baseline Economic Forecast, February 2014; AEG Estimates
 Analysis: Anderson Economic Group, LLC

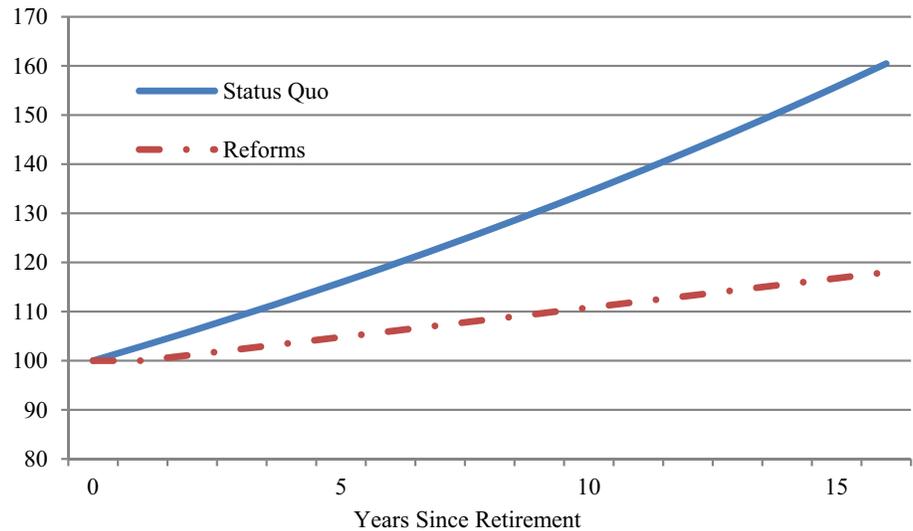
CHANGE IN BENEFITS FOR CURRENT EMPLOYEES

Current employees will see a considerable decrease in long-term benefits once they retire, as well. In this section, we focus only on employees who were hired prior to 2011. Those hired in 2011 or later will actually see an increase in average benefits because they are now able to retire two years earlier.

As with current retirees, the change in annual benefits for employees, in percentage terms, is the same for almost all employees over the course of their retirement. Figure 11 on page 20 shows the increase in annual benefits over the course of retirement for employees that have not yet retired under the status quo and under the proposed reforms.

Under the status quo, in their tenth year after retirement, plan members receive 34% more in annual benefits than they received in their first year of retirement. Under the proposed reforms, this increase in annual benefits will be reduced to 11%. Within fifteen years, these values increase to 56% and 17%, respectively. For someone with a starting annuity of \$60,000, this results in a cut of \$14,160 in the tenth year of retirement and \$23,405 in the fifteenth year of retirement.

FIGURE 11. Increase in Annual Retiree Benefits After Retirement for Future Retirees, Under Status Quo and Reforms (100 = benefit level in first year)



Source: Senate Bill 1922, as passed on April 8, 2014; Congressional Budget Office Baseline Economic Forecast, February 2014; AEG Estimates
 Analysis: Anderson Economic Group, LLC

The only retirees who will not experience the change in benefits shown above are those who will retire in the next few years. They will experience a lower benefits trajectory—closer to that of current retirees—because they will not receive an increase in the years 2017, 2019, and 2025.

There is a special provision in the law for those making annuities less than \$22,000. They are not subject to the pension “freezes” in the first year of retirement and in the years 2017, 2019, and 2025. This currently applies to just under 40% of retirees, but will apply to a lower and lower share in the future as inflation steadily increases the final average salary on which benefits are based. Those who receive an increase in the “freeze” years will only receive an increase of 1%, so this provision only has a small effect on the overall reduction in benefits.

VI. About the Author

ABOUT ANDERSON ECONOMIC GROUP

Anderson Economic Group, LLC was founded in 1996 and today has offices in East Lansing, Michigan and Chicago, Illinois. AEG is a research and consulting firm that specializes in economics, public policy, financial valuation, and market research.

We insist on a high level of integrity in our analyses, together with technical expertise in the field. For these reasons, work by Anderson Economic Group is commonly used in legislative hearings, legal proceedings, and executive strategy discussions.

Since our founding in 1996, our analysis has helped publicly-held corporations, private businesses, governments, and non-profit organizations. Our work has included markets throughout the United States, as well as in Canada, Mexico, and Barbados.

AEG's past clients include:

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Please visit www.AndersonEconomicGroup.com for more information.

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VII. Methodology

In order to provide the estimates in this report, we performed an actuarial analysis on the pension reforms, as proposed in SB 1922. Our primary sources were the annual actuarial reports and comprehensive financial reports for the Laborers' and Retirement Board Employees' Annuity and Benefit Fund of Chicago (LABF) and the Municipal Employees' Annuity and Benefit Fund of Chicago (MEABF). These reports provide only summary information, so we were required to make certain assumptions in order to carry out our analysis. As a result, our estimates may moderately differ from those of actuaries who have access to more detailed information.

Using, where possible, the same actuarial assumptions that these funds' actuaries used, we took the following steps:

- Estimated, for all years through 2050, the number of active employees and retirees, including their age, tenure, and average salary (in the case of retirees, average salary upon retirement) for both the MEABF and the LABF.
- Estimated benefit payments for retirees in each year, based on the current funding formula and based on the formula after reforms for both the MEABF and the LABF.
- Estimated the new unfunded liability and new requirements for funding due to changes in the benefits paid and the changes in the funding formula for both the MEABF and LABF.

MEMBERS AND RETIREES

For each year between 2014 and 2050, inclusive, we estimated the number of active employees in the LABF and the MEABF. We started with the number of active employees by age and tenure. We assigned each employee within a given age-and-tenure group the average pay level for that group. This information was available in the actuarial report for each fund.

The total number of Tier 2 employees (employees hired after January 1, 2011) was available, but they were not separated out by age and tenure. We assigned all employees with less than one year of tenure and a proportion of those with one to four years of tenure to the Tier 2 group. The share of those with one to four years of tenure apportioned to the Tier 2 group were based on the Tier 2 total and the percent of people within each age group with less than one year of tenure. We tracked Tier 1 and Tier 2 employees separately because they receive very different benefits.

We then constructed a custom model to project the number of active employees and number of retirees for future years. In each year, the number of active employees at a given tenure and age would be equal to the number of active employees from the previous year with that tenure minus one year and that age minus one year, adjusted for the following:

- Mortality rate for working people of that age;

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- Termination rate (rate at which employees left without retiring, for any reason) for that tenure and age; and,
- Retirement rate for that tenure and age.

We used RP-2014 Mortality Rates from the Society of Actuaries. We did not make adjustments to these mortality rates for future years. Termination rates and retirement rates were provided in the actuarial reports.

We also adjusted the salaries in each year. We assumed that starting salaries would grow by 3% from one year to the next (the actuaries for these systems use inflation values of 3%). For other salaries, at every given level of tenure and age, we used the rate of salary increases as presented in the actuarial report. For example, the rate of salary increase used by MEABF actuaries for employees with 4 years of tenure is 6.75%. Therefore, we assumed that a 30-year-old with 5 years of tenure in 2021 would have a salary 6.75% greater than a 29-year-old with 4 years of tenure in 2020.

For those who retired, we kept track of final salary, tenure, age, and the year in which they retired. After the first year of retirement, the number of retirees at a given tenure level were simply adjusted by mortality rates for the following year.

We also assumed that, for each year after 2012, the number of new employees in each fund and their age distribution would be the same as they were in 2012 for MEABF and 2011 in LABF. We used 2011 for LABF employees because the number of hires in 2012 was unusually low, and we did not want to assume that trend would continue.

The only difference between the numbers and characteristics of retirees under the reforms occurs for Tier 2 employees (those hired in 2011 or later). Tier 2 employees would be able to hire two years earlier under proposed reforms (65 instead of 67 for a full pension). We assumed that retiree rates at the earlier ages would be the same as they were for the youngest ages under the current plan. We adjusted our analysis accordingly when modeling the effect of the proposed reforms.

ESTIMATING BENEFITS

We estimated benefits for three different groups: those who retired before 2013 (current retirees), those who were hired before 2011 and retired in 2013 or later (Tier 1 future retirees), and those who were hired in 2011 or later (Tier 2 future retirees).

Current retirees

The actuarial reports for these funds provide the number of retirees and their average benefits received by age. We assumed, in the first year, that each retiree received the average benefit corresponding to their given age bracket. In modeling future benefit payments under the status quo, we simply increased the bene-

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fit level for the set of retirees at each age by 3%, and then reduced the number of retirees by the mortality rate for retired workers.

After Reforms. To estimate current retirees' benefits after reforms, we assumed that inflation would never be 6% or higher. This means that, in years where there would be no freeze, retirees' benefits would increase at half the rate of inflation times their benefit in the year 2014. For each year, we added a given age group's 2014 benefit times half the rate of inflation, according to the Congressional Budget Office (CBO) February 2014 Economic Baseline Forecast. For years after 2024, the last year where CPI-U is projected in the baseline forecast, we assumed that the inflation rate would be equal to the projected inflation rate in 2024 (2.4%).

In the years 2017, 2019, and 2025 we did not increase the benefits from one year to the next, as the proposed reforms require a benefit freeze in those years. In each case, we adjusted the change in benefits from one year to the next by the mortality rate for retirees within each age group.

Tier 1 future retirees

For future retirees in Tier 1 (retirees who retire in or after 2013 and were hired prior to 2011), we estimated benefits under the current plan by multiplying 2.4% times years of tenure times final average salary for retirees with 33 years of service or less. Retirees cannot receive more than 80% of their final average salary as their starting annuity, so retirees with over 33 years of service were given an original annuity of 80% times their final average salary.

Final average salary is the highest average annual salary for any four consecutive years within the last ten years of service. To approximate final average salary, we multiplied the retiring salary for a retiree by 93.7% for the MEABF and 94.7% for the LABF. This would accurately estimate a retiree's final average salary if that retiree received 4.5% raises in each of the four years leading up to retirement in the MEABF and 3.75% raises in each of the four years leading up to retirement in the LABF. Those amounts for raises correspond to actuarial assumptions made in the funds' actuarial reports.

In all future years, we increased each retiree's benefits by 3%. In each case, we adjusted the number of retirees for each year downward by the mortality rates for retirees within each age group.

After Reforms. To estimate the benefits for future retirees under the reforms, we used the same method to estimate the starting benefit as under the current plan. However, instead of using a 3% increase in years following the first year of retirement, we used an increase equivalent to half of inflation, as estimated by the Congressional Budget Office, times the original annuity upon retirement.

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We did not apply this increase in the first year after retirement or in the years 2017, 2019, and 2025. In each case, we adjusted the number of retirees for each year downward by the mortality rates for retirees within each age group.

Tier 2 future retirees

For future retirees in Tier 2 (retirees who were hired in 2011 or later), we estimated benefits under the current plan by multiplying 2.4% times years of tenure times final average salary for those with 33 years of service or less. Retirees cannot receive more than 80% of their final average salary as their starting annuity, so retirees with over 33 years of service were given an original annuity of 80% times their final average salary.

For Tier 2 employees, final average salary is the highest average annual salary for any eight consecutive years within the last ten years of service (as opposed to four). To approximate final average salary, we multiplied the retiring salary for a retiree by 86.2% for the MEABF and 88.2% for the LABF. This would accurately estimate a retiree's final average salary if that retiree received 4.5% raises in each of the eight years leading up to retirement in the MEABF and 3.75% raises in each of the eight years leading up to retirement in the LABF. Those raise amounts correspond to actuarial assumptions made in the funds' actuarial reports.

Also, final average salary was capped at \$106,800 in 2011 for Tier 2 employees. This cap is adjusted upward by half the rate of inflation each year. We accounted for this cap and how it would change over time in estimating final average salary.

In all future years, we increased each retiree's benefits by half of inflation times the original annuity upon retirement. We also adjusted the number of retirees downward by the mortality rate for retirees at each corresponding age.

After Reforms. The reforms would affect Tier 2 retirees in two ways. Their retirement age would be reduced by two years (65 instead of 67 for a full benefit), and they would no longer receive a benefit increase after their first year of retirement and in the year 2025 (no Tier 2 employees in these plans will be eligible to retire prior to 2022).

As stated above, we re-estimated the number and characteristics of Tier 2 members and retirees using an earlier retirement age. We simply applied the same procedure to these new estimates in order to account for the change in retirement age.

Also, we did not apply the benefit increase after retirees' first year of retirement or in the year 2025 to arrive at our final estimate of benefits provided to Tier 2 employees.

Impact on Benefits

Once we had estimated annual benefit payments for all groups under both the status quo and the reforms, we simply added up the groups under both scenarios. Then, the net impact of the reforms in any given year on benefit payments was simply the difference between the annual benefit payments to all groups under the reforms and the annual benefit payments to all groups under the status quo.

CHANGE IN NORMAL COSTS AND UNFUNDED LIABILITY

The changes in retiree benefit payments estimated above would impact the required City contributions through their change in the normal costs for current employees and their impact on the unfunded liability for the two systems.

Normal Costs

Normal costs are the payments required to cover the most recent year in accrued benefits for current employees. They represent how much should be paid into the pension fund if there is no unfunded liability. We estimated the change in normal costs by estimating how much less (or more) benefits will cost that will be accrued in future years. We estimated this separately for Tier 1 and for Tier 2 employees.

Tier 1. For a range of Tier 1 employees at different ages, tenure, salary, and years of retirement, we projected their future benefits under the status quo and under the reforms, using the appropriate cost-of-living adjustments. Then, we took the present value of those changes relative to the year of their retirement. We took the present value because for each year in which they are not receiving benefits, assets set aside for their benefits can gain another year of returns. The discount rate used to estimate present value was 7.5%, the actuarial assumption for market rates of return under both plans.

After modeling projected benefits under the status quo and reforms under a range of scenarios, we estimated the *total* present value of all benefits provided over the course of retirement in each scenario. Then, we estimated the percentage difference between the total present value of benefits provided under the reforms relative to the status quo in each scenario. The average of this percentage difference across all scenarios was 12.8%. Therefore, we assumed that normal costs would be reduced by 12.8%, on average, for Tier 1 employees.

Tier 2. For Tier 2 employees, we used a different method because we had to account not only for a different amount of benefits for each retiree, but a change in the overall number and characteristics of retirees due to the lowered retirement age. Using the methods described in the section “Tier 2 future retirees” on page 25, we estimated the change in total retiree benefits only for Tier 2 employees for all years between 2022 and 2050.

Then, we assumed that all retiree benefits paid in 2050 were not yet accrued. In years prior to 2050, we increased the share of benefits not yet accrued (and

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therefore not a part of the already-recognized liability). We needed to make this distinction since normal costs only reflect new benefits accrued in the relevant year. We assumed that about two-thirds of the benefits for those retiring in 2022 had not yet been accrued. For each year in between, there was a gradual increase through 2050 to a full share of benefits.

Once we estimated the share of the net savings that were attributable to benefits yet to be accrued, we took the average of those benefits over every year from 2022 to 2050. This average was weighted by a factor related to the present value in benefits for that year, such that changes in benefits in 30 years had less of an impact on the normal costs than changes in benefits in 20 years. The discount rate we used for present value was 7.5%. Our weighted average was a 7.2% increase in benefits, suggesting that normal costs for Tier 2 retirees should go up by 7.2%.

Unfunded Liability

To estimate the unfunded liability, we started with the total change in benefits paid due to the reform, as calculated in “Impact on Benefits” on page 26. We could not attribute the total change in benefits to a change in the unfunded liability, because some of the reduced benefits are yet to be accrued by current employees (they will be paid for through normal costs in the coming years).

For *current* retirees, all changes in benefits would contribute to a reduction in the unfunded liability. We took the present value of all reductions in benefits for current retirees and summed them to estimate how much they would reduce the unfunded liability.

For employees not yet retired, we assumed that all of the change in their benefits would reduce the unfunded liability in the year 2015 and none of them would reduce the unfunded liability in the year 2030. We then estimated the share that should be applied to the unfunded liability in between using a straight-line gradual increase in the share of benefits. Finally, we took the present value of these benefits and summed them across all years to get their total impact on the unfunded liability.

CITY AND EMPLOYEE CONTRIBUTIONS

Once we estimated the change in normal costs and the unfunded liability, we could estimate the change in City contributions and employee contributions. The provisions of the law, as laid out in “Changes to Employee Contributions” on page 11, require that employees begin to increase their contributions gradually over the next five years as a share of their payroll. We estimated total payroll for active employees every year through the process outlined in “Members and Retirees” on page 22.

We simply applied the proper percentage to those payrolls in each year to estimate the employee contribution to the pension plans under both the status quo and the reform. The difference between the status quo and the reform contribu-

Methodology

tions in any given year are the net annual cost of the pension reforms to active employees.

City contributions in the years 2012 and 2013 were taken from the actuarial reports. The City contribution for 2014 and 2015 was estimated by multiplying the employer contributions in the year 2012 and 2013, respectively, by the appropriate multipliers—1.0 for the LABF and 1.25 for the MEABF. Under the status quo, we continued this for all years after 2015 until the funds were insolvent. We made no assumptions about what the City contributions might be upon fund insolvency.

For the years 2016 through 2020 under reforms, we applied the provisions in the law that require the multiplier to go up each year and to multiply it times the employer contributions from three years previously. For example, City contributions in 2016 for the LABF will simply be 1.6 times 2013 employer contributions in the LABF.

In order to estimate the contributions in 2021 and beyond under the reforms, we were required to estimate the unfunded liability over time. The unfunded liability at the beginning of 2013 is taken from the 2012 actuarial report. For each year after that, we simply subtract the contributions from the City and employees for that year that do not cover the normal cost, and then multiply the remainder by 1.075. We use the multiplier 1.075 since the actuaries assume 7.5% market gains in both funds. In all cases, we excluded the City contribution to cover retiree health care. This method is applied to both the reform and the status quo. Under the reform, we subtract our estimate for the change in unfunded liability from both the unfunded liability and the total accrued liability in the year 2015.

For the year 2021 under the reform, we estimated City contributions for all future years based on the unfunded liability. The proposed reforms require that the City achieve 90% funding in both plans by the year 2055 by providing contributions as a level share of payroll. In both plans, actuaries assume that payroll will increase at an annual rate of 4%. Therefore, if the City is funding the plans as a level share of payroll, the contribution will also increase at an annual rate of 4%.

To find the amount the City is required to contribute in 2021, we set the City contribution to the value it would need to be in order for the unfunded liability in the year 2055 to be equivalent to 10% of the total system liabilities. The contribution in each year from the City for pensions was assumed to be 4% higher than the last after 2021. The unfunded liability would change from year to year just as described above.