## ePacket Agenda Item 2.1

Treasurer's MemO
Treasurer's Report
Schedules
To: Karen Selman, Finance Committee

From: Rosemary N. Ryba, Treasurer
CC: Board of Trustees, Village President
Date: March 27, 2015
Re: Monthly Summary - MARCH BOT MEETING

- Separate memo is distributed for Agenda Item 2.5 (Appropriation Ordinance). The public hearing precedes consideration of the ordinance.
- The monthly snow removal contractual payment to Cuba Township Road District in the amount of $\$ 25,947.65$ is included in Agenda Item 2.4. This is payment five (5) of six (6) with last payment due in April, 2015. An invoice for the materials/special call-out in the amount of $\$ 7,176.33$ is also included in the bills for approval.
- The Illinois Public Risk Fund (IPRF) concluded their FY '14 Workers' Compensation audit which resulted in an additional premium of \$351 upon adjustment of 2014's forecasted payroll, for a total 2014 premium of \$112,992.
- Cook County property tax bills were due on March 3, 2015, which the County has begun distribution as shown on Schedule J.
- Sikich, LLP has concluded their audit fieldwork for FY '14. A draft of the financial statement will be available for an April 20, 2015 meeting of the Finance Committee.
- Pursuant to the BOT Meeting of February 23, 2015, attached are educational materials for review on the subject of pension obligation bonds that detail potential risks and rewards of issuance.
- The Treasurer's Report 2.1 is available to the Board of Trustees in the ePacket with other March Agenda materials. Archive records can be found online at www.barringtonhills-il.gov/treasurer.


# AN UPDATE ON PENSION OBLIGATION BONDS 

By Alicia H. Munnell, Jean-Pierre Aubry, and Mark Cafarelli*

## Introduction

This update shows how Pension Obligation Bonds (POBs) have fared since the financial crisis. This instrument, which is a general obligation of the government, alleviates pressure on the government's cash position; and it may offer cost savings if the bond proceeds are invested, through the pension fund, in assets that realize a return higher than the cost of the bond. At the time of our last study, 2009 data showed that most issuers had lost money by issuing a POB. ${ }^{1}$ One question is the extent to which five additional years have changed that picture. The earlier study also looked at the factors leading a state or locality to issue a POB and concluded that those least able to absorb the risk were the most likely to do so. The second question is whether that continues to be the story.

The brief proceeds as follows. The first section presents a brief history of POBs from their introduction in 1985 to the present. The second section
introduces the rationale for, and possible risks associated with, issuing a POB. The third section evaluates POBs at three points in time: 2007 (at the height of the stock market), 2009 (in the midst of the financial crisis), and 2014 (today). The fourth section summarizes the regression results - using an expanded sample that includes cities that do not administer their own pension plan - that relate the probability of issuing a $P O B$ to the financial pressures of the sponsor, the economic environment, and financial conditions such as the "expected spread" between interest rates and stock market returns. The fifth section presents a two-fold conclusion. On the one hand, five years of economic recovery have improved the performance of POBs; on average they have produced a real internal rate of return of 1.5 percent. On the other hand, while POBs could potentially be a useful tool under the right circumstances, evidence to date

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suggests that the jurisdictions that issue POBs tend to be the financially most vulnerable with little control over the timing.

## BAckground

In 1985, the city of Oakland, CA, issued the first POB. ${ }^{2}$ At the time, POBs offered city, municipal, and state governments a classic arbitrage opportunity. Issued on a tax-exempt basis, the government could immediately invest the proceeds through the pension fund in higher-yielding taxable securities, such as U.S. Treasury bonds, which would lock in a positive net return from the transaction. ${ }^{3}$ However, because POBs (and all "arbitrage bonds") deprived the federal government of tax revenues, Congress stopped state and local governments from issuing tax-exempt bonds solely to reinvest the proceeds in higher-yielding securities. Indeed, the Tax Reform Act of 1986 (TRA86), which did away with the tax exemption for POBs, appeared to mark an end for this instrument.

Surprisingly, POBs re-emerged in the 1990s. The strong performance of the stock market led some governments (and bankers) to see a potential arbitrage opportunity for taxable POBs. Two factors were important. First, taxable interest rates had come down considerably, which meant that POB borrowing costs were lower as well. Second, pension funds had increased their equity holdings substantially over the decade, ${ }^{4}$ which generated higher returns for the plans and, thus, led actuaries to assume higher future returns. The combination of these two factors was enough to convince some governments that POBs offered an attractive "actuarial arbitrage." ${ }^{5}$

Figure 1. Pension Obligation Bonds Issued from 1985-2013, Billions of 2013 Dollars


Source: Data set compiled from Bloomberg Online Service (2012), and SDC Thomson Reuters (2013) databases.

Since TRA86 and the end of arbitrage bonds, governments have issued about $\$ 105$ billion in taxable POBs. The most notable characteristic of the pattern of new issues is the spike in POB dollars issued in 2003 (see Figure 1), which is partly due to a single POB issuance worth almost $\$ 10$ billion ( $\$ 12.4$ billion in 2013 dollars) by the state of Illinois. ${ }^{6}$

Even with the 2003 spike, the total amount of POBs issued in any given year has never been more than 1 percent of the total assets in public pensions. However, certain states and localities are more active in the POB market than others. Figure 2 shows total issuances by state from 1985 to 2013.? It is clear that the bulk of activity in POBs has been centered in about 10 states, with Illinois and California being major players. ${ }^{8}$

Figure 2. Pension Obligation Bonds Issued from 1985-2013 for States with More Than $\$ 1$ Billion Issued, Billons of 2013 Dollars


Source: Data set compiled from Bloomberg Online Service (2012) and SDC Thomson Reuters (2013) databases.

## The Pros and Cons of Issuing a POB

While the market remains small, it is clear that certain jurisdictions see POBs as attractive policy instruments. The available literature suggests two primary reasons for their appeal:"

- Budget relief: During periods of economic stress, governments use POBs for budget relief. State and local governments often face legal requirements to reduce underfunding. With declining revenues, officials may see POBs as the "least bad alternative" among a variety of tough fiscal choices.
- Cost savings: POBs offer issuers an actuarial arbitrage opportunity, which, in theory, can reduce the cost of pension obligations through the investment of the bond proceeds in higher risk/ higher return assets. By commingling POB proceeds with pension assets, the assumption is that bond proceeds will return whatever the pension returns. Given that actuarial practice assumes public pensions will return about 8 percent, POBs can be a compelling proposition (especially to governments whose taxable borrowing costs are in the 5-6 percent range).

While the actuarial arbitrage highlighted above may be persuasive, the issuance of POBs poses serious risks: ${ }^{10}$

- Financial: The success of POBs depends on pension returns averaging more than the cost of financing the debt. However, these assumptions may not turn out to be correct.
- Timing: POBs involve considerable timing risk, as the proceeds from the issuance are invested en masse into the pension plan. Dollar-cost averaging would be the more measured approach to investing large sums of money. ${ }^{11}$
- Flexibility: While the issuance of a POB does not change the total indebtedness of the sponsor, it does change the nature of the indebtedness. ${ }^{12}$ Requirements to amortize unfunded pension liabilities may be relatively flexible obligations that can be smoothed over time, while the POB is an inflexible debt with required annual payments.
- Political: If the government uses the POB to fully fund the pension, it may end up with a pension system having more assets than liabilities. Such overfunding may create the political risk that unions and other interest groups will call for benefit increases, despite the fact that the underfunding just moved from the pension plan's balance sheet to the sponsor's balance sheet. ${ }^{13}$


## Evidence to Date

In order to assess the extent to which POBs have met issuers' expectations, we calculate the internal rate of return for all POBs issued in a given year. This analy-
sis is based on the universe of taxable POBs issued since the passage of TRA86 through 2013. ${ }^{14}$ The universe includes 5,109 POBs issued from 529 different governing entities, totaling approximately $\$ 98$ billion in 2013 dollars.

We begin by looking at each bond issued in a given year. Of the 5,109 bond issuances in our data, 4,538 provide the detailed data needed to perform a meaningful assessment - the date of issuance, the date of maturity, the coupon rate, the par value, and the purchase price as a percent of par. The assumption is that the proceeds from each bond are invested in accordance with the allocation of the aggregate assets of state and local pensions from the Federal Reserve's Flow of Funds - approximately 65 percent in equities and 35 percent in bonds. Accordingly, we use the S\&P 500 total return index and the Barclays 10 year bond total return index to approximate how the POB proceeds have grown over time. For each bond, beginning in year one, we calculate the growth of the invested bond proceeds for that year, then subtract the interest payment (using the stated coupon rate) to get a new beginning balance for the following year, and this process is repeated until the bond matures. For bonds that have not yet matured, the process is repeated until the date of the assessment. At maturity or date of assessment, we compare the ending balance with the initial proceeds to calculate an internal rate of return (IRR). These IRRs are then weighted by the size of the bond and the maturity (or, if the bond has not yet matured, the number of years between the date of issue and the assessment date) in order to calculate an aggregate IRR for each annual cohort of POBs.

The results demonstrate the risk associated with a POB strategy. If the assessment date is the end of 2007 - the peak of the stock market - the picture looks fairly positive (see Figure 3 on the next page). If assessed in the middle of 2009 - right after the market crash - most POBs appear to be a net drain on government revenues. And, as of February 2014, the majority of POBs have produced positive returns due to the large market gains that followed the crisis. Only those bonds issued at the end of the market run-up of the 1990 s, and those issued right before the crash in 2007, have produced a negative return; all others are in the black.



Source: Authors' calculations based on total monthly returns of the S\&P 500 from Standard and Poor's Index Services (1992-2014); total monthly returns of U.S. Treasuries from the Ibbotson SBBI Classic Yearbook (2013); and the Barclays U.S. Treasury 10 -year Term Index (2014). POB data are from Bloomberg Online Service (2012); and SDC Thomson Reuters (2013).

Weighting the bonds by their dollar amount and maturity (or, if the bond has not yet matured, the number of years between the date of issue and the assessment date), Figure 4 shows the average IRR for the three periods. Between 1992 and the peak in 2007, the average real return was 0.8 percent; by 2009 the average return had dropped to -2.6 percent; and over the period 1992-2014 - which includes both the financial crisis and the subsequent market rebound - the return was 1.5 percent. The story is still far from over, however, since many of these POBs have a 30 -year life.

Figure 4. Average Internal Rate of Return on Pension Obligation Bonds, 1992-2007, 1992-2009, AND 1992-2014


## What Contributes to the Issuance of A POB?

In theory, governments with well-funded pension plans and sound fiscal health might find POBs advantageous if issued at periods when interest rates are particularly low. This type of issuer could shoulder the additional risk of a POB without jeopardizing its fiscal health. Or, for governments facing severe fiscal stress, POBs could be implemented as part of a larger pension reform plan in which the POB helps provide immediate relief while other reforms put the plan on the path to long-term sustainability. ${ }^{15}$ So, the question is which governments issue POBs and why. The following regression analysis attempts to answer that question.

## The Data

The first step is to define the sample. The sample of issuers used in this analysis is larger than in the earlier study, because it includes both governments that sponsor their own pension plans and cities that participate in state cost-sharing plans. This broadening of the sample is important, because most of the POB occurrences come from local governments that only participate in a state-administered retirement system. Plan data for cities not administering their own plan are constructed based on the methods stipulated in the Governmental Accounting Standards Board's Statement 68.

The second step is to construct the dependent variable - a government issuing a $P O B$ in a given year. This step requires consolidating the multiple POB bonds into a single observation. For example, in 1997, the New Jersey state government issued 31 bonds; in this exercise, this information is consolidated to indicate that the New Jersey state government was a POB issuer in 1997. This process of consolidation results in 733 observations. Data limitations reduce the number of issues considered to $270 .{ }^{16}$

## Analysis and Results

The probability of being one of the 270 POB issuances among the 140,000 states and localities is then assumed to depend on fiscal pressures facing the government, the economic environment, and financial variables such as the expected spread between interest costs and stock market returns. ${ }^{17}$ The specific variables in the model included: $:^{18}$

## Fiscal Pressure on Government

- Contributions/revenue. Government contributions to the pension plan as a percent of total ownsource government revenue. The assumption is that as the pension expenditure increases as a percentage of total government spending, the more likely the government is to issue a POB.
- Debt/revenue. Government debt as a percent of own-source revenue. The effect could go either way. A government with substantial debt may find it costly to issue a POB and therefore would not find it profitable. On the other hand, governments with high debt burdens could also be those facing large pension payments for unfunded liabilities, since the government may be more likely to defer pension contributions to make fixed required debt payments.
- Cash/revenue. Government cash and securities outside of trusts as a percent of total own-source revenue. The more cash on hand, the less likely a government would be pressed to issue a POB.
- Carry deficit. States where it is possible to carry deficits from one year to another are likely to be in more fiscal stress than those states with a strict balanced budget requirement.


## Economic Environment

- Unemployment rate. The average unemployment rate by county over 2000-2007. The higher the unemployment rate, the more likely a government would be to issue a POB.


## Financial Conditions

- 10-Year Treasury Bond. In times of low interest rates, localities would be more likely to issue POBs as their cost of borrowing would be lower.
- Spread. The difference between the actual investment returns that each retirement system experienced in the previous three years and the 10 -year Treasury rate. The greater the spread, the more likely to issue a POB.


## Control Variables

- Total Employees. The expected outcome is that larger localities would be more likely to issue a POB as they could spread the transaction cost over a larger base.
- Self-Administered Plan. The Census identifies governments that administer their own pension plan. This variable could be positively related to issuing a POB because POBs are generally issued by governments in order to shore up the unfunded liabilities of their own plan. On the other hand, local governments that participate in state plans have less flexibility regarding required contributions demanded by the plan, and may issue a POB when unable to make payments.
- Individual years. Year dummies were included to control for changes in the health of the national economy.

Figure 5. Factors Affecting the Probability of Government Issuing a Pension Obligation Bond, 1992-2013


Note: All results are statistically significant at least at the 95 percent level. For dummy variables, the effects illustrated reflect a shift from 0 to 1 . In the case of continuous variables, the effects illustrated reflect a one-standard-deviation change across the mean in one variable while holding the others at their mean (see Appendix Table A1). For detailed regression results, see Appendix Table A2. ${ }^{19}$
Sources: Authors' calculations based on government financial data and retirement plan data from the U.S. Census Bureau (2011, 2012a, and 2012b); POB data from Bloomberg Online Service (2012); SDC Thomson Reuters (2013); and the St. Louis Federal Reserve (2014).

The results show that governments are more likely to issue POBs if the plan represents a substantial obligation to the government, they have substantial debt outstanding, and they are short of cash (see Figure 5). That is, financial pressures play a major role. Additionally, governments are more likely to issue a POB if they are in a relatively high unemployment state. Sponsors also appear to respond to financial conditions, being more likely to issue a POB when interest rates are low and the spread is high. Finally, governments that administer their own plan are much more likely to issue POBs than those participating in a state plan. While the magnitudes of the effects appear small, they are meaningful given that only 0.2 percent of governments in our sample issued a POB.

## Conclusion

When plan sponsors issue a pension obligation bond, the bond proceeds are invested with pension plan assets. The question then is whether the government will earn more on the proceeds than it will have to pay in interest. Immediately after the financial crisis, governments appeared to have lost money on their POBs.

Four years of economic recovery have improved the performance of POBs ; today these bonds have netted 1.5 percent. But the story is far from over since many of these bonds have a 30 -year life. And, because POBs turn a somewhat flexible commitment into a firm commitment, governments that have issued a POB have reduced their financial flexibility.

The second finding from this update - which includes a greatly expanded number of POB issuers - is that financial pressures continue to play a major role in the issuance of these securities. But the transaction also contains an element of investment speculation in that the spread - based on the plan's historical returns and current interest rate - is also positively related to the probability of issuing a POB. POBs could potentially be used responsibly by fiscally sound governments who understand the risks involved or could play a role as part of a broader pension reform package for fiscally stressed governments. But the results from this brief suggest that POB usage to date has not followed this formula - think Detroit, which issued POBs in 2005 and 2006 just as the market was approaching a peak.

## Endnotes

1 Munnell et al. (2010).
2 Scanlan and Lyon (2006).
3 The decrease in borrowing costs in issuing taxexempt state and municipal POBs often exceeds the differential in the risk premium of state and local bonds over federal bonds of the same duration.

4 See Peng (2004).
5 Bader and Gold (2003).
6 Thad Calabrese generated the POB data set from raw data on government bond issues from Bloomberg.

7 States with less than $\$ 1$ billion in POB issuances are not shown in the figure.

8 California and Illinois are, of course, large states. On a per-capita basis, the biggest players are Oregon, Illinois, and Connecticut. California is number six.

9 Burnham (2003); Davis (2006); and Calabrese (2009).

10 Burnham (2003); Davis (2006); Calabrese (2009); Block and Prunty (2008); and Hitchcock and Prunty (2009).

11 Timing risk could be mitigated if the POB proceeds were applied more strategically, for example for purposes of matching retiree liabilities. This approach would be contrary to the principal of performance arbitrage but, in addition to avoiding timing risk, it would also reduce plan leverage and possibly improve funding.

12 Hitchcock and Prunty (2009).
13 Government Finance Officers Association (2005). The political risk of unnecessary benefit increases can be mitigated by legislatures and boards building in governance protections. For example, benefit increases could be prohibited until funding exceeds 115-125 percent.

14 A data set containing only non-federal pension financing bonds issued from 1992-2009 was drawn from municipal bond data from Bloomberg Online Service. This data set was combined with data on POB issuances from 1986-2013 from SDC Thomson Reuters.

15 A recent report by The PFM Group (2014) on the use of POBs states that they "should be considered only in conjunction with refining the ongoing benefit structure and investment policy of the fund or trust in order to position the issuer and employees for future sustainability." The report goes on to say that issuers who wish to take advantage of the appropriate window to issue a POB should lay the groundwork early by preparing legal documents and considering the size and structure of the issuance in advance.

16 Of the 270 POB occurrences used in the regression analysis, 157 come from jurisdictions that do not administer their own plan.

17 We apportion the pension finances of state plans to these localities according to the ratio of the locality's payroll to the total payroll of all localities in the same state that also do not administer their own plan. If the state-administered plan is employee-specific (i.e. a police and fire plan, or a teachers plan), then we apportion based on the ratio of the locality's payroll for that employee type to the total payroll for that employee type.

18 In addition to the variables described, it would also be useful to include the funding status of the plan. Presumably, poorly funded plans would be more likely to issue a POB. Unfortunately, historical funding data are not available for most plans in the sample.

19 Census data regarding state and local government and pension finances are only available up to fiscal years 2011 and 2012, respectively. For the regression, the most recent Census data - 2011 for government finances and 2012 for pension finances - were duplicated and used for 2012 and 2013. Limiting the regression to only years with Census data does not change the results.

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## APPENDIX

Table A2. Marginal. Impact of Factors Affecting the Probabilitty of Government Issuing a Pension Obligation Bond, 1992-2013

| Variable | Marginal effects |
| :--- | :---: |
| Contributions/revenue | $0.00027 * * *$ |
|  | $(0.000)$ |
| Debt/revenue | $0.00030 * * *$ |
|  | $(0.000)$ |
| Cash/revenue | $-0.00030 * * *$ |
|  | $(0.000)$ |


| Carry deficit | 0.00050 * |
| :--- | :---: |
|  | $(0.041)$ |


| Unemployment rate | $0.00018 \% * *$ |
| :--- | :---: |
|  | $(0.008)$ |
| 10-year Treasury Bond | $-0.00203 * * *$ |
|  | $(0.000)$ |
| Spread | $0.00027 * * *$ |
|  | $(0.000)$ |
| Total employees | $0.00005 * *$ |
|  | $(0.025)$ |
| Self-administered plan | $0.00286 * * *$ |
|  | $(0.000)$ |
| Pseudo R | 0.1396 |
| Number of observations | 139,323 |

Note: Standard errors are in parentheses and adjusted for within-plan correlation. The model includes year fixed effects. The coefficients report marginal effects from a probit estimation computed at sample means of the independent variables and are significant at the 95 percent ( $* *$ ) or 99 percent ( $* \lll$ ) level. The dependent variable is 1 for governments that issued a POB in a given year, and 0 otherwise. Source: Authors' calculations.

# Research Report 

# Pension Obligation Bonds: Risks and Rewards 

By Lance J. Weiss and Amy Williams*

## Introduction

States and local governments continue to be interested in Pension Obligation Bonds ("POBs") due primarily to low interest rates, rising underfunded pension liabilities and shrinking revenues. POBs are financial investments and, as such, involve both investment risks as well as investment rewards. Bob Eichem, Chief Financial Officer of the City of Boulder, Colorado, summarized the nature of POBs by stating "POBs are not for the faint of heart, you have to understand them."'

A POB issued by a financially strong government following careful analysis of all the risks may be a part of a prudent long-term pension funding strategy. On the other hand, a POB issued by a financially weak government may lead to significant problems for the government and the pension fund. Further context and balance is essential to truly understanding the nature of both the risks and potential rewards of POBs. The purpose of this Research Report is to provide more clarity on both the potential risks and rewards inherent in issuing pension obligation bonds.

## Background

POBs are a form of pension financing using debt instruments issued by a governmental entity. The POB proceeds will typically be used to fund all or a portion of the unfunded actuarial accrued liability of a pension plan (or a retiree health care program). Today, most are issued in the form of taxable general obligation ("GO") bonds that are subject to constitutional debt limitations and are backed by the full faith and credit, as well as the taxing power, of the issuing state or local government.

Simply stated, the idea is for a state or local government to issue such bonds and contribute the proceeds into the pension fund. Essentially, the issuer of the POB is borrowing money to invest in the financial markets. The hope, of course, is that the pension fund will earn a higher rate of return on the invested POB proceeds than the interest rate that the sponsoring government pays on the bonds. If that happens, the transaction will reduce the overall cost of the pension plan to the plan sponsor (i.e., reduce the annual pension contribution requirement to the fund by more than the cost of borrowing) and, at the same time, improve the funded ratio, liquidity position and benefit security of the pension plan.

[^1]However, it is very important to recognize that in order to achieve a net positive financial impact for the plan sponsor, the investment returns on the POB proceeds need to exceed the interest rate paid on the bonds over the life of the debt.

It is also important to remember that the issuance of a POB itself does not reduce the total debt obligations of the sponsor. It does, however, convert the unfunded pension liability that is currently a "soft" debt of the plan sponsor and which can potentially be deferred into the future in difficult economic times, into a "hard" debt that must be paid to the bond holders even during the most trying economic times.

## POBs in Perspective

According to a 2010 report on POBs by Alicia Munnell of the Center for Retirement Research at Boston College, the first POB was issued in 1985 by the City of Oakland, California. ${ }^{\text {ii }}$ Prior to 1986, POBs could be issued on a tax-exempt basis which provided governments with the ability to invest the proceeds through the pension fund in higher yielding taxable securities, thus ensuring a positive net return from the transaction. However, the tax exemption for POBs was eliminated by the Tax Reform Act of 1986, and the interest in POBs waned for a while.

Interest in POBs picked-up again in the 1990s, as taxable interest rates decreased and pension plans were able to generate higher returns by increasing their equity allocation. Between 1984 and 2012, governments issued approximately $\$ 100$ billion of POBs. ${ }^{\text {ii }}$ The majority of POB debt, however, has been issued by about 11 states, with California, Illinois, Oregon and New Jersey being the major players. ${ }^{\text {iv }}$

Even though the $\$ 100$ billion total of POB issues sounds large, the amount issued in any one year has never been more than one percent of total pension assets across the country." However, for several states, POBs make up a significant portion of pension assets. For example, POBs represent approximately $19 \%$ of pension assets for Illinois, $15 \%$ for Oregon, $13 \%$ for Connecticut and $10 \%$ for New Jersey. ${ }^{\text {vi }}$

As the result of two financial crises in the last decade, public pension plans suffered a significant drop in average funded status and a corresponding increase in pension contribution requirements. The average funded ratios of state and local pension plans fell from a high of $103 \%$ in 2000 to $73 \%$ in 2012. In addition, the average GASB "ARC" (i.e., the Governmental Accounting Standards Board's Annual Required Contribution) for such plans increased from $6.4 \%$ of payroll in 2001 to $15.5 \%$ of payroll in 2012 . $^{\text {vii }}$

Nevertheless, pension costs as a percentage of state and local own-source revenues remain a modest percent of state and local budgets. Absent a new crisis and taking into account the impact of recent pension reform changes adopted by state and local pension plans, pension costs as a percentage of state and local own-source revenues are projected to change as follows: viii

| Period of Time | Pension Costs as Percentage <br> of State and Local Own- <br> Source Revenues |
| :--- | :---: |
| Pre-financial crisis in 2007 | $4.1 \%$ |
| Post-crisis in 2011 | $6.5 \%$ |
| In 2028 as pension reform changes are partially recognized | $5.3 \%$ |
| In 2046 as pension reform changes are fully recognized | $3.3 \%$ |

Even though pension costs, on average, represent a modest cost for state and local governments, a number of states and municipalities face net pension liabilities in excess of annual revenues, thus fostering continued interest in POBs. According to a 2013 report by Moody’s Investors Service, nine states have adjusted net pension liabilities that are greater than annual revenues. ${ }^{1 x}$ Ratios range from a low of $6.8 \%$ of revenue for Wisconsin to a challenging $241 \%$ for lllinois, with the median being $45 \% .^{\mathrm{x}}$ The problem is even more acute,
however, for the larger municipalities. Thirty of the top 50 largest municipalities have unfunded pension liabilities greater than annual revenues. Ratios range from a low of $10 \%$ for Washington D.C. to a high of $680 \%$ for Chicago with the average being $100 \%$. $^{\text {xi }}$

Considering these circumstances, some states and local governments continue to look to POBs as one of several tools to help manage rising pension liabilities and related costs.

## The Role of POBs in Pension Cost Management

As a financial investment, the issuance of POBs should be considered as a component part of a government's broader strategy to manage its pension costs. As previously pointed out, however, the issuance of a POB itself does not reduce the total pension debt obligations of the plan sponsor. It does, however, convert the unfunded pension liability that is currently a "soft" debt of the plan sponsor into a "hard" debt that must be paid even during the most trying times.

In this regard, the Government Finance Officers Association recommends that state and local governments use caution when issuing pension obligation bonds and undertake a careful financial analysis. The GFOA also states: "... the issuance of pension obligation bonds should not become a substitute for prudent funding of pension plans.,"xii

The State of Illinois Governor's Advisory Commission on Pension Benefits stated in their November 1, 2005 recommendation: "Consider the issuance of Pension Obligation Bonds ... as a financing instrument to reduce the State's pension costs, as long as (1) there are favorable market conditions and (2) the issuance of such POBs is a component part of a broader plan to reduce the Pension Systems' unfunded liabilities."

Gary Findlay, Executive Director of the Missouri State Employees Retirement System, has stated that if POBs are issued "it should be done with full disclosure of the potential downside, so policy makers are conversant with the risks involved." ${ }^{\text {xiii }}$

## Timing Considerations

Given the inherent fluctuations in the investment markets, it is to be expected that there will be times during the life of the POB when the interest rate paid on the bonds exceeds the investment return of the pension fund and other times when the investment return of the pension fund exceeds the interest rate paid on the bonds. While in the long run, most people expect a diversified portfolio to produce returns in excess of current bond interest rates, it is important for the POB issuer to have financial strength sufficient to weather the ups and downs of the investment market over the life of the bond issue.

As previously stated, however, a POB issue should only be viewed as a success or failure after all the bonds are retired, not over the short-term. Given the inherent fluctuations in the investment market, it can be misleading to conclude that POBs are a bad investment because of market conditions at any one interim valuation date prior to retirement of the bonds.

A good example of this timing difference is illustrated by examining Connecticut's $\$ 2.28$ billion POB issuance in April of 2008. When this bond was issued, the Dow Jones average was approximately 13,000 and by the following March it stood at just over 6,600. However, only looking at the Connecticut POB transaction immediately after the market crisis points out the flaw in trying to measure the success or failure of POBs at one point in time before the bonds mature.

According to Denise Nappier, Connecticut State Treasurer, based on a stochastic projection of the Connecticut POB results, there is an $88 \%$ probability of exceeding the $5.88 \%$ borrowing cost by the time the bonds mature in 2032. ${ }^{\text {xiv }}$ Nappier also pointed out an additional important benefit of the POB, which was a much
needed liquidity cushion thus avoiding the need for the pension plan to sell assets during the credit crisis and market downturn. Finally, another less obvious but no less important benefit of the Connecticut POB transaction was a unique bond covenant that requires the State to fully fund the annual required contributions for as long as the POBs remain outstanding.

The 2010 report on POBs by the Center for Retirement Research at Boston College indicates just how important timing is in assessing whether a POB issue saves the plan sponsor money or not. ${ }^{\mathrm{xv}}$ The report shows that if the POBs' assessment date was at the end of 2007 (the peak of the stock market), the internal rate of return on the POBs by year issued is positive for 11 of the 16 years from 1992 to 2007. However, if the POBs' assessment date was at the middle of 2009 (post financial crisis), the internal rate of return on the POBs by year issued is positive for only 6 of the 18 years from 1992 to 2009. Further, the 2010 report concludes that " ...POBs could well leave plan sponsors worse off than where they were before they issued the POBs" even though they admit "...the story is not yet over, since about $80 \%$ of the bonds issued since 1992 are still outstanding." In fact, in a just-released update to their 2010 report, the Center finds that the internal rate of return on POBs was positive for 18 of the 22 years from 1992 to 2013 . ${ }^{\text {xvi }}$

## Actuarial Projection Results

One way to analyze the potential success or failure of a POB issue is to model the long-term expected performance of the POB and associated pension plan. In this regard, Gabriel, Roeder, Smith \& Company (GRS) performed a stochastic projection study showing a cost comparison for a hypothetical underfunded plan with and without a POB issue.

The modeled plan covered 30,000 active members and 20,000 retirees and included a benefit multiplier of $2.2 \%$ of final average pay per year of service and a normal retirement age of 60 . At the time of the hypothetical bond issue, this plan was $45 \%$ funded and had an annual contribution requirement of $\$ 500$ million per year. Finally, the plan's funding policy was to pay normal cost plus a 30 -year closed period level percent of pay amortization payment of the unfunded liability. The assumptions used in the projection study included the following:

- A $7.00 \%$ investment return assumption and discount rate under the scenarios with and without pension obligation bond proceeds;
- The comparison of cost on a present value basis based on a discount rate of $7.00 \%$;
- A 3.00\% payroll growth assumption;
- An assumed open group, with the number of active members remaining constant;
- An interest rate on debt service of $5.00 \%$, with a $2.00 \%$ spread between the expected investment return and interest on debt service;
- One 30-year pension obligation bond with a level dollar debt service schedule at $5.00 \%$; and
- No benefit increases adopted during the life of the POB and the plan sponsor contributes the full ARC (normal cost plus amortization of the unfunded actuarial accrued liability) during the life of the POB and makes all required debt service payments.

This example is not intended to suggest or recommend an appropriate amount of POBs for a pension plan to issue or the characteristics of a plan that should issue a POB. This example is for illustrative purposes only.

GRS performed simulations on two POB issues: 1) a $\$ 6$ Billion POB issue; and 2) a $\$ 2$ Billion POB issue, with the results based on 1,000 trials of possible future investment returns. Returns were assumed to follow a lognormal distribution and included an expected return assumption of $7.00 \%$ and a standard deviation assumption of $10.00 \%$. The bonds were assumed to be issued by the employer in 2012 and paid into the plan in 2013.

The results of the stochastic simulation show the following savings in employer contributions (including debt service) over 30 years with the POB as compared to without the POB. The results also show the increase in funded ratio after 30 years with the POB as compared to without the POB:

|  | Average Annualized Return | \$6 Billion POB |  |  | \$2 Billion POB |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | PV of er ns plus ce (in ver 30 <br> a POB | Increase in <br> Funded <br> Ratio After <br> 30 Years <br> with a POB |  | $\begin{aligned} & \text { V of } \\ & \text { plus } \\ & \text { (in } \\ & \text { er } 30 \\ & \text { POB } \end{aligned}$ | Increase in <br> Funded <br> Ratio After <br> 30 Years <br> with a POB |
| 95th Percentile | 10.2\% | \$ | 1,955 | 103.2\% | \$ | 841 | 23.6\% |
| 75th Percentile | 8.2\% |  | 1,020 | 24.1\% |  | 435 | 4.0\% |
| Median | 7.0\% |  | 394 | 2.6\% |  | 192 | 0.6\% |
| 25th Percentile | 5.7\% |  | (242) | 1.1\% |  | (45) | 0.3\% |
| 5th Percentile | 3.9\% |  | (954) | 0.4\% |  | (286) | 0.2\% |
|  |  | \$6 Billion POB increased initial funded ratio to $\mathbf{9 0} \%$. \$2 Billion POB increased initial funded ratio to $\mathbf{6 0} \%$. |  |  |  |  |  |

The simulation results indicate that, for this sample plan and under the given assumptions and funding policy (i.e., normal cost plus 30 -year closed period amortization of the unfunded liability as a level percentage of pay), there is approximately a $70 \%$ probability that issuing a POB produces a savings in employer contributions (including debt service) over the life of the bond issue. The downside is that there is a $30 \%$ probability that issuing a POB produces an increase in employer contributions (including debt service) over the life of the bond issue. Of course, these probabilities depend on the specific situation that was modeled. Under different circumstances, different probabilities would result and, in some situations, the probability of producing a savings could be less than $50 \%$.

In addition to the projected cost savings ( $70 \%$ probability) to the plan sponsor, the issuance of a POB also improves the funded ratio, liquidity position and benefit security of the pension plan. The additional assets from a POB may also provide a liquidity cushion to help the plan avoid selling assets, thus resulting in the plan achieving a higher return than if the POB had not been issued.

As shown in the chart above, our simulation indicated an increase in the funded ratio after 30 years at all percentiles under both the $\$ 6$ Billion and the $\$ 2$ Billion POB scenarios. The large increase in the funded ratio at the 75th and 95th percentiles for scenarios with a POB compared to without a POB is a result of a significant initial increase in the assets and funded ratio from the POB proceeds, and sustained favorable investment performance. These scenarios illustrate that, strictly from the pension plan's perspective, there is little or no downside risk on the funded ratio of issuing a POB (assuming that the funding policy would always be followed).

Despite the higher funded ratios under the scenario in which a POB was issued, the plan sponsor would be required to continue making the debt service payments. Whereas under the scenario in which no POB was issued, contributions would not be required in the small percentage of instances where the amortization of a surplus balance was more than the normal cost contribution.

The graph and chart on the next page show the net present value of the cumulative contribution savings of issuing a $\$ 6$ Billion POB in 2012 (i.e., the assumed year of the POB issue). By 2042, the debt service is fully paid off and the full impact of the POB can be analyzed. As shown in the graph, there is approximately a $70 \%$ likelihood that issuing the POB will result in lower employer contributions (including debt service) on a present value basis than if a POB had not been issued.


Because we have not assumed that any pension assets could be used to pay debt service (even in the case of a funded status in excess of $100 \%$ ), the additional contributions under the POB scenarios result in funded ratios that are also much higher in certain future simulated outcomes. However, because of the required debt service payments, the likelihood of achieving savings on a net present value basis before the end of the 30year period is much lower than $70 \%$ (e.g., less than $25 \%$ after 9 years and less than $50 \%$ after 15 years), and illustrates the importance of only evaluating the success of a POB over the long-term and not the short-term.

Finally, because of the higher amount of assets under the POB scenarios, there is likely to be more contribution rate volatility (i.e., there is a higher likelihood that the change in the contribution rate will be higher when there is favorable or unfavorable investment performance). However, the stability of the debt service payment helps mitigate the volatility of the total contribution rate (when also taking into account the debt service payment).

## Refinancing Analogy

The issuance of a POB has often been characterized as being similar to refinancing a debt that bears a high interest rate (i.e., the interest rate used to amortize the pension plan's unfunded accrued liability) with one that bears a lower interest rate (the underlying borrowing rate of the POB). However, the long-term, actual investment performance of the POB proceeds is what determines the final savings or cost of issuing the POB and not the interest rate used to amortize the pension plan's unfunded accrued liability. Note that, although issuing a POB will usually produce a near-term reduction in contributions to the retirement plan, it is not possible to know in advance whether the POB will produce any long-term savings. However, it is possible (as shown above by our analysis) to conduct a stochastic projection of the pension plan in order to model the probability of the longer term success or failure of the POB issue.

## Rating Agencies View of POBs

According to Moody's Investors Service, the issuance of pension obligation bonds may be neutral or negative for an issuer's credit rating depending on the use of the proceeds, the relative size of the bond issue and associated debt service, the level of future budget savings assumed and the assumptions on which such savings are based.

However, Moody's points out that pension obligation bonds are often a red flag associated with greater rigidity of long-term obligations, failure to find sustainable solutions to pension funding and a pattern of pushing costs off into the future. For this reason, Moody's indicates that most pension bonds have at best a neutral impact on the assessment of an issuer's credit quality.

Moody's cautions that if proceeds of POBs directly substitute for the issuer's pension contribution requirements, they would view the transaction as deficit financing and such transactions could have a material impact on credit quality. Moody's does offer that if the issuance of POBs is made as part of a broader effort aimed at restoring the balance between a plan's assets and liabilities and restoring affordability, the initiative would be considered as a credit positive effort.

## Other Risk Considerations

POBs are financial investments, and like any other, they involve various forms of risk, including, but not limited to: 1) investment risk; 2) timing risk; 3) flexibility risk; and 4) political risk. The following issues should therefore be considered before issuing Pension Obligation Bonds:

1. Is the POB period sufficiently long to earn the needed return? To achieve any real savings from issuing a POB, the proceeds need to earn an investment return that exceeds the total cost of borrowing during the entire period the POB is outstanding. Further, what level of risk can the plan sponsor tolerate over this period to earn the desired return?
2. How will the pension fund invest the proceeds of the POB? Will the proceeds be invested all at once or via dollar-cost averaging? Will they be entirely invested in equity-type securities or will a portion be invested in debt instruments that are not that dissimilar to the POB itself? How will the influx of funds impact investment policy and asset allocation strategy?
3. How will the rating agencies view the transaction?
4. How will the transaction affect the debt capacity of the issuer?
5. Will a higher funded ratio lead to pressure for benefit enhancements?
6. Is the long-term expected financial reward of issuing the bonds (i.e., reducing the overall cost of the pension plan to the plan sponsor) worth the loss of potential funding flexibility? Issuing POBs converts the unfunded pension liability that is currently a "soft" debt of the issuer, and which can potentially be deferred into the future in difficult economic times, into a "hard" debt that must be paid to the bond holders even during the most trying economic times.

Another risk consideration is how market performance, particularly in the short-term, could affect the funded ratio of the plan. For example, even after issuing the POB, short-term market declines producing low or negative investment returns can cause the unfunded actuarial accrued liability (UAAL) to rise to the prePOB level or higher. Therefore, a plan sponsor hoping to reduce or eliminate its UAAL amortization payment by using a POB may still find it owes a pension contribution (including the UAAL amortization payment) at the same time the POB debt payments are due. As a result, plan sponsors considering issuing POBs need to be aware of the impact of short-term market declines.

In summary, plan sponsors considering the issuance of POBs need to go into such transactions fully prepared with all available information and knowledge about the various potential risks.

## Conclusions

POBs are not a silver bullet and will not, on their own, solve the challenge of pension funding and rising pension costs. In fact, if either the plan sponsor or the plan are having financial difficulties, it may be advisable to explore solutions that do not involve additional borrowing. Further, POBs are not a substitute for regular pension fund contributions made in accordance with a well thought out funding policy. However,

POBs do represent one of several management tools that state and local governments may wish to consider to address pension funding.

A POB issued by a financially strong government following careful analysis of all the risks may be a part of a prudent long-term pension funding strategy. A POB issued by a financially weak government as a last ditch effort to save the pension fund from ruin may lead to significant problems for the government and the pension fund.

Are there risks involved with issuing POBs? Of course there are and this Research Report describes many of them. But there are also benefits, primarily the potential for the transaction to produce net cost savings for the issuer. In addition, there are also less obvious benefits such as:

- The potential for POB proceeds to provide a liquidity cushion thus avoiding the need for a pension fund to liquidate long-term assets.
- The positive message perceived by both active and retired plan members of an immediate increase in benefit security resulting from the inclusion of the POB proceeds into the pension fund.

The bottom line is that state and local governments need to analyze both the risks and rewards of POBs and determine if the upside potential is worth the downside risk. It is also important to keep in mind that an open discussion and full disclosure of all the issues raised will go a long way to getting all of the interested parties on the same page with respect to making a final determination on whether to issue POBs or not.

## About the Authors

Lance J. Weiss is a senior actuarial consultant with Gabriel, Roeder, Smith \& Company. Lance has over 35 years of experience in employee benefits and retirement support planning, with special emphasis on the design, funding, security, administration and communication of qualified and nonqualified retirement and postretirement medical programs for private-sector and public-sector employers. He is an Enrolled Actuary, a Member of the American Academy of Actuaries and a Fellow of the Conference of Consulting Actuaries. Lance is also a Past President of the Conference of Consulting Actuaries and a former member of the Board of Directors of the American Academy of Actuaries. He has a Bachelor of Science Degree in Mathematics/Actuarial Science from the University of Illinois at Urbana-Champaign. He frequently serves as a speaker and author on public pension topics and recently coauthored an article for the Government Finance Review entitled "Addressing Media Misconceptions about Public Sector Pensions and Bankruptcy."

Amy Williams is an actuarial consultant with Gabriel, Roeder, Smith \& Company and has 15 years of actuarial experience. Amy's work involves consulting on pension and retiree health care valuations, funding projections, experience studies, actuarial audits and plan design. She manages, directs and monitors the work of actuarial analysts and senior analysts. Amy is an Associate of the Society of Actuaries, a Member of the American Academy of Actuaries and a Fellow of the Conference of Consulting Actuaries. She has a Bachelor of Science Degree in Mathematics/Actuarial Science from the University of Illinois at UrbanaChampaign.

## Appendix: Additional Stochastic Projection Results

The following graphs provide additional details from the stochastic projection results under the "No POB" scenario and the two "POB Issued" scenarios.

Graphs Ia through Ic illustrate the projected funded ratios of the plan. Initially, the contribution amounts and rates under POB scenarios Ib and Ic do not include the POB proceeds but do include the annual contribution amounts and annual debt service payments. The assets and funded ratio first reflect the POB proceeds in 2013.

As a result of the POB proceeds, the funded ratio increases by 41 percentage points under the $\$ 6$ Billion POB scenario (Graph Ib) and 14 percentage points under the $\$ 2$ Billion POB scenario (Graph Ic).

By the end of the 30-year closed amortization period, the median funded ratio is about $100 \%$ under all scenarios. However, the funded ratio at the 75th and 95th percentiles is significantly higher under the "POB Issued" scenarios as compared to the "No POB" scenario. The large increase in the funded ratios at the 75th and 95th percentiles in Graphs Ib and Ic is the result of the significant initial increase in the assets and funded ratio from the POB proceeds, and sustained favorable investment performance.

These scenarios illustrate that, strictly from the pension plan's perspective, there is little or no downside risk on the funded ratio of issuing a POB (assuming that the funding policy would always be followed).

Graphs Ila through IIc illustrate the total contribution rates (including POB debt service) as a percentage of pay under each scenario.

The total contribution rate is lower under both of the "POB Issued" scenarios between the 25 th and 75 th percentiles for most years when compared with the No POB scenario. Contribution rates are slightly higher in the earlier years under the POB scenarios due to the level dollar debt service payments.

At the 5 th percentile (i.e., the line above the red shaded area indicating the most unfavorable investment performance), the contribution rate is higher under the POB scenarios than under the No POB scenario as a result of having to pay the debt service payments in addition to the required contributions to the pension fund.

At the 95th percentile (i.e., the line below the blue shaded area indicating the most favorable investment performance), the contribution rate is higher under the POB scenarios (Graphs IIb and IIc) in the later years. This is partly the result of favorable investment performance which causes the required contributions to the pension fund to be zero, but there are still remaining obligations to make the debt service payments under the POB scenarios.

Because the illustrations are based on a plan with a closed-period amortization policy, the variability of the contribution rate increases as the amortization period decreases. Therefore, in 2042, there is significant variability because the contribution rate is based on amortizing the unfunded liability over the one year remaining in the closed amortization period.


Graph Illa shows the annual savings in total dollar contributions (including debt service) as a result of issuing the $\$ 6$ Billion POB. Because, for purposes of the example, the debt service payments were calculated as a level dollar amount and the pension plan contributions were calculated as a level percent of pay (with increasing dollar amounts), contributions under the "POB Issued" scenario are higher in the early years.

However, in the later years, there is about a $75 \%$ likelihood that the annual contribution under the "POB Issued" scenario is lower than under the "No POB" scenario. In Graph Illa, the results shown at the 5 th percentile flatten out in the later years as a result of a continued required debt service payment under the "POB Issued" scenario and no required contribution to the pension plan (since under these scenarios the plan is $100 \%$ funded).

Graph IIIb shows the net present value in 2012 of the cumulative contribution savings. By 2042, the debt service is fully paid off and the full
 impact of the POB can be analyzed. There is approximately a $66 \%$ likelihood that issuing the $\$ 6$ Billion POB will result in lower contributions on a present value basis than if a POB had not been issued.

Because we have not assumed that any pension assets could be used to pay debt service payments (even in the case of a funded status in excess of $100 \%$ ), the additional contributions under the POB scenario results in funded ratios that are also much higher in certain future simulated outcomes. If pension assets could be used to make debt service payments or excess assets could be "refunded" from the pension plan, we project that the POB scenarios would result in lower contributions in $80 \%$ of the simulation trials.

## Notes

[^2]
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## Resources

## Best Practices/Advisories

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Research Reports
Yield Advantage
Federal Government Relations
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Training Policies

## Pension Obligation Bonds

Type: Advisory
Advisory:
GFOA Advisories Identify specific policies and procedures necessary to $\mathrm{m} / \mathrm{h} / \mathrm{m} / \mathrm{ze}$ a governments exposure to potentlal loss in connection with its financial management activities. It is not to be interpreted as GFOA sanctioning the underlying activity that gives rise to the exposure.

## Approved by GFOA's Executive Board: January 2015

## Background:

Pension obligation bonds (POBs) are taxable bonds ${ }^{1}$ that some state and local govemments have issued as part of an overall strategy to fund the unfunded portion of their pension liabilities by creating debt. The use of POBs rests on the assumption that the bond proceeds, when invested with pension assets in higher-yielding asset classes, will be able to achieve a rate of retum that is greater than the interest rate owed over the term of the bonds. However, POBs involve considerable investment risk, making this goal very speculative. ${ }^{2}$ Failing to achieve the targeted rate of return burdens the issuer with both the debt service requirements of the taxable bonds and the unfunded pension liabilities that remain unmet because the investment portfolio did not perform as anticipated. In recent years, local jurisdictions across the country have faced increased financial stress as a result of their reliance on POBs, demonstrating the significant risks associated with these instruments for both small and large governments.

## Recommendation:

The Govemment Finance Officers Association (GFOA) recommends that state and local governments do not issue POBs for the following reasons:

1. The invested $P O B$ proceeds might fail to eam more than the interest rate owed over the term of the bonds, leading to increased overall liabilitles for the government.
2. POBs are complex instruments that carry considerable risk, POB structures may incorporate the use of guaranteed investment contracts, swaps, or derivatives, which must be intensively scrutinized as these embedded products can introduce counterparty risk, credit risk and interest rate risk. ${ }^{3}$
3. Issuing taxable debt to fund the pension liability increases the jurisdiction's bonded debt burden and potentially uses up debt capacity that could be used for other purposes. In addition, taxable debt is typically issued without call options or with "make-whole" calls, which can make it more difficult and costly to refund or restructure than traditional taxexempt debt.
4. POBs are frequently structured in a manner that defers the principal payments or extends repayment over a period longer than the actuarial amortization period, thereby increasing the sponsor's overall costs.
5. Rating agencies may not view the proposed issuance of POBs as credit positive, particularly if the issuance is not part of a more comprehensive plan to address pension funding shortfalls.

## Committee: Retirement and Benefits Administration

## Notes:

1 The Tax Reform Act of 1986 eliminated the tax exemption for pension obligation bonds.
2 Alicia H. Munnell, Jean-Pierre Aubry, and Mark Cafarelli, "An Update on Pension Obligation Bonds," Center for Retirement Research at Boston College, July 2014.

3 See GFOA Advisory - Using Debt-Related Derivatives and Developing a Derivatives Policy (2015)
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## Graystone Consulting

## PERFORMANCE BAR

PERIODS ENDING DECEMBER 31, 2014


|  | 9/2014-12/2014 | 12/2013-12/2014 | 12/2012-12/2014 | 12/2011-12/2014 | 12/2009-12/2014 | 12/2004-12/2014 |
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| 30\%S\&P500/70\% Int BC G/C | 2.09 | 6.26 | 7.26 | 7.34 | 7.19 | 5.40 |
| 40\% S\&P500/60\%Int BC G/C | 2.49 | 7.31 | 9.37 | 9.15 | 8.39 | 5.80 |
| 50\% S\&P500/50\%Int BC G/C | 2.90 | 8.36 | 11.51 | 10.98 | 9.59 | 6.17 |
| 60\% S\&P 500/40\% BC Int GC | 3.30 | 9.42 | 13.68 | 12.83 | 10.78 | 6.52 |
| Standard \& Poor's 500 | 4.93 | 13.69 | 22.68 | 20.41 | 15.45 | 7.67 |
| Barclays Intermediate Govt/Credit | 0.89 | 3.12 | 1.11 | 2.03 | 3.54 | 4.10 |

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## ADMINISTRATION

EXPENSES
$\quad 10-01-50201$
10-01-50202

VILLAGE CLERK
VILLAGE TREASURER

5,092.10
5,190.66

| ACCOUNT NUMBER | DESCRIPTION | FEBRUARY BUDGET | FEBRUARY <br> ACTUAL |  | FISCAL <br> YEAR <br> BUDGET | $\begin{gathered} \text { FISCAL } \\ \text { YEAR-TO-DATE } \\ \text { ACTUAL } \end{gathered}$ | $\stackrel{\circ}{\circ}$ <br> ANCE |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| ADMINISTRATION |  |  |  |  |  |  |  |
| EXPENSES |  |  |  |  |  |  |  |
| 10-01-50203 | OFFICE/COMP/SOFTWARE SUPPLIES | 375.00 | 384.51 | (2.5) | 4,500.00 | 384.51 | 91.4 |
| 10-01-50204 | COMPUTER EQUIPMENT | 333.33 | 799.99 | (140.0) | 4,000.00 | 799.99 | 80.0 |
| 10-01-50205 | OFFICE EQUIPMENT SERVICES | 229.16 | 163.26 | 28.7 | 2,750.00 | 450.10 | 83.6 |
| 10-01-50206 | TELEPHONE \& INTERNET SERVICES | 666.66 | 453.94 | 31.9 | 8,000.00 | 1,418.10 | 82.2 |
| 10-01-50207 | TELEPHONE LEASE/PURCHASE | 208.33 | 0.00 | 100.0 | 2,500.00 | 0.00 | 100.0 |
| 10-01-50208 | VEHICLE STICKER EXPENSE | 175.00 | 393.94 | (125.1) | 2,100.00 | 393.94 | 81.2 |
| 10-01-50209 | BACOG ASSESSMENT | 0.00 | 0.00 | 0.0 | 25,625.02 | 6,311.50 | 75.3 |
| 10-01-50210 | LONGEVITY PAY-CLERK | 0.00 | 0.00 | 0.0 | 1,250.00 | 0.00 | 100.0 |
| 10-01-50211 | MEETINGS EXPENSES | 666.66 | 327.31 | 50.9 | 8,000.00 | 1,373.58 | 82.8 |
| 10-01-50212 | DUES AND SUBSCRIPTIONS | 916.66 | 0.00 | 100.0 | 11,000.00 | 778.02 | 92.9 |
| 10-01-50213 | TUITION/TRAVEL EXPENSE | 666.66 | 0.00 | 100.0 | 8,000.00 | 0.00 | 100.0 |
| 10-01-50214 | NEWSLETTER/WEBSITE | 0.00 | 0.00 | 0.0 | 12,300.00 | 0.00 | 100.0 |
| 10-01-50215 | COMPUTER ACCESSORIES | 20.83 | 0.00 | 100.0 | 250.00 | 0.00 | 100.0 |
| 10-01-50216 | ADMINISTRATIVE VEHICLE | 291.66 | 817.39 | (180.2) | 3,500.00 | 817.39 | 76.6 |
| 10-01-50217 | VACATION COMPENSATION | 0.00 | 0.00 | 0.0 | 0.00 | 0.00 | 0.0 |
| 10-01-50218 | POSTAGE EXPENSE | 291.66 | 0.00 | 100.0 | 3,500.00 | 0.00 | 100.0 |
| 10-01-50219 | MESSENGER SERVICE | 58.33 | 0.00 | 100.0 | 700.00 | 0.00 | 100.0 |
| 10-01-50220 | PAYROLL SERVICES | 300.00 | 260.39 | 13.2 | 3,600.00 | 401.63 | 88.8 |
| 10-01-50221 | BROADBAND DATA SERVICE | 1,000.00 | 879.14 | 12.0 | 12,000.00 | 1,712.22 | 85.7 |
| 10-01-50222 | LONGEVITY PAY-TREASURER | 0.00 | 0.00 | 0.0 | 500.00 | 0.00 | 100.0 |
| 10-01-50223 | TRANSFER TO E 911 FUND | 0.00 | 0.00 | 0.0 | 0.00 | 0.00 | 0.0 |
| 10-01-50224 | WEB SERVICES | 333.33 | 459.17 | (37.7) | 4,000.00 | 459.17 | 88.5 |
| 10-01-50230 | DIRECTOR OF ADMINISTRATION | 11,373.00 | 11,373.00 | 0.0 | 136,476.00 | 22,746.00 | 83.3 |
| 10-01-50231 | LONGEVITY PAY-ADMINISTRATOR | 0.00 | 0.00 | 0.0 | 2,000.00 | 0.00 | 100.0 |
| 10-01-50235 | CLERICAL SERVICES | 1,750.00 | 1,442.76 | 17.5 | 21,000.00 | 2,885.52 | 86.2 |
| 10-01-50240 | COMMUNICATIONS COMMITTEE | 41.66 | 0.00 | 100.0 | 500.00 | 0.00 | 100.0 |
| 10-01-50241 | DIRECTOR OF COMMUNICATIONS | 2,715.66 | 2,851.46 | (5.0) | 32,588.00 | 5,702.92 | 82.5 |
| 10-01-50242 | OVERTIME | 83.33 | 0.00 | 100.0 | 1,000.00 | 0.00 | 100.0 |
| 10-01-50400 | SPECIAL EVENTS | 416.66 | 0.00 | 100.0 | 5,000.00 | 0.00 | 100.0 |
| 10-01-50401 | MERCHANT FEES-CREDIT CARD FEES | 2.08 | 74.84 | (3498.0) | 25.00 | 74.84 | (199.3) |
| 10-01-50999 | TRANSFER TO POLICE PENSION | 16,061.14 | 2,296.85 | 85.7 | 669,214.01 | 11,059.64 | 98.3 |
| TOTAL EXPENS | MINISTRATION | 49,259.54 | 33,260.71 | 32.4 | 1,109,271.03 | 78,334.57 | 92.9 |

## BUILDING DEPARTMENT

| BUILDING DEPARTMENT |  |  |
| :--- | :--- | ---: |
| EXPENSES |  | $6,250.00$ |
| $10-02-50301$ | PERMIT ADMINISTRATION | $4,125.00$ |
| $10-02-50302$ | OUTSIDE SERVICES | 83.33 |
| $10-02-50303$ | PRINTING AND SUPPLIES | 58.33 |
| $10-02-50304$ | FIELD/OFFICE EQUIPMENT | 8.33 |
| $10-02-50305$ | VEHICLE EXPENSE | 333.33 |
| $10-02-50306$ | OFFICE EXPENSES |  |

10-02-50305
OFFICE EXPENSES

| $6,731.90$ | $(7.7)$ |
| ---: | ---: |
| $1,482.00$ | 64.0 |
| 0.00 | 100.0 |
| 104.95 | $(79.9)$ |
| 0.00 | 100.0 |
| 483.31 | $(44.9)$ |

$75,000.00$
$49,500.00$
$1,000.00$
700.00
100.00
$4,000.00$

| $10,058.80$ | 86.5 |
| ---: | ---: |
| $1,842.00$ | 96.2 |
| 0.00 | 100.0 |
| 104.95 | 85.0 |
| 0.00 | 100.0 |

4,000.00
83.31 - 87.

BUDGET VS. ACTUAL WITH PERCENT VARIANCE
FOR 2 PERIODS ENDING FEBRUARY 28, 2015
FUND: GENERAL FUND

| FUND: GENERAL FUND |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | \% | FISCAL | FISCAL | \% |
| ACCOUNT |  | FEBRUARY | FEBRUARY | VARI- | YEAR | YEAR-TO-DATE | VARI- |
| NUMBER | DESCRIPTION | BUDGET | ACTUAL | ANCE | BUDGET | ACTUAL | ANCE |

## BUILDING DEPARTMENT

## XPENSES

| 10-02-50307 | PLAN/ZONING INFORM. SPECIALIST |
| :--- | :--- |
| $10-02-50308$ | INSPECTIONS |
| $10-02-50309$ | RECORDS MANAGEMENT |
| $10-02-50310$ | SURVEYING SERVICES |
| $10-02-50311$ | OVERTIME |
| $10-02-50315$ | DRAINAGE |

TOTAL EXPENSES: BUILDING DEPARTMENT

## HEALTH SERVICES

## EXPENSES

| $10-03-50401$ | ANIMAL SERVICES |
| :--- | :--- |
| $10-03-50403$ | BOARD OF HEALTH |
| $10-03-50405$ | POTABLE WATER |

10-03-50405 POTABLE WATER

TOTAL EXPENSES: HEALTH SERVICES

## LEGAL SERVICES

## EXPENSES

| $10-04-50501$ | VILLAGE ATTORNEY |
| :--- | :--- |
| $10-04-50502$ | COURT ATTORNEY (CLARKE) |
| $10-04-50503$ | POLICE ATTORNEY (MCGUIRE |
| $10-04-50504$ | OTHER LEGAL FEES |
| $10-04-50505$ | PUBLICATION OF NOTICES |
| $10-04-50506$ | EXPERT WITNESSES |
| $10-04-50507$ | COURT REPORTERS |
| $10-04-50508$ | LITIGATION EXPENSES |
| $10-04-50509$ | LABOR RELATIONS |
| $10-04-50510$ | PLANNING/ZONING |
| $10-04-50511$ | FOIA RECORDS MANAGEMENT |

TOTAL EXPENSES: LEGAL SERVICES

RESTIT. EXCHANGE \& BOND TRANSE PURCHASE/LEASE AUTOMOBILES
PETROLEUM SUPPLIES
AUTOMOBILE REPAIRS TIRES
83.33
0.00

8,166.66
$8,166.66$
$2,166.66$
, 250.00

| 0.00 | 100.0 | $1,000.00$ |
| ---: | ---: | ---: |
| 0.00 | 0.0 | $61,000.00$ |
| $3,730.37$ | 54.3 | $98,000.00$ |
| $1,571.41$ | 27.4 | $26,000.00$ |
| 0.00 | 100.0 | $3,000.00$ |


| 0.00 | 100.0 |
| ---: | ---: |
| 0.00 | 100.0 |
| $3,730.37$ | 96.1 |
| $2,347.72$ | 90.9 |
| 599.64 | 80.0 |

FUND: GENERAL FUND
ACCOUNT
NUMBER
-----------
PUBLIC SAFET

## PUBLIC SAFETY

| EXPENSES | TELEPHONE SERVICES |
| :--- | :--- |
| $10-05-50606$ | BARN NETWORK |
| $10-05-50612$ | RADIO MAINTENANCE |
| $10-05-50613$ | REINSTALLATION OF RADIOS |
| $10-05-50614$ | POLICE COMMUNICATIONS CONTRACT |
| $10-05-50615$ | RADAR REPAIRS |
| $10-05-50616$ | SECURITY MAINTENANCE |
| $10-05-50617$ | JAIL SERVICES CONTRACT |
| $10-05-50618$ | MEMBERSHIPS \& DUES |
| $10-05-50619$ | UNIFORMS |
| $10-05-50621$ | I.T. CONSULTANT |
| $10-05-50625$ | MARKING VEHICLES |
| $10-05-50630$ | TRAINING REIMBURSEMENTS |
| $10-05-50642$ | SHOOTING PROGRAM/ARMORY |
| $10-05-50651$ | VEHICULAR EXPENSES |
| $10-05-50652$ | EMPLOYEE RECOGNITION/AWARDS |
| $10-05-50653$ | EQUIPMENT REPLACEMENT |
| $10-05-50654$ | OFFICE EXPENSES |
| $10-05-50655$ | OFFICE SUPPLIES |
| $10-05-50657$ | IPSAN \& PIPS |
| $10-05-50661$ | OTHER EXPENSES |
| $10-05-50662$ | TOWING EXPENSES |
| $10-05-50663$ | RECRUITMENT/PROMOTIONAL |
| $10-05-50665$ | PROFESSIONAL SERVICES COUNSELI |
| $10-05-50666$ | SEIZED DRUG SURRENDER TO STATE |
| $10-05-50667$ | DRUG/PUBLIC EDUCATION EXPENSES |
| $10-05-50668$ | COMPUTER SOFTWARE/EQUIPMENT |
| $10-05-50669$ | DISASTER/EMERGENCY |
| $10-05-50670$ | FURNITURE \& EQUIPMENT |
| $10-05-50671$ | CALEA EXPENSE |
| $10-05-50672$ | PUBLIC SAFETY EQUIPMENT |
| $10-05-50673$ | LEASE COMPUTER AIDED DISPATCH |
| $10-05-50677$ | LIVE-SCAN FEES |
| 105 |  |


| 1,541.66 | 691.81 | 55.1 | 18,500.00 | 2,898.24 | 84.3 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1,833.33 | 914.74 | 50.1 | 22,000.00 | 3,922.45 | 82.1 |
| 1,000.66 | 962.63 | 3.8 | 12,500.00 | 2,033.26 | 83.7 |
| 350.00 | 1,000.00 | (185.7) | 4,200.00 | 1,000.00 | 76.1 |
| 562.50 | 580.54 | (3.2) | 6,750.00 | 580.54 | 91.4 |
| 41.66 | 0.00 | 100.0 | 500.00 | 0.00 | 100.0 |
| 750.00 | 0.00 | 100.0 | 9,000.00 | 250.00 | 97.2 |
| 62.50 | 0.00 | 100.0 | 750.00 | 0.00 | 100.0 |
| 4,505.00 | 482.00 | 89.3 | 12,900.00 | 1,007.00 | 92.1 |
| 916.66 | 318.36 | 65.2 | 11,000.00 | 628.86 | 94.2 |
| 2,916.66 | 0.00 | 100.0 | 35,000.00 | 2,074.00 | 94.0 |
| 100.00 | 0.00 | 100.0 | 1,200.00 | 0.00 | 100.0 |
| 1,450.00 | 895.00 | 38.2 | 17,400.00 | 1,285.00 | 92.6 |
| 583.33 | 0.00 | 100.0 | 7,000.00 | 0.00 | 100.0 |
| 375.00 | 0.00 | 100.0 | 4,500.00 | 0.00 | 100.0 |
| 100.00 | 0.00 | 100.0 | 1,200.00 | 0.00 | 100.0 |
| 1,500.00 | 159.48 | 89.3 | 18,000.00 | 159.48 | 99.1 |
| 658.33 | 266.58 | 59.5 | 7,900.00 | 562.94 | 92.8 |
| 458.33 | 271.68 | 40.7 | 5,500.00 | 738.18 | 86.5 |
| 0.00 | 0.00 | 0.0 | 0.00 | 0.00 | 0.0 |
| 833.33 | 455.83 | 45.3 | 10,000.00 | 540.08 | 94.6 |
| 62.50 | 0.00 | 100.0 | 750.00 | 0.00 | 100.0 |
| 250.00 | 0.00 | 100.0 | 3,000.00 | 0.00 | 100.0 |
| 416.66 | 0.00 | 100.0 | 5,000.00 | 0.00 | 100.0 |
| 0.00 | 0.00 | 0.0 | 0.00 | 0.00 | 0.0 |
| 83.33 | 88.95 | (6.7) | 1,000.00 | 88.95 | 91.1 |
| 3,333. 33 | 1,129.64 | 66.1 | 40,000.00 | 6,503.29 | 83.7 |
| 227.27 | 0.00 | 100.0 | 5,500.00 | 0.00 | 100.0 |
| 250.00 | 0.00 | 100.0 | 3,000.00 | 0.00 | 100.0 |
| 506.00 | 0.00 | 100.0 | 8,000.00 | 0.00 | 100.0 |
| 666.66 | 0.00 | 100.0 | 8,000.00 | 0.00 | 100.0 |
| 1,418.17 | 0.00 | 100.0 | 29,100.00 | 0.00 | 100.0 |
| 11.67 | 0.00 | 100.0 | 5,123.00 | 0.00 | 100.0 |
| 38,431.19 | 13,519.02 | 64.8 | 503,273.00 | 30,950.00 | 93.8 |

WELLNESS REIMBURSEMENTS
EMPLOYEE DENTAL PLAN
10-06-50905
WORKER'S COMPENSATION INS.
EMPLOYEE MEDICAL AND LIFE
0.00
$5,259.58$
$9,012.42$
54.166 .66

54,166.66

| 0.00 | 0.0 |
| ---: | ---: |
| $4,754.44$ | 9.6 |
| $9,011.00$ | 0.0 |

47,606.76
47.606.76 12.1

2,400.00
63,115.00
$108,149.04$ 650,000.00
600.00

9,508.88 18,022.00 88, 454.53
75.0
84.9
84.9
83.3
83.3
86.3

| ACCOUNT NUMBER | DESCRIPTION |
| :---: | :---: |
| INSURANCE |  |
| EXPENSES |  |
| 10-06-50906 | VEHICLE/PHYSICAL DAMAGE |
| 10-06-50907 | SURETY BONDS |
| 10-06-50908 | DISABILITY INSURANCE |
| 10-06-50909 | PROPERTY INSURANCE |
| 10-06-50910 | INLAND MARINE/COMPUTER EQUIP |
| 10-06-50911 | ASSET INVENTORY |
| 10-06-50912 | PROPERTY-FIRE STATION |
| 10-06-50913 | DEDUCTIBLE PAYMENTS |
| 10-06-50914 | VSP EXPENSES |

TOTAL EXPENSES: INSURANCE

| 473.00 | 0.00 | 100.0 | 5,676.00 | 0.00 | 100.0 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 0.00 | 0.00 | 0.0 | 2,500.00 | 0.00 | 100.0 |
| 1,666.66 | 0.00 | 100.0 | 20,000.00 | 3,013.44 | 84.9 |
| 0.00 | 0.00 | 0.0 | 3,305.00 | 0.00 | 100.0 |
| 0.00 | 0.00 | 0.0 | 1,555.00 | 0.00 | 100.0 |
| 1,029.83 | 0.00 | 100.0 | 12,358.00 | 0.00 | 100.0 |
| 0.00 | 0.00 | 0.0 | 2,050.00 | 0.00 | 100.0 |
| 1,250.00 | 0.00 | 100.0 | 15,000.00 | 0.00 | 100.0 |
| 3,725.00 | 3,870.99 | (3.9) | 44,700.00 | 7,741.98 | 82.6 |
| 76,583.15 | 65,243.19 | 14.8 | 930,808.04 | 127,340.83 | 86.3 |

## MUNICIPAL BUILDINGS \& GROUNDS

## EXPENSES

| $10-07-51001$ | BUILDING IMPROVEMENTS |
| :--- | :--- |
| $10-07-51002$ | FURNITURE AND EQUIPMENT |
| $10-07-51003$ | INTERIOR BLDG MAINTENANCE |
| $10-07-51004$ | EXTERIOR BLDG MAINTENANCE |
| $10-07-51005$ | GROUNDS MAINTENANCE |
| $10-07-51006$ | CONTRACTUAL SERVICES |
| $10-07-51007$ | PARKING LOT MAINTENANCE |
| $10-07-51008$ | PROPERTY TAXES |
| $10-07-51009$ | LANDSCAPE RESTORATION |
| $10-07-51010$ | LANDSCAPE IRRIGATION |
| $10-07-51011$ | SNOW REMOVAL |
| $10-07-51012$ | SAFETY/SECURITY EQUIPMENT |
| $10-07-51098$ | FIRE STATION MAINTENANCE |

TOTAL EXPENSES: MUNICIPAL BUILDINGS \& GROUNDS
$1,666.66$
416.66
$3,041.66$
$1,666.66$
760.00
416.66
333.33
0.00
27.00
125.00
$3,000.00$
750.00
208.33

12,411.96
4,415.28 64.4
157,500.00
$20,000.00$
$5,000.00$
$36,500.00$
$20,000.00$
$8,000.00$
$5,000.00$
$4,000.00$
$4,000.00$
$27,000.00$
$1,500.00$
$15,000.00$
$9,000.00$
$2,500.00$

BUDGET

FISCAL
\% YEAR-TO-DATE VARIACTUAL ANCE

## ZONING AND PLANNINC

EXPENSES
$\quad 10-08-50801$ 10-08-5080 10-08-50802 10-08-50803 10-08-50804 10-08-50808 10-08-50812 10-08-50813 10-08-50840 10-08-5084 10-08-50845

MINUTES-PLANNING \& ZBA
SUPPLIES/GIS/PRINTING
ENGINEERING SERVICES
SUBDIVISION REVIEW/RECORDING
PROFESSIONAL CONSULTANTS
PLAN/ZONING INFORM. SPECIALIST
OVERTIME
EQUESTRIAN COMMISSION
DEVELOPMENT COMMISSION
666.66

3,166.66
416.66
416.66
416.66
0.00
0.00
0.00
8.33
8.33
8.33

| 0.00 | 100.0 | $8,000.00$ |
| ---: | :---: | ---: |
| 776.00 | 75.4 | $38,000.00$ |
| $1,894.00$ | $(354.5)$ | $5,000.00$ |
| 0.00 | 100.0 | $5,000.00$ |
| 0.00 | 100.0 | $5,000.00$ |
| 0.00 | 0.0 | 0.00 |
| 0.00 | 0.0 | 0.00 |
| 0.00 | 100.0 | 100.00 |
| 0.00 | 100.0 | 100.00 |


| 0.00 | 100.0 |
| ---: | ---: |
| $1,276.00$ | 96.6 |
| 1.894 .00 | 62.1 |
| 0.00 | 100.0 |
| 0.00 | 100.0 |
| 0.00 | 0.0 |
| 0.00 | 0.0 |
| 0.00 | 100.0 |
| 0.00 | 100.0 |


| 0.00 | 100.0 |
| ---: | ---: |
| 0.00 | 100.0 |
| $1,867.23$ | 94.8 |
| 0.00 | 100.0 |
| 0.00 | 100.0 |
| 0.00 | 100.0 |
| 0.00 | 100.0 |
| 0.00 | 100.0 |
| 0.00 | 100.0 |
| 0.00 | 100.0 |
| $2,692.50$ | 82.0 |
| 0.00 | 100.0 |
| 300.00 | 88.0 |



（D）
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total expenses：Zoning and planning FUND SURPLUS（DEFICIt）
$\square$
$\square$
 $3,170.00$

都
， 200.

DETAILED REVENUE \＆EXPENSE REPORT
BUDGET VS．ACTUAL WITH PERCENT VARIANCE
FOR 2 PERIODS ENDING FEBRUARY 28， 201
DETAILED REVENUE \＆EXPENSE REPORT
BUDGET VS．ACTUAL WITH PERCENT VARIANCE
FOR 2 PERIODS ENDING FEBRUARY 28， 201
$\begin{array}{cc}\% & \text { FISCAL } \\ \text { MARI－} & \text { YEAR }\end{array}$ YEAR
BUDGET AR－TO－DATE VAR $\begin{array}{cl}\text { ACTUAL } & \text { ANTE }\end{array}$ 94.8
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FUND: POLICE PROTECTION FUND


## UNASSIGNED

| EXPENSES |  |
| :--- | :--- |
| $20-00-51101$ | POLICE CHIEF |
| $20-00-51102$ | SUPERVISORS (SWORN) |
| $20-00-51103$ | PATROL OFFICERS |
| $20-00-51106$ | OVERTIME |
| $20-00-51107$ | DISPATCHERS/RECORD CLERKS |
| $20-00-51108$ | EDUCATIONAL BENEFITS |
| $20-00-51110$ | SUPERVISORS (NON-SWORN) |
| $20-00-51111$ | VACATION COMPENSATION |
| $20-00-51112$ | LONGEVITY AWARDS |

TOTAL EXPENSES: UNASSIGNED

| 10,000.00 | 10,000.00 | 0.0 | 120,000.00 | 20,000.00 | 83.3 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 44,348.16 | 44,153.50 | 0.4 | 532,178.00 | 88,846.35 | 83.3 |
| 73,333.33 | 74,073.56 | (1.0) | 880,000.00 | 149,420.03 | 83.0 |
| 8,000.00 | 5,193.22 | 35.0 | 96,000.00 | 9,981.90 | 89.6 |
| 39,252.08 | 39,900.29 | (1.6) | 471,025.00 | 80,060.43 | 83.0 |
| 333.33 | 0.00 | 100.0 | 4,000.00 | 0.00 | 100.0 |
| 12,333.33 | 12,333.34 | 0.0 | 148,000.00 | 24,685.67 | 83.3 |
| 0.00 | 0.00 | 0.0 | 10,000.00 | 0.00 | 100.0 |
| 2,354.16 | 0.00 | 100.0 | 28,250.00 | 2,000.00 | 92.9 |
| 189,954.39 | 185,653.91 | 2.2 | 2,289,453.00 | 374,994.38 | 83.6 |


| $153,483.17$ | $192,462.40$ | 25.4 | $2,289,453.00$ | $200,433.54$ | $(91.2)$ |
| ---: | ---: | ---: | ---: | ---: | ---: |
| $189,954.39$ | $185,653.91$ | 2.2 | $2,289,453.00$ | $374,994.38$ | 83.6 |
| $(36,471.22)$ | $6,808.49$ | $(118.6)$ | 0.00 | $(174,560.84)$ | 100.0 |

TIME: 09:34:27
DETATTVillage of Barrington Hill

|  |  |  |  | \% | FISCAL | FISCAL | \% |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| ACCOUNT |  | FEBRUARY | FEBRUARY | VARI- | YEAR | YEAR-TO-DATE | VARI- |
| NUMBER | DESCRIPTION | BUDGET | ACTUAL | ANCE | BUDGET | ACTUAL | ANCE |

## UNASSIGNED

REVENUES
30-00-40000 PROPERTY TAX-SOCIAL SECURITY

| $15,750.00$ | $1,767.62$ | $(88.7)$ | $210,000.00$ | $1,839.66$ |
| :---: | :---: | :---: | :---: | :---: |$(99.1)$

## UNASSIGNED

EXPENSES
30-00-51201 SOCIAL SECURITY TAXES
TOTAL EXPENSES: UNASSIGNED

TOTAL FUND REVENUES
TOTAL FUND EXPENSES FUND SURPLUS (DEFICIT)
$15,750.00$
17,500.00
(1, 750.00)

| $1,767.62$ | $(88.7)$ |
| ---: | ---: |
| $16,142.54$ | 7.7 |
| $(14,374.92)$ | 721.4 |

$$
\begin{array}{rr}
16,142.54 & 7.7 \\
14.374 .92) & 721.4
\end{array}
$$

$$
721.4
$$

210,000.00
210,000.00
0.00

| $1,839.66$ | $(99.1)$ |
| ---: | :---: |
| $32,634.39$ | 84.4 |
| $(30.794 .73)$ | 100.0 |

$32,734.33) \quad 84.4$

FUND: AUDIT FUND


## UNASSIGNEI

## EXPENSES

| $40-00-51301$ | ANNUAL AUDIT EXPENSE |
| :--- | :--- |
| $40-00-51302$ | HARDWARE/SOFTWARE EXPENSE |
| $40-00-51303$ | FINANCE CONSULTING |

$40-00-51302$
$40-00-51303$
40-00-51304

## FINANCE CONSULTING

RECORDS MANAGEMENT
TOTAL EXPENSES: UNASSIGNED

TOTAL FUND REVENUES

| $1,875.00$ | $2,098.37$ | 11.9 | $25,000.00$ | $2,183.89$ | $(91.2)$ |
| :---: | :---: | :---: | ---: | ---: | ---: |
| $4,071.70$ | $2,800.00$ | 31.2 | $25,000.00$ | $5,555.68$ | 77.7 |
| $(2,196.70)$ | $(701.63)$ | $(68.0)$ | 0.00 | $(3,371.79)$ | 100.0 |



FOR 2 PERIODS ENDING
FUND: LIGHTING FUND

| ACCOUNT NUMBER | DESCRIPTION |
| :---: | :---: |
| UNASSIGNED |  |
| REVENUES |  |
| 50-00-40000 | PROPERTY TAX-LIGHTING |

TOTAL REVENUES: UNASSIGNED

## UNASSIGNED

## EXPENSES

EXPENSES MUNICIPAL STREET LIGHTING
50-00-51401
TOTAL EXPENSES: UNASSIGNED

TOTAL FUND REVENUES
TOTAL FUND EXPENSES FUND SURPLUS (DEFICIT)

| 225.00 | 249.42 | 10.8 | $3,000.00$ | 259.58 | $(91.3)$ |
| ---: | ---: | ---: | ---: | ---: | ---: |
| 250.00 | 213.68 | 14.5 | $3,000.00$ | 427.32 | 85.7 |
| $(25.00)$ | 35.74 | $(242.9)$ | 0.00 | $(167.74)$ | 100.0 |


|  | DESCRIPTION | FUND: LIABILITY INSURANCE FUND |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| ACCOUNT NUMBER |  | FEBRUARY BUDGET | FEBRUARY ACTUAL | VARIANCE | FISCAL <br> YEAR <br> BUDGET | ```FISCAL YEAR-TO-DATE ACTUAI``` |  |
| NUMBER |  | BUDGET | ACTUAL |  |  |  |  |
| REVENUES |  |  |  |  |  |  |  |
| 60-00-40000 | PROPERTY TAX-INSURANCE FUND | 7,505.78 | 8,409.77 | 12.0 | 100,076.99 | 8,752.51 | (91.2) |
| 60-00-43000 | DEBT PROCEEDS | 0.00 | 0.00 | 0.0 | 0.00 | 0.00 | 0.0 |
| TOTAL REVENUES: |  | 7,505.78 | 8,409.77 | 12.0 | 100,076.99 | 8,752.51 | (91.2) |

EXPENSES
60-00-51501
60-00-51502 60-00-51503 60-00-51504 60-00-51505 60-00-51506 60-00-51507 60-00-51508 60-00-51509 TOTAL EXPENSES:

GENERAL LIABILITY POLICY
VEHICLE LIABILITY POLICY EMPLOYMENT PRACTICE LIABILITY LAW ENFORCEMENT POLICY PUBLIC ENTITY MANAGEMENT EXCESS LIABILITY POLICY CRIME INSURANCE POLICY EMPLOYEE BENEFITS LIABILITY DEDUCTIBLE PAYMENTS

| 0.00 | 0.00 | 0.0 | 13,413.00 | 0.00 | 100.0 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 0.00 | 0.00 | 0.0 | 18,281.00 | 0.00 | 100.0 |
| 0.00 | 0.00 | 0.0 | 5,733.00 | 0.00 | 100.0 |
| 0.00 | 0.00 | 0.0 | 14,556.00 | 0.00 | 100.0 |
| 0.00 | 0.00 | 0.0 | 2,812.00 | 0.00 | 100.0 |
| 0.00 | 0.00 | 0.0 | 40,282.00 | 0.00 | 100.0 |
| 0.00 | 0.00 | 0.0 | 0.00 | 0.00 | 0.0 |
| 0.00 | 0.00 | 0.0 | 0.00 | 0.00 | 0.0 |
| 416.66 | 0.00 | 100.0 | 5,000.00 | 0.00 | 100.0 |
| 416.66 | 0.00 | 100.0 | 100,077.00 | 0.00 | 100.0 |


| ACCOUNT NUMBER | FEBRUARY BUDGET | FEBRUARY ACTUAL |  | $\begin{aligned} & \text { FISCAL } \\ & \text { YEAR } \\ & \text { BUDGET } \end{aligned}$ | $\begin{gathered} \text { FISCAL } \\ \text { YEAR-TO-DATE } \\ \text { ACTUAL } \end{gathered}$ | VARI- <br> ANCE |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| UNASSIGNED |  |  |  |  |  |  |
| REVENUES |  |  |  |  |  |  |
| 70-00-40000 PROPERTY TAX-CROSSING GUARDS | 180.00 | 200.62 | 11.4 | 2,400.00 | 208.80 | (91.3) |
| TOTAL REVENUES: UNASSIGNED | 180.00 | 200.62 | 11.4 | 2,400.00 | 208.80 | (91.3) |

## UNASSIGNED

## EXPENSES

70-00-51601 CROSSING GUARD SALARIES
TOTAL EXPENSES: UNASSIGNED

| 200.00 | 200.00 | 0.0 | 2,400.00 | 400.00 | 83.3 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 200.00 | 200.00 | 0.0 | 2,400.00 | 400.00 | 83.3 |

TOTAL FUND REVENUES
TOTAL FUND EXPENSES FUND SURPLUS (DEFICIT)

| 180.00 | 200.62 | 11.4 | $2,400.00$ | 208.80 | $(91.3)$ |
| ---: | ---: | ---: | ---: | ---: | ---: |
| 200.00 | 200.00 | 0.0 | $2,400.00$ | 400.00 | 83.3 |
| $(20.00)$ | 0.62 | $(103.1)$ | 0.00 | $(191.20)$ | 100.0 |



## UNASSIGNED

## EXPENSES

EXPENSES UNEMPLOYMENT TAXES
$80-00-51701$ S
TOTAL EXPENSES: UNASSIGNED

TOTAL FUND REVENUES
TOTAL FUND EXPENSES FUND SURPLUS (DEFICIT)

| 210.00 | 233.15 | 11.0 | $2,800.00$ | 242.65 | $(91.3)$ |
| ---: | ---: | ---: | ---: | ---: | ---: |
| 900.00 | 766.73 | 14.8 | $2,800.00$ | $1,924.25$ | 31.2 |
| $(690.00)$ | $(533.58)$ | $(22.6)$ | 0.00 | $(1,681.60)$ | 100.0 |


| 900.00 | 766.73 | 14.8 | 2,800.00 | 1,924.25 | 31.2 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 900.00 | 766.73 | 14.8 | $2,800.00$ | 1,924.25 | 31.2 |

ACCOUNT
NUMBER

## UNASSIGNED

## VENUES

| 90-00-40000 | PROPERTY TAX-ROAD \& BRIDGE |
| :--- | :--- |
| $90-00-40100$ | MISCELLANEOUS REVENUE |
| $90-00-40200$ | ROAD \& BRIDGE TWN TAXES |
| $90-00-40300$ | GENERAL FUND TRANSFERS IN |

TOTAL REVENUES: UNASSIGNED

## UNASSIGNEI

| EXPENSES |  |
| :--- | :--- |
| 90-00-50701 | ROAD MAINTENANCE CONTRACTS |
| $90-00-50702$ | SNOWPLOWING CONTRACTS |
| $90-00-50703$ | MOWING/CLEANUP CONTRACTS |
| $90-00-50704$ | SIGN PURCHASE/INSTALLATION |
| $90-00-50705$ | DRAIN MANAGEMENT |
| $90-00-50706$ | ENGINEERING FEES |
| $90-00-50707$ | ROAD STRIPING |
| $90-00-50708$ | EQUIPMENT MAINTENANCE |
| $90-00-50709$ | ROAD PATCHING CONTRACTS |
| $90-00-50710$ | EQUIPMENT PURCHASES |
| $90-00-50711$ | BRIDGE INSPECTIONS |
| $90-00-50712$ | CN RAILWAY RES. 10-02 EXPENSES |
| $90-00-50713$ | CUBA ROAD BRIDGE EXPENSES |


| 986.85 | 1,154.00 | (16.9) | 986,846.01 | 1,154.00 | 99.8 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 45,500.00 | 48,736.52 | (7.1) | 260,000.00 | 75,912.19 | 70.8 |
| 2,916.66 | 3,745.75 | (28.4) | 35,000.00 | 4,220.75 | 87.9 |
| 1,166.66 | 721.00 | 38.2 | 14,000.00 | 1,718.50 | 87.7 |
| 10,000.00 | 34.50 | 99.6 | 120,000.00 | 2,632.50 | 97.8 |
| 12,060.00 | 12,595.90 | (4.4) | 180,000.00 | 12,595.90 | 93.0 |
| 83.33 | 0.00 | 100.0 | 1,000.00 | 0.00 | 100.0 |
| 100.00 | 0.00 | 100.0 | 4,000.00 | 0.00 | 100.0 |
| 1,250.00 | 856.25 | 31.5 | 15,000.00 | 856.25 | 94.2 |
| 166.66 | 0.00 | 100.0 | 2,000.00 | 0.00 | 100.0 |
| 666.66 | 0.00 | 100.0 | 8,000.00 | 0.00 | 100.0 |
| 0.00 | 0.00 | 0.0 | 0.00 | 0.00 | 0.0 |
| 13,333.33 | 0.00 | 100.0 | 160,000.00 | 0.00 | 100.0 |
| 88,230.15 | 67,843.92 | 23.1 | 1,785,846.01 | 99,090.09 | 94.4 |


| $142,548.50$ | 11.2 | $1,702,648.00$ |
| ---: | ---: | ---: |
| $67,843.92$ | 23.1 | $1,785,846.01$ |
| $74,704.58$ | 87.1 | $(83,198.01)$ |

74,704.58 87.1 (83,198.01)
67,843.92
$\begin{array}{rr}203,544.50 & (88.0 \\ 99,090.09 & 94.4\end{array}$

104,454.41 (225.5)

TOTAL FUND REVENUES
TOTAL FUND EXPENSES
FUND SURPLUS (DEFICIT)

TOTAL EXPENSES: UNASSIGNED

FUND: ROADS AND BRIDGES FUND

BUDGET

FISCAL ACTUAL ANCE


|  |  |
| :--- | :--- |
| ACCOUNT |  |
| NUMBER | DESCRIPTION |
| $------------------------------------------1 ~$ |  |
| UNASSIGNED |  |
| REVENUES |  |
| $92-00-41000$ | INTEREST INCOME |
| $92-00-42000$ | VOIP SURCHARGES |
| $92-00-45000$ | WIRELINE SURCHARGES |
| $92-00-46000$ | WIRELESS SURCHARGES |
| $92-00-47000$ | GENERAL FUND TRANSFER |

92-00-50015 92-00-50018 92-00-50019 92-00-50020 92-00-50024

PURCHASE NEW EQUIPMEN TELEPHONE LINE CHARGES MAINTAIN EQUIPMENT OTHER EXPENSES LOAN REPAYMENT-INTEREST

TOTAL EXPENSES: UNASSIGNED

TOTAL FUND REVENUES
TOTAL FUND EXPENSES
FUND SURPLUS (DEFICIT)

FOR 2 PERIODS ENDING FEBRUARY 28, 2015
FUND: E 911 FUND
\% FUND
FISCAL

ISCAL
YEAR YEAR-TO-DATE VARI BUDGET ACTUAL ANCE

| 6.25 | 5.90 | (5.6) | 75.00 | 12.31 | (83.5) |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1,083.33 | 1,127.62 | 4.0 | 13,000.00 | 2,266.88 | (82.5) |
| 2,416.66 | 1,894.47 | (21.6) | 29,000.00 | 3,822.40 | (86.8) |
| 1,250.00 | 1,521.16 | 21.6 | 15,000.00 | 3,000.75 | (80.0) |
| 0.00 | 0.00 | 0.0 | 0.00 | 0.00 | 0.0 |
| 4,756.24 | 4,549.15 | (4.3) | 57,075.00 | 9,102.34 | (84.0) |


| 2,041.66 | 2,038.04 | 0.1 | 24,500.00 | 4,076.08 | 83.3 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 2,500.00 | 0.00 | 100.0 | 30,000.00 | 0.00 | 100.0 |
| 916.66 | 929.83 | (1.4) | 11,000.00 | 1,859.78 | 83.0 |
| 1,458.33 | 0.00 | 100.0 | 17,500.00 | 0.00 | 100.0 |
| 266.66 | 0.00 | 100.0 | 3,200.00 | 0.00 | 100.0 |
| 0.00 | 0.00 | 0.0 | 0.00 | 0.00 | 0.0 |
| 7,183.31 | 2,967.87 | 58.6 | 86,200.00 | 5,935.86 | 93.1 |

4,756.24
7,183.31
(2,427.07)
$4,549.15$
$2,967.8$
(4.3)
58.6

1,581.28 (165.1)

## 57,075.00

86,200.00
$(29,125.00)$
(84.0)
$\begin{array}{lr}5,935.86 & 93.1 \\ 3,166.48 & (110.8\end{array}$
IC

TOTAL REVENUES: UNASSIGNED

## UNASSIGNEI

## EXPENSES

92-00-50000 AMERITECH CREDIT LEASE

|  | FUND: MOTOR FUEL T |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| ACCOUNT NUMBER | FEBRUARY BUDGET | FEBRUARY ACTUAL | $\stackrel{\circ}{\circ}$ ANCE | $\begin{aligned} & \text { FISCAL } \\ & \text { YEAR } \\ & \text { BUDGET } \end{aligned}$ | $\begin{gathered} \text { FISCAL } \\ \text { YEAR-TO-DATE } \\ \text { ACTUAL } \end{gathered}$ | $\stackrel{\circ}{\circ}$ <br> ANCE |
| UNASSIGNED |  |  |  |  |  |  |
| REVENUES |  |  |  |  |  |  |
| 95-00-40000 MOTOR FUEL TAX INTEREST | 2.08 | 0.90 | (56.7) | 25.00 | 1.68 | (93.2) |
| 95-00-40099 MISC. REVENUE-DUE TO M F T | 0.00 | 0.00 | 0.0 | 0.00 | 0.00 | 0.0 |
| 95-00-40100 MOTOR FUEL TAX ALLOTMENTS | 8,539.58 | 9,961.28 | 16.6 | 102,475.00 | 20,560.52 | (79.9) |
| TOTAL REVENUES: UNASSIGNED | 8,541.66 | 9,962.18 | 16.6 | 102,500.00 | 20,562.20 | (79.9) |
| UNASSIGNED |  |  |  |  |  |  |
| EXPENSES |  |  |  |  |  |  |
| 95-00-50100 MOTOR FUEL TAX EXPENSES | 8,333.33 | 0.00 | 100.0 | 100,000.00 | 0.00 | 100.0 |
| TOTAL EXPENSES: UNASSIGNED | 8,333.33 | 0.00 | 100.0 | 100,000.00 | 0.00 | 100.0 |
| TOTAL FUND REVENUES | 8,541.66 | 9,962.18 | 16.6 | 102,500.00 | 20,562. 20 | (79.9) |
| TOTAL FUND EXPENSES | 8,333.33 | 0.00 | 100.0 | 100,000.00 | 0.00 | 100.0 |
| FUND SURPLUS (DEFICIT) | 208.33 | 9,962.18 | 4681.9 | 2,500.00 | 20,562.20 | 722.4 |

MOTOR FUEL TAX INTEREST MOTOR FUEL TAX ALLOTMENTS
$\begin{array}{lllll}8,541.66 & 9,962.18 & 16.6 & 102,500.00 & 20,562.20 \quad \text { (79.9) }\end{array}$
$8,541.66$
$8,333.33$
208.33
$\begin{array}{rr}0.00 & 100.0\end{array}$
$20,562.20 \quad 722.4$
$\begin{array}{rrr}0.00 & 100.0 & 100,000.00 \\ , 962.18 & 4681.9 & 2,500.00\end{array}$
100.0
$\begin{array}{rrr}, 962.18 & 4681.9 & 2,500.00\end{array}$
,
FOR 2 PERIODS ENDING FEBRUARY 28, 2015

| FUND: IMRF FUND |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| ACCOUNT NUMBER | DESCRIPTION | FEBRUARY BUDGET | FEBRUARY ACTUAL | VARI- <br> ANCE | FISCAL <br> YEAR <br> BUDGET | $\begin{gathered} \text { FISCAL } \\ \text { YEAR-TO-DATE } \\ \text { ACTUAL } \end{gathered}$ |  |
| UNASSIGNED |  |  |  |  |  |  |  |
| REVENUES |  |  |  |  |  |  |  |
| 96-00-40000 | PROPERTY TAX-IMRF FUND | 3,750.00 | 4,196.75 | 11.9 | 50,000.00 | 4,367.78 | (91.2) |
| TOTAL REVENUES: | JASSIGNED | 3,750.00 | 4,196.75 | 11.9 | 50,000.00 | 4,367.78 | (91.2) |

## UNASSIGNED

## EXPENSES

EXPENS IMRF EXPENSES
$96-00-51801$ IM
TOTAL EXPENSES: UNASSIGNED

TOTAL FUND REVENUES
TOTAL FUND EXPENSES FUND SURPLUS (DEFICIT)

3,750.00
4,166.66
(416.66)

| $4,196.75$ | 11.9 | $50,000.00$ |
| :--- | :--- | :--- |
| $3,427.85$ | 17.7 | $50,000.00$ |

$768.90-50,00.00$

4,367.78 (91.2)
6,915.92 $\quad 86.1$
$(2,548.14) \quad 100.0$


## UNASSIGNED

## EXPENSES

| $97-00-52001$ | PRINCIPAL PAYMENT |
| ---: | :--- |
| $97-00-52002$ | INTEREST PAYMENTS |

97-00-52002 INTEREST PAYMENTS

TOTAL EXPENSES: UNASSIGNED

TOTAL FUND REVENUES

IME: 09:34:27
GL470001.CBH

| 0.00 | 0.00 | 0.0 | 236,150.00 | 0.00 | 100.0 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 0.00 | 0.00 | 0.0 | 21,150.00 | 0.00 | 100.0 |
| 0.00 | 0.00 | 0.0 | 257,300.00 | 0.00 | 100.0 |


0.01


## UNASSIGNED

## UNASSIGN

EXPENSES
$98-00-50000$
DRUG/GANG/DUI EXPENSES
TOTAL EXPENSES: UNASSIGNED

| 333.33 | 19.66 | $(94.1)$ | $4,000.00$ | 439.75 | $(89.0)$ |
| ---: | ---: | ---: | ---: | ---: | ---: |
| $1,000.00$ | 0.00 | 100.0 | $12,000.00$ | 0.00 | 100.0 |
| $(666.67)$ | 19.66 | $(102.9)$ | $(8,000.00)$ | 439.75 | $(105.5)$ |


[^0]:    *Alicia H. Munnell is director of the Center for Retirement Research at Boston College (CRR) and the Peter F. Drucker Professor of Management Sciences at Boston College's Carroll School of Management. Jean-Pierre Aubry is assistant director of state and local research at the CRR. Mark Cafarelli is a research associate at the CRR. The authors wish to thank David Blizstein and Keith Brainard for helpful comments.

[^1]:    * Lance J. Weiss is a senior actuarial consultant with GRS and has over 35 years of experience in employee benefits and retirement support planning, with special emphasis on the design, funding, security, administration and communication of retirement and post-retirement medical programs for private-sector and public-sector employers.
    Amy Williams is an actuarial consultant with GRS and has 15 years of actuarial experience. Her work involves consulting on pension and retiree health care valuations, funding projections, experience studies, actuarial audits and plan design. Additional information about the authors is provided on page 8.

    The authors of this article are actuaries, not investment consultants. This article shall not be construed as providing tax advice, legal advice, or investment advice. Readers are cautioned to examine the original source materials and to consult with subject matter experts before making decisions related to the subject matter of this article. The article expresses the views of the authors and does not necessarily express the views of Gabriel, Roeder, Smith \& Company.

[^2]:    i Eric Schulzke, "Pension Obligation Bonds: Risky Gimmick or Smart Investment?" Governing, January 2013.
    ${ }^{i 1}$ Alicia H. Munnell et al., "Pension Obligation Bonds: Financial Crisis Exposes Risks," State and Local Issue in Brief 9, Center for Retirement Research at Boston College, January 2010.
    iii "Pension Obligation Bonds: "Do you feel lucky?" Jean-Pierre Aubry, Assistant Director of State and Local Research at the Center for Retirement Research at Boston College. Presentation at 2013 Annual Meeting of the Conference of Consulting Actuaries. Source cited in presentation: Data set compiled from Bloomberg Online Service (1992-2009), supplemented with Thomson Reuters SDC Municipal Bond Dataset (1984-2012).
    iv Ibid.
    v "Pension Obligation Bonds: "Do you feel lucky?" Jean-Pierre Aubry, Assistant Director of State and Local Research at the Center for Retirement Research at Boston College. Presentation at 2013 Annual Meeting of the Conference of Consulting Actuaries. Source cited in presentation: Data set compiled from Bloomberg Online Service (1992-2009), supplemented with Thomson Reuters SDC Municipal Bond Dataset (1984-2012); The Census of Governments State and Local Government Finances (1986-2011).
    vi Ibid
    vii Alicia H. Munnell et al., "The Funding of State and Local Pensions: 2012-2016," State and Local Issue in Brief 32, Center for Retirement Research at Boston College, July 2013.
    viii Alicia H. Munnell et al., "State and Local Pension Costs: Pre-Crisis, Post-Crisis, and Post-Reform," State and Local Issue in Brief 30, Center for Retirement Research at Boston College, February 2013.
    ix Moody's Investors Service, Adjusted Pension Liability Medians for US States, June 27, 2013. The report used Moody's measure of the "adjusted net pension liability" which is substantially different from the measures used to fund public pension plans and typically results in a higher unfunded liability.
    $\times$ Ibid.
    xi Pension Obligation Bonds: "Do you feel lucky?" R. Ray Kljajic, Managing Director of Citigroup. Presentation at the 2013 Annual Meeting of the Conference of Consulting Actuaries. Source cited in presentation: Moody's, September 19, 2013.
    xii Government Finance Officers Association, "Evaluating the Use of Pension Obligation Bonds," GFOA Advisory, 2005.
    xiii "Questions to Consider Before Issuing Pension Obligation Bonds," GRS Insight, Gabriel, Roeder, Smith \& Company, February 2004.
    xiv Eric Schulzke, "Pension Obligation Bonds: Risky Gimmick or Smart Investment?" Governing, January 2013.
    xv Alicia H. Munnell et al., "Pension Obligation Bonds: Financial Crisis Exposes Risks," State and Local Issue in Brief 9, Center for Retirement Research at Boston College, January 2010.
    xvi Alicia H. Munnell et al., "An Update on Pension Obligation Bonds," State and Local Issue in Brief 40, Center for Retirement Research at Boston College, July 2014.

