02
Special Meeting Item

Office of the City Manager

ACTION CALENDAR
April 26, 2022

To: Honorable Mayor and Members of the City Council

From: Dee Williams-Ridley, City Manager

Submitted by: Henry Oyekanmi, Director, Finance

Subject: Accept the Risk Analysis for Long-Term Debt (Bonding Capacity) Report provided by Government Finance Officers Association

RECOMMENDATION

Accept the report titled 'Risk-Based Analysis and Stress Test of Long-Term Debt Affordability' as provided by the Government Finance Officers Association (GFOA). This report is based on their research and development of a risk-modeling tool to address issuing long-term debt related to City of Berkeley Vision 2050.

FISCAL IMPACTS OF RECOMMENDATION

There are no fiscal impacts of accepting the report

CURRENT SITUATION AND ITS EFFECTS

The Risk-Based Analysis and Stress Test of Long-Term Debt Affordability (Bonding Capacity) report is a Strategic Plan Priority Project, advancing our goal to:

- Provide an efficient and financially-healthy City government

The City engaged GFOA to conduct this analysis of the City's bonding capacity through their risk-modeling approach. This analysis will support the City's later development of a thirty-year borrowing plan, which will enable the City to replace its aging infrastructure assets, maintain its General Obligation Bond rating at AA+ at S & P Global and Aa1 at Moody's, and keep the bond property tax rate at an affordable level (which was .0540% at June 30, 2020). The GFOA's risk model and report look at a comprehensive financial analysis with particular focus on options to maintain the City's debt affordability within the framework of the City's huge unfunded pensions and other post-employment benefits (OPEB) and overall City operations.

The study and report are intended to help develop recommendations for a combination of infrastructure-focused revenue measures slated for November 2022 and beyond.

The context provided for GFOA to build the risk model and draft the subsequent report was framed through initially providing these items to GFOA:

1. Vision 2050
2. Unfunded Liabilities Report
3. Capital Improvement Plan in the most recent biennial budget and five-year planning horizon
4. Annual Comprehensive Financial Reports (ACFR)
5. GO Bonds, Revenue Bonds, and Certificates of Participation Debt Repayment Schedules
6. Current Bond Authority and Outstanding Amounts (GO Bonds for the past 20 years as of 7/12/21)
7. City's Debt Policy
8. S and P Global Ratings Letter Re: GO Bonds
9. S and P Global Ratings Letter Re: Lease Revenue Bonds
10. Analysis of City's Debt and Contingent Liability Profile
11. GO Rating Report – April 2021
12. GO Rating Report – February 2020

The GFOA report details these and additional factors that GFOA researched and incorporated into their construction of the risk model and their drafting of the final report.

BACKGROUND

The City has an extensive portfolio of capital assets and infrastructure, including 95 public buildings; 254 miles of public sanitary sewer mains and 130 miles of public sewer laterals; 52 parks, two pools; three camps; and 42 different facilities served by the City's IT systems. Maintaining these assets is costly and requires significant resources and constant attention. As an older city, 50% of Berkeley's $837 million of capital assets have exceeded their useful life.

The City's FY 2021 Capital Plan called for spending of $57 million/year on capital and maintenance needs. Even at this increased level of funding, Berkeley's infrastructure will deteriorate faster than it is being repaired and replaced, and construction cost escalation at four (4) percent/year will significantly increase replacement costs.

To modernize these old physical structures with resilient, durable, and climate-smart infrastructure will require substantial new investments. To adequately address the $882 million in unfunded infrastructure liabilities, the City needs to double its annual capital spending over the next decade to $80 million/year. Capital expenditures are typically funded through a combination of debt financing (pay-as-you-use) and cash (pay-as-you-go). Paying in cash avoids the cost of interest, but requires the City to accumulate sufficient cash to fund the project, while construction costs escalate. Using debt to finance capital projects incurs interest expense but allows the project to start earlier, thereby avoiding escalation costs.

The City has an infrastructure system that has allowed it to thrive for over 100 years. Now, the City wants to incorporate new technologies and be able to adapt to meet environmental trends so that the infrastructure systems can continue to support the City for another 100 years. The risk analysis report shows the potential impact of multiple factors on the City's capacity to issue debt during the next thirty years.

ENVIRONMENTAL SUSTAINABILITY AND CLIMATE IMPACTS
There are no identifiable effects or opportunities associates with this item.

RATIONALE FOR RECOMMENDATION
The City administered Request for Proposals #21-11459-C for consulting services to determine the City's bonding capacity. The RFP was published twice with neither publication generating responses from the market. In the course of staff researching why no responses were received, staff met with GFOA. GFOA provided their relatively new risk-modeling approach to the bonding capacity topic. Thus, it was determined, since a traditional RFP was not generating market response, that it would be advantageous to contract with GFOA for their services to research and develop the risk-model for City of Berkeley to evaluate its capacity for issuance of long-term debt.

ALTERNATIVE ACTIONS CONSIDERED
Not conducting the study

CONTACT PERSON
Henry Oyekanmi, Director, Finance, 981-7326

Attachments:
1: Report: Risk-Based Analysis and Stress Test of Long-Term Debt Affordability (from GFOA, 2022)

A Risk-Based Analysis and Stress Test of Long-Term Debt Affordability for the City of Berkeley, California

April 2022

Produced by:

The Government Finance Officers Association

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Section 1 – Introduction

Long-term debt is an important tool for municipal governments to invest in long-term assets that serve their community. The City of Berkeley, California (City) is considering seeking authorization from its voters on a large amount of long-term debt, perhaps up to $600 million, to support the City of Berkeley's infrastructure needs included in its Vision 2050 plan. The debt would be used to fund assets like streets, public buildings, and more. This would be the largest amount of debt the City has sought to authorize in at least the last 20 years.[1] Therefore, the City has, prudently, decided to analyze the long-term affordability of this debt and has engaged the Government Finance Officers Association (GFOA) to perform this analysis.

GFOA is a non-profit association of more than 21,000 state and local government finance professionals and elected officials from across the United States and Canada. A key part of GFOA's mission is to promote best practices in public finance, including analyzing important financial risks like the affordability of long-term debt. GFOA's approach to risk analysis is distinctive because we use the same basic methods used by insurance companies and climate scientists to evaluate risk. We use computer simulation to build hundreds, if not thousands, of scenarios of how the City's financial situation could play out over 30 years. Each scenario changes important variables that influence how affordable the City's debt might be. For example, each scenario features a different interest rate environment. The variation in these variables is governed by parameters we set, where the parameters keep the variation within the realm of possibility. To continue our interest rate example, we gathered data on the rate of change in bond interest rates since 1970. This information was used to create the parameters for the interest rate environments generated for each scenario. We then see how often the City's debt remains affordable over those thousands of scenarios. If the debt is shown to be affordable under a high proportion of those scenarios, then that suggests there is a good chance that the debt will ultimately be affordable in the real world. Conversely, if the debt is not affordable under a high portion of the scenarios that suggests the debt is unlikely to be affordable in the real world. This computer simulation is built in Microsoft Excel using open standards for the data.[2] We'll refer to this computer simulation as the GFOA "Risk Model". The Risk Model is completely available to the City to use as it sees fit, including the ability to adjust many of the assumptions utilized for the simulations.

The rest of this report is divided into the following sections:

- **Defining What is "Affordable" Debt.** This section describes our rationale for using a typical bond ratings analysis as the basis for determining what is "affordable" for the City government.
- **Key Financial Indicators and Assumptions.** This section examines the key indicators of debt affordability that are taken into consideration by bond ratings companies and our method of approximating how the indicators suggest debt affordability in our simulation of the City government's future.

[1] History of the City's bond issuances compiled with the help of the City Clerk.
[2] Visit probabilitymanagement.org for more information on the standards we use.

- **Results of the Analysis and Recommendations.** In this section, we will address the findings from our analysis, including recommendations to help the City retain its credit rating.

Section 2 – Defining What is "Affordable" Debt

The definition of what is "affordable" debt is at the foundation of this analysis.

The first step to defining what is affordable is defining the type of debt the City is considering. The City is considering "general obligation (GO) debt". This debt is paid for by a dedicated property tax levy. Thus, the City **does not** have to pay for this debt out of its existing revenue streams. This means that taking on more general obligation debt **will not** have a **direct** impact on the City's operating budget. There is **indirect** impact – for example, perhaps the higher tax bills faced by taxpayers would cause them to vote against future tax measures intended to support the operating budget. Or, maybe residents or businesses feel the impact of higher taxes in their businesses or personal finances and decide to move. These are important considerations, but are outside the scope of this analysis, which is focused on the **direct** impacts to City government. That said, the financial indicators we will examine do include measures of personal income and the size of the tax base relative to the size of the population, which do provide some insight into affordability to taxpayers. It is also worth remembering that, according to California law, debt like the City is considering must be approved by two-thirds of voters in an election. If approval is not obtained, the debt cannot be issued. Thus, taxpayers evaluate the affordability of the proposed debt themselves by choosing to approve it or not. However, affordability to the taxpayers might not be that simple. We'll have more to say on this topic later in the report.

The impact of general obligation debt on the City government's finances is to add to the City's total debt burden. Generally, the more debt a City takes on the less attractive its debt becomes to investors, all else being equal.[3] This is because, in theory, the more debt a City has, the less likely it is that it will be able to pay it all back. This is important because if the City's debt becomes too unattractive, it will need to offer higher interest rates to investors. That would make it more expensive to borrow and, thus, more expensive for the City to make future investments in long-term assets. **Thus, we will define debt affordability as the extent to which issuing more debt in support of any City Council program might cause the City's debt to cross a threshold point where the City has to offer a higher interest rate to attract investors**.

Threshold points where higher interest rates must be offered are known as bond ratings. There are three major agencies that issue bond ratings: Moody's Investors Service, Standard and Poor's, and Fitch Ratings. Each rating agency has its own approach, but there are broad similarities between all three. For purposes of this analysis, we will focus on Moody's approach. This is because Moody's method is: A) well documented; and B) makes use of quantitative financial information to help standardize the approach to issuing ratings. This means we can collect the same financial information Moody's would collect and evaluate it in a similar, albeit much simplified, manner. By doing this, our Risk Model was able to essentially duplicate the City's current rating, which is "Aa", according to Moody's. Aa is the second best rating on Moody's scale (which is similar to the scales used by the other rating agencies). The complete scale is shown in the accompanying table. The reader should note that rating agencies also make finer grained distinctions within the rating tiers. For example, technically, the City's rating is "Aa1", which

[3] Municipal governments might issue more debt, but their tax base and revenues might also continue to grow. In this case, all else has not remained equal so the debt of that municipality may not become less attractive.

indicates the City is a strong Aa or at the upper end of what is considered Aa. An Aa2 would be in the middle and Aa3 would be considered a weak Aa. For the majority of this report we will not refer to these finer grained distinctions. This is, first, in the interest of simplicity. Using just the ratings scale showing in our accompanying table, the reader will be required to track six different categories of ratings. Multiplying the number of categories by three might make this analysis much more difficult to follow. Second, we do not have access to reliable historical data on how big a difference these finer distinctions would make on the interest rate the City could obtain for its bonds. We have data back to 1970 for the differences between the tiers shown in our table. Therefore, most the analysis will take place at the level of these six tiers. Occasionally, though, we will refer to the finer distinctions (e.g., Aa1 vs. Aa2 vs. Aa3) to discuss how the City's credit rating could change in response to different conditions.

If the City's debt were to be downgraded to an "A" we would expect the City to have to pay a higher interest rate on future debt. How much more would depend on the interest rate environment at the time. Historically, the difference between the interest rate of Aa and A has ranged from 1.05 to 0.08 percentages points, with an average of 0.26 percentage points. If, for example, a $100 million 30-year bond sold at 2.26% interest rather than 2.00% interest, this would translate to $5 million more in total interest cost over the life of the bond.

Moody's Rating Scale	
The best->	Aaa
	Aa
	A
	Baa
	Ba
The worst->	B or below

To evaluate the affordability of the City of Berkeley's borrowing plan including its Vision 2050 debt issuance plan we can do the following:

1. Update the key financial indicators used within the Moody's rating system to reflect what the indicators would look like with the additional debt over the 30-year analysis period covered by our Risk Model.
2. Use computer simulation to vary key variables that impact the financial indicators over the 30-year analysis period. We'll describe what these variables are and the assumptions our analysis makes in the next section.

Section 3 – Key Financial Indicators and Assumptions

The purpose of this section is to summarize the key financial indicators used to help frame bond ratings and to describe key assumptions we have made with respect to future values of the important variables that go into the analysis. Our analysis considers the next 30 years, so we had to make assumptions about how key variables would behave. Before we delve into these topics, we'd like to bring five important points to the attention of the reader:

1. The amount of debt the City takes on is not the only, or even primary, factor that determines bond ratings. Bond ratings take into account a number of factors besides debt. Therefore, our analysis include other factors that impact bond ratings, such as pensions, fund balance and tax base, along with debt.
2. Bond ratings are intended, primarily, to help investors decide how risky it is to invest in a municipality's debt. Though many of the factors bond ratings take into account are reflective of

the general financial health of a municipality, the ratings are not a perfect measure of financial health. This is because ratings are intended to judge the ability of the City to pay back its bondholders and nothing more. This is a limited perspective on financial health.[4]

3. Bond ratings method are not a purely mechanical exercise where a given value for the financial indicators leads to a perfectly predictable bond rating. For example, Moody's rating method includes "notching factors", which are essentially the wiggle room to adjust a municipality's rating up or down, based on local circumstances and the judgment of bond rating analysts. Nevertheless, given that our approximation of the financial indicators that Moody's uses did produce the City's current rating in our Risk Model, we can assume that the financial indicators will produce useful insights into what the City's rating might be under different circumstances.
4. Our analysis is based largely on the future looking a lot like the past in many important respects. For example, we will see that the size of the City's tax base is regarded as a big strength by the Moody's evaluation method. We will assume it will continue to be. Of course, it is plausible that that a large natural disaster, like an earthquake, could severely damage property stock in Berkeley to the point where the tax base is seriously impaired and is no longer the strength it once was. These kinds of extreme scenarios (e.g., natural catastrophes) are not within the scope of our analysis. This is not to say such scenarios are not important. In fact, GFOA analyzes the impact of catastrophic scenarios on municipal financial health on a regular basis. However, given the scope for this project we focused on the key financial indicators of the City's financial health that are described in the following pages and not on catastrophe events. The Risk Model is not intended as a perfect representation of reality. It has been said "all models are wrong, but some are useful". We would suggest that focusing on the trajectory of key financial indicators given the decisions that City makes is a useful perspective on the affordability of its debt plan.
5. Readers who are not interested in the details of the Moody's methods and the assumptions we made about the future of the City's finances are invited to skip the rest of this section and go directly to the next section for our findings and recommendations.

The rest of this section will delve into key financial indicators that are salient to bond ratings and which underlies how we are defining "debt affordability" for this study.

The key financial indicators Moody's considers are described by what Moody's calls its "scorecard". Moody's has four broad factors for its bond rating scorecard and a number of sub-factors, which are shown in Exhibit 3.1.[5] We will summarize each immediately following. With respect to the overview provided by Exhibit 3.1, the reader should note the factor weightings. We see that measures of the City's debt constitute only 10% of the total scorecard. Thus, the City's plan to issue more debt, by itself, can only have a marginal impact on the score. The City's actions with respect to its financial position, in whole, will be what really matters for debt affordability.

[4] A comprehensive approach can be found in GFOA's Financial Foundations for Thriving Communities.

[5] Our primary source on Moody's methods is "US Local Government General Obligation Debt" dated January 26, 2021, published by Moody's Investors Service.

Exhibit 3.1 – Moody's Scorecard Factors and Weights (for Local Governments)

Broad Scorecard Factors	Factor Weighting	Sub-factors	Sub-factor Weighting
Economy/Tax Base	30%	Tax Base Size (full value)	10%
		Full Value Per Capita	10%
		Wealth (median family income)	10%
Finances	30%	Fund Balance (% of revenues)	10%
		Fund Balance Trend (5-year change)	5%
		Cash Balance (% of revenues)	10%
		Cash Balance Trend (5-year change)	5%
Management	20%	Institutional Framework	10%
		Operating History	10%
Debt/Pensions	20%	Debt to Full Value	5%
		Debt to Revenue	5%
		Moody's-adjusted Net Pension Liability (3-year average) to Full Value	5%
		Moody's-adjusted Net Pension Liability (3-year average) to Revenue	5%

Source: Moody's Investor Service

Economy / Tax Base

The tax base ultimately determines if a city can pay back its debt. There are three sub-factors considered:

Tax-base size: The size of the property tax base is where a municipality draws its revenue from. Currently, full value of the property in the City's tax base is almost double what is necessary to receive the highest possible score on Moody's scorecard. We did not find a reason to think that a radical decline in the value of property in the tax base was a probable risk. Of course, events like the 2008 recession and bursting of the housing bubble can cause a temporary decline. These kinds of variations are captured in the Risk Model. The Risk Model assumes that tax base will grow (and occasionally shrink) at rate that is broadly consistent with historical patterns, but the Risk Model does not assume a constant rate of growth. For example, the Risk Model simulates market pullbacks like the Great Recession (and worse). However, we did not find a reason to think that a dramatic, long-term decline in the City's property values was a high-probability risk. The Risk Model does provide the user with the ability to easily change growth rate assumptions in order to see the effect of more optimistic or pessimistic outlooks.

Full-value per capita: This indicator adds in population size to the size of the tax base. The per resident property wealth shows the availability of tax-generating resources relative to the users of public services. This measure is almost 1/3 above what is necessary to receive the highest score on Moody's scorecard. We did not find reason to believe that the City's population would outpace the growth in property values to the point where it would risk the City falling below the Moody's threshold for the best score. In fact, a long-term forecast sourced from Association of Bay Area Governments (ABAG) shows the City's population forecasted to grow just over 1% per year over the next 30 years. This growth does not seem to be so great that it puts a strain on City finances and, thus, pose a risk to the City's bond ratings.

Median Family Income: A community with high-income taxpayers may have greater ability to cover the cost of debt. The City is almost exactly in the middle of the two threshold values that bound the second highest score on Moody's scale. Presumably, the large number of college students in Berkeley exert downward pressure on this measure. That said, we did not uncover a high probability risk that the City would fall out of the second-highest category over the next 30 years.

Finances

This factor considers a local government's cushion against the unexpected, the City's ability to meet existing financial obligations, and its flexibility to adjust to new ones. There are four sub-factors considered:

Fund Balance: Fund balance describes the net financial resources available to a municipality in the short term. It is essentially the "rainy day fund" or "self-insurance" to react to unplanned, unavoidable costs (like natural disasters). More fund balance would presumably reduce the risk of a local government failing to repay debt because of a natural disaster or other catastrophe. For the City, this measure is currently almost 2/3 above what is necessary to receive the highest score on Moody's scorecard (Aaa). That said, fund balance is not nearly as stable a quantity as the economic forces we reviewed above. For example, in the years 2007 to 2013 the City's annually available reserves were less than half of what they've been in the last few years. In fact, the City would have been in the Aa, rather than Aaa, equivalent tier for six of the last 15 years (though not too far below the Aaa tier, at least). This means that we shouldn't take for granted that the City will continue to maintain reserves high enough to receive Moody's highest scores for the entire 30-year analysis period. The Risk Model assumes the City has a chance of falling out of the Aaa equivalent tier for fund balance. That chance is determined by the City's historical experience. Over the last 15 years the City was below the Aaa threshold six times. So, the Risk Model assumes a six in 15 chance (or two in five chance) per year that the City falls below the Aaa tier.

Five-Year Dollar Change in Fund Balance as % of Revenues: The reason for this measure is much the same as stated above, except this takes longer-term perspective on fund balance. Fund balance can change fairly rapidly, year to year, compared to some of the other indicators in the Moody's scorecard. So, this measure checks to see if fund balance is growing or shrinking and by how much. Currently, the City is just above the threshold required for the highest score. However, this is an example of a measure that is highly relevant to the interest of bondholders, but not as well aligned with the interests of the people who live in Berkeley. From the perspective of bondholders, it would not be a bad thing if the City continued to build its fund balance indefinitely. That continues to reduce the risk of a default. However, from the citizens' perspective there is a clear upper limit on the amount of fund balance a local government should hold. At some point the opportunity cost (in terms of higher taxes or foregone services) is not worth the benefit the public receives from the City having a larger fund balance. Thus, given that the City already, by Moody's own standards, has a large fund balance, it is questionable whether the City would continue to grow the fund balance in the future at the same rate it has in the past. Thus, it seems unlikely the City would continue to achieve the highest score under the Moody's rating system. However, that said, Moody's documentation does imply that local governments with a strong fund balance might be given consideration for maintaining that fund balance rather than continuing to grow it - Moody's might adjust ratings upwards to reward maintaining stability of a high level of fund balance. This means that the City

may not enjoy the top-rated scores it had gotten in the past on this measure, but if it maintains a high level of fund balance, it might only drop to the second highest score. The Risk Model gives the user the option to choose the growth rate, from maintaining a rate of growth equivalent to Aaa to remaining flat (equivalent to an A rating). For the purposes of this report, we chose to make this indicator equivalent to an Aa rating. The rationale is that the City probably can't keep historic levels of growth indefinitely, but the high amount of fund balance the City usually carries would, hopefully, be enough to avoid falling down to an A rating.

Cash Balance: Cash is a similar measure to fund balance – but focuses on "money in the bank", whereas fund balance can include some non-liquid resources. For the City, this measure is currently almost three times above what is necessary to receive the highest score on Moody's scorecard. At the City, cash balances and fund balance levels tend to mirror each other. So, just as the City did not have nearly the same level of fund balance in the past as it does today, it did not have the same level of cash either. Thus, like fund balance, this means that we shouldn't take for granted that the City will continue to maintain cash high enough to receive Moody's highest scores for the entire 30-year analysis period. That said, given that cash appears to be so far above what Moody's is looking for that it would take much more extraordinary circumstances for the City's cash to fall below Aaa equivalence. The Risk Model assumes that the City has a 2 in 15 chance of falling to the Aa tier, each year. This chance is smaller than fund balances falling to the Aa tier. The rationale is the City's cash amounts are very high above the Aaa threshold, so would have a long way to fall to reach Aa territory.

Five-Year Dollar Change in Cash Balance as % of Revenues: The rationale and issues related to this measure are much the same as discussed above. Cash is a more liquid resource for dealing with unplanned, unavoidable expenditures and this measure shows the rate and direction of growth. The City is currently well above the amount required for Moody's highest score, but, again, the same rate of growth probably cannot keep up indefinitely. Like fund balance, though, it seems possible that Moody's might not penalize the City for mere stability in its amounts of cash on hand, if the amounts on hand were kept high. The Risk Model uses identical assumptions for this measure as for the fund balance trend, described above.

Management

The legal structure of a local government and management under which it operates influence the government's ability to maintain a balanced budget, fund services, and continue to derive resources from the local economy. There are two measures in this category.

Institutional Framework: This factor measures the municipality's legal ability to match revenues with expenditures based on its constitutionally and legislatively conferred powers and responsibilities. For example, a local government with many mandated responsibilities, but with little ability to raise revenues would score poorly on this measure. Our examination of the City's prior Moody's bond ratings suggest that the City, for this measure, was rated consistently with is overall rating: Aa. In other words, the second best possible score. We found no high probability risk that the City's legal powers and responsibilities would change dramatically in the coming years, so we assume the City's score on this measure will remain constant throughout the analysis period.

Operating History: Operating history is essentially the extent to which the City runs annual surpluses or deficits. The City's current measure is well above what is required for Moody's highest score. However, because surpluses and deficits are determined annually, we shouldn't assume stability in this measure over a long-term period. We looked at the last 15 years of the City's history to see the size of surpluses (there were no deficits) and used those to simulate what surpluses will be in the future. This results in a more conservative assumption than simply continuing the most recent trends indefinitely into the future.

Debt / Pensions

Debt and pension burdens are measures of the financial leverage of a community. The more leveraged a tax base is, the more difficult it is to service existing debt and to afford additional debt, and the greater the likelihood there will be difficulties funding debt service. There are four measures in this category.

We gave this category the most analytical attention for a number of reasons. First, debt was the primary focus of the City in commissioning this study. The amount of debt the City is considering issuing will have a direct impact on some of the measures in this category. Second, as we will see, the City's current performance on debt indicators is already weak compared to the other indicators we have reviewed. Third, this section includes pensions, which, as we will see, are the weak spot in the City's performance on the Moody's scorecard.

We will first briefly overview the four measures in this category and then go into details on the assumptions made for future values of these indicators.

Debt to Full Value: This evaluates net direct debt relative to full value of the property in the City's tax base. This metric tells us how onerous future debt service payments could be to the tax base. Currently, the City is in the second best category for scoring on this measure.

Debt to Revenues: This compares debt to the City's regular revenue stream. Moody's does not subtract from the calculation any debt whose principal and interest is paid by taxes, even if those costs are external to the General Fund. Under this definition, the City gets a score on the Moody's scorecard equivalent to an "A" rating.

Three-year Average of Moody's-Adjusted Net Pension Liability to Full Value. This measures the magnitude of a local government's pension obligations relative to its tax base.[6] Similar to the debt burden evaluation, the tax base serves as a proxy for future revenue-generating capacity to amortize accrued pension obligations. The City's score here is equivalent to a "Baa" bond rating.

Three-year Average of Moody's-Adjusted Net Pension Liability to Operating Revenues. This metric seeks to measure pension obligations relative to the size of the local government's budget. The metric attempts to reflect that amortization of accrued net pension obligations could divert revenues out of future budgets and lead to funding shortfalls. The City's score here is equivalent to a "Ba" bond rating (the second worst rating).

[6] Note that Moody's adjusts the standard net pension liability measure found in government financial reports to include less favorable assumptions on the discount rate for pension investments. The details behind these calculations are available in the Risk Model supplied to the City by GFOA.

Assumptions for Future Indebtedness:

- The Risk Model includes all repayment schedules for the City's existing debt and assumes debt will be repaid in the times and amounts currently scheduled.
- The Risk Model includes three categories of "new" debt. The detailed assumptions behind the new debt are described in more detail later, but the general categories of new debt are:
    - Debt that the voters have previously authorized, but which the City has not issued. This is in the amount of $117 million in principal.
    - Debt issued to support Vision 2050 or other programs. The user defines the amount of principal in the Risk Model. The Risk Model assumes that the number entered by the user will be approved by the voters.
    - Debt issued in the far future. Given we are taking a long-term (30 years) perspective, we should not assume that future City Councils will not issue any more debt. The amounts and timings of these simulate future debt issues are described as part of the following bullets.
- For all new debt, the user can choose the length of the repayment schedule. For the purposes of this report, we assumed 30 years. This is consistent with the City's past practices and current plans. We assume level repayment schedules (i.e., no front or back loading of repayment schedules). We assume no debt refunding, refinancing, etc.
- For all new debt, we simulate the interest rate, where historical rates are used as a model. Here are some key points:
    - We use forecasts of the yield on ten-year US Treasuries for the next two years to simulate the interest rate environment for the next two years. We do this so that the Risk Model does not generate short-term results that are divergent from short-term expectations.
    - After two years, the Risk Model randomly generates future interest rates, where the rate of change in the rates is entirely consistent with the rate of change in the interest rates for Aaa-rated GO bonds and US Treasuries since 1977. We used the historical rate of change to simulate downward, upward, and stable trajectories for long-term interest rates.
    - The Risk Model assumes bond interest rates will not go below zero. The user has the option to adjust this rate floor.
    - The Risk Model includes the City's informal policy that the City will not borrow if rates are above 5%. If rates are simulated to go above 5% in any year any simulated, then borrowing is deferred until rates go back below 5%.
    - For the purpose of this report, the Risk Model assumes that rates are just as likely to go up in the future as they are to go down, with the exception of the first two years. As discussed above, the next first years are determined by the 10-year US Treasury forecasts produced by other organizations. For the years after that, the user is able to adjust how likely rates are to go up or down to explore assumptions other than what we assumed for this report. So, if the user wanted the Risk Model to simulate an interest environment where it is twice as likely rates would go up, then that assumption could be entered. In no case will the rates rise at a greater rate of change than has been observed historically.

- The Risk Model assumes that the City will issue new debt that has been previously authorized by voters, but which have not yet been issued. This amounts to $117 million in additional principal that is added to the City's debt burden over the next five years. The debt is issued according to a user-defined schedule.
- For the debt to support more borrowing, including the City of Berkeley Vision 2050, in the Risk Model, the user can choose the amount of debt the City will issue. The Risk Model allows the user to choose between the options below. The options are completely user definable so the City can add, change, or delete options as it likes:
    - An option for $300 million in debt, which represents the lower end of what the City Council has discussed. Note that the City Council has discussed supplementing this amount of debt with a parcel tax. The parcel tax would not impact the City government's performance on the key indicators in the Moody's scorecard other than requiring the City issue less debt. Hence, the parcel tax is not included in the Risk Model.
    - An option for $600 million in debt, which represents the upper end of what the City Council has discussed.
    - An option for $900 million in debt. This is included just for demonstration purposes, so the user can see what a larger amount of debt would do to the model results.
- Debt issued to support more borrowing for the 2050 Vision Plan are assumed to be issued in increments evenly throughout the 30-year analysis period. The user can change this assumption and make the debt issued on any schedule they would like.
- We should not assume that the debt issued to support the City of Berkeley Vision 2050 will be the last debt the City issues for 30 years. Since 2000, the City has tried to gain voters' approval to issue new debt in seven of ten election years. Thus, we must assume that future City Councils will have plans to issue debt to support future projects. The model simulates this under the following assumptions:
    - The City will not try to issue new debt again until 2028. This assumption can be easily changed by the user.
    - For any election year after 2028, there is a 70% chance that the City will try to gain approval to issue new debt. This is based on the fact the City has historically tried in 70% of election years, though this assumption can be adjusted by users.
    - The amount of debt the City attempts to issue in any given election year varies between $13 million and $150 million. This is based on the inflation adjusted amounts the City has tried to issue in the past. The Risk Model adjusts this amount upwards in future years to account for the effects of inflation.
    - The public approves proposed new issues at the same rate it has in the past, including partial approvals.

Assumptions for Future Pension Liabilities

For pension liabilities, we developed a single alternative pension assumption, based on the work of the City's CPA firm. This assumption assumes a negative 1 percentage point adjustment to the discount rate applied to pension investments. So, if the baseline, status quo assumption is 7.15%, then the alternative would be 6.15%. The user can activate or deactivate the alternative assumption on the Risk Model

dashboard. If activated, the alternative assumption is applied across all of the thousands of scenarios the risk model produces. If is not activated, it is not applied to any of the scenarios.

The Risk Model also includes an assumption for annual increase in pension liability and the current annual rate of 3.96%. GFOA would like to acknowledge the assistance of Dan Matusiewicz, Senior Finance Consultant, at GovInvest for providing assistance on formulating this assumption, which is based on a 6.8% discount rate and wage growth of 2.5%.

Section 4 – Results of the Analysis and Recommendations

In this section, we will address the finding from our analysis, including recommendations to help the City retain its credit rating.

Let's Put Debt in Context of the Financial Indicators Used to Estimate Debt Affordability

The City's level of debt only impacts the financial indicators that comprise a total of 10% of the Moody's scorecard. Put another way, 90% of the scorecard result is determined by factors other than the City's debt! That means that long-term affordability of the City's debt will be influenced by things like how the City manages its tax base, fund balance, its pensions, and its budget. Exhibit 3.1 provided details on the relative importance of the different factors in the Moody's scorecard. To recap some of the more notable items:

- Pensions are equal to 10% of the scorecard result, or the same as debt.
- Fund balance and cash are equal to 30% or are three times the importance of debt.
- A balanced budget is equal to 10% of the scorecard result.
- Economic factors, like full value and median family income, are equal to 30% of the scorecard result.

According to our re-creation of the Moody's scoring method, today, the City is just short of a score that would be consistent with an Aaa rating. The City's pension liabilities are the main culprit for keeping the City from that score. This conclusion seems consistent with what bond analysts have conveyed to the City: that the City would have an Aaa rating if not for its pension situation. This means that the City has some "distance to fall" in order to get down to an A rating, at least according to the quantified scoring system and the assumptions we described in this report.

All this means that the City's decision to issue debt must be done in the context of the other factors that impact affordability when trying to determine the chance that additional debt will reduce the City's bond rating.

So, to review, the City' strengths are:

- The City's economic base is firmly in Aaa territory and there does not seem to be a plausible risk of it falling out of that tier. The economic base accounts for almost 1/3 of the rating.
- The City's fund balance and cash are firmly in Aaa territory as well. Even though these measures are, by nature, more volatile than the measures of the economic base there seems to be low risk that they would fall completely out of Aaa territory much less all the way down to an A-rating territory (assuming the City maintains a strong reserve policy, as further described in our recommendations). Fund balance and cash measures also constitute almost one-third of the rating.
- The City has also consistently maintained a balanced budget.

And, the City's weaknesses are:

- The City's pensions are in Baa territory currently. Some observers believe there is a case for a lower discount rate to estimate the City's pension liability. A lower discount rate would make the liability to go up substantially. The City's CPA firm produced the calculation for a 1 percentage point reduction and we included it in the Risk Model as an option for the user to activate, if they wish. If this scenario came to fruition, pensions would become an even greater drag on the City. In fact, the Risk Model shows a good chance that pensions reach B territory (the worst rating) well before the end of the 30-year analysis period. Finally, it is worth noting that the Risk Model shows that one of the pension measures in the scorecard (pension liabilities compared to revenues) is at risk of slipping down to a score equivalent to the next lower rating tier (Ba) within in the next five years. As we will discuss more later, a continued downward trajectory on pensions could influence bond ratings analysts to give the City a lower rating.
- Though the City's current indebtedness is not nearly the problem that pensions are, it is not helping the City's bond rating either. Currently, debt measures sit between Aa and A territory.

More debt reduces the City's score on the indicators. We can illustrate with the table below. The table shows the City's scores under different simulations, starting with the City's current score and ending with the City's simulated score at the end of 30 years. The simulation does not produce a single score for the end of 30 years, but rather produces a range of possible scores. For this reason, we show the average, optimistic, and pessimistic outcomes.[7] The table uses assumptions identical to that described earlier in this report and assumes $600 million of new debt in support of the City's programs, including Vision 2050, plus debt issued by future City Councils, as described earlier. We can see that the score at the end of the 30 years is worse than the City's current score under all three perspectives in the table (average, optimistic, pessimistic). The good news is that when we consider just debt, at least the scores do remain broadly consistent with an Aa rating. But, what about if we consider more than just debt? Other factors do enter into the final bond rating of course.

Exhibit 4.1 – Simulated Results on Moody's Scorecard under the Assumptions Described Earlier in the Report

	Score for Each Rating		City's Current Score	Average Score at end of 30 years	Optimistic Score at end of 30 years	Pessimistic Score at end of 30 years
Rating	**Min**	**Max**				
Aaa	0.05	1.5				
Aa	1.5	2.5	**1.65**	**2.14**	**2.00**	**2.30**
A	2.5	3.5				
Baa	3.5	4.5				
Ba	4.5	5.5				
B or below	5.5	6.5				

[7] Optimistic and pessimistic are defined as the points at which 5% of the outcomes produced by the model are above or below the point indicated on the table.

To examine the other considerations that go into a rating, Exhibit 4.2 changes the assumptions in the Risk Model to be less favorable for the City, including: a lower discount rate on pensions (1 percentage point) and performance equivalent to an Aa rating for fund balances, cash balances, and operating history (which would be less favorable than the City's recent history would suggest). We can see that the City's scores now deteriorate enough that the pessimistic outcome places the City in the "A" rating equivalent scoring tier. What the table does not show is how the scores change for periods less than 30 years. The Risk Model tells us that the risk of a downgrade is present in the near-term future, not just the long-term future. This is because the City is close enough to the next lower tier of scoring for its debt and pension measures that it is plausible that the City will reach these lower tiers in five to ten years. We'll discuss this more detail in the next section. Over the long-term, the City's strong property tax base (and growth in that base) can balance out some of the nearer-term challenges (assuming the challenges don't also get worse).

Exhibit 4.2 – Simulated Results on Moody's Scorecard under Less Favorable Assumptions

	Score for Each Rating		City's Current Score	Average Score at end of 30 years	Optimistic Score at end of 30 years	Pessimistic Score at end of 30 years
Rating	**Min**	**Max**				
Aaa	0.05	1.5				
Aa	1.5	2.5	**1.65**	**2.39**	**2.30**	
A	2.5	3.5				**2.50**
Baa	3.5	4.5				
Ba	4.5	5.5				
B or below	5.5	6.5				

The reader will notice that even on this second table, the scores are certainly not disastrous, by any means: the average score is still within the Aa equivalent tier. That said, we must remember that the final bond rating a municipality receives is not a purely mechanical exercise, where the key financial indicators dictate the bond rating. According to Moody's: "The scorecard is not a calculator. Its purpose is not to determine the final rating, but rather to provide a standard platform from which to begin viewing and comparing local government credits. It therefore acts as a starting point for a more thorough and individualistic analysis." Put another way, the rest of the rating is subject to a human element: the rating analyst. In a real-life scenario characterized by unfavorable performance across the indicators that Moody's looks at we can't discount the possibility that the analyst might decide to "put a thumb on the scale" and raise the chance of a downgrade. For example, perhaps a significant amount of new debt along with further deterioration in the City's pension situation dampens the rating analyst's enthusiasm for the City of Berkeley's debt even more than the Moody's scorecard suggests. Finally, it could be possible that rating agencies could change the weightings of the indicators they consider. GFOA has observed that the measures favored by rating agencies and the relative weight placed on them has evolved over time. It seems unlikely that debt and pensions would come to occupy a less important place in rating considerations given that they currently constitute a relatively small consideration compared to fund balance / cash and tax base. Given that pensions and debt are biggest risk to future debt affordability, we'll examine this risk more in the next subsection.

Finally, the model can address different interest rate environments and property markets. Some observers believe that sustained higher interest rates may result from efforts to combat inflation. This would result in economic stagnation and impact on the housing market. In fact, the Federal Reserve Bank of Dallas recently stated that the property market is showing "signs of a brewing U.S. housing bubble". The implication is that bubbles pop, with the types of consequences we saw in the 2008. To explore these concerns further, we adjusted the model assumptions to give more weight to a rising interest rate environment and to reduce, by half, the chances of growth in the City's revenue and property values. Note that the baseline assumptions in the Risk Model **did not** assume uninterrupted growth in property values, but did assume a good chance of a long-term upward trajectory. These new assumptions result in a good chance of long-term stagnation. Under these assumptions, unsurprisingly, the City's is at significantly greater risk of slipping below an Aa equivalent score. Interestingly, the City's informal policy of not borrowing at rates above 5% makes a noticeable difference in the high interest rate environment: the City stops borrowing at a certain point and pays back existing debt, which helps its score. The take-away is that unfavorable turns in the economic environment will have a noticeable impact on the financial indicators and increase the risk of a ratings downgrade.

Pension, Debt and the Risk Posed to the City's Bond Rating

Though pension and debt do not dominate the Moody's scorecard and are not the most important consideration in bond ratings, they still can influence bond ratings. For example, especially poor performance or notable deterioration from previous performance might capture the attention of the bond ratings analyst. To illustrate, the table below displays results from one of thousands of simulations the Risk Model produced, using the more unfavorable assumptions described in the previous section. We chose to illustrate using the more unfavorable assumptions because it helps make the point we wish to make more clearly. Also, keep in mind this is just one of the thousands of simulations we developed, so it's not intended to show generalizable results (unlike the tables in the last section which summarized results from across the thousands of simulations).

The top set of rows in the table shows the City's current values for the key financial indicators associated with debt and pension in the Moody's scorecard. The next set of rows shows the scores the indicators receive under the Moody's methodology. The scores can range from 1 to 6, where 1 is the best (Aaa equivalent) and 6 is the worst (equivalent to B or below). The final row is the average of all indicators in the Moody's scorecard, which includes indicators not shown in the rows above (e.g., tax base, fund balance, etc.). Remember that the average is weighted towards the indicators Moody's deems most important (see Exhibit 3.1).

We see that the City's current score across all indicators is a 1.65 (bottom left corner), consistent with a strong Aa rating. However, as we move to right and further into the future, we see City's score on debt and pensions deteriorate (the numbers on the 1 through 6 scale get higher). We can also see the average score move upwards. The movement upwards is not as dramatic because debt and pensions only account for 20% of the total score. The measures that account for the other 80% perform well, often in Aaa territory. Nevertheless, we see that although the City's score remains consistent with an Aa rating, it has become consistent with a weak Aa (or Aa3 in Moody's terminology). It should be noted that the cutoff

points used in the table to differentiate strong from weak come directly from Moody's documentation.[8] With this in mind, it becomes more understandable why an analyst might decide to downgrade the City to an A rating, if they observe the City's scorecard result fall from a strong to a weak Aa. They might conclude that the possibility of continued decline, for example, merits a lower rating.

Exhibit 4.3 – Example Results from a Simulation the Risk Model Produced

		Years into the Future									
	Now	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
VALUES FOR INDICATORS											
Net Direct Debt / Full Value	1.3%	2.2%	2.3%	2.2%	3.0%	2.9%	2.7%	3.5%	3.8%	3.8%	3.8%
Net Direct Debt / Operating revenues (x)	0.76	1.29	1.34	1.86	1.78	1.69	2.08	2.28	2.20	2.10	2.01
Adjusted Net Pension Liability (3-Year Average) to Full Value (%)	8.7%	13.7%	13.7%	13.8%	14.0%	14.1%	14.7%	15.2%	16.4%	17.7%	18.8%
Adjusted Net Pension Liability (3-Year Average) to Revenues (x)	5.24	7.73	8.26	8.49	8.72	8.90	8.80	9.17	9.44	9.67	9.93
SCORE FOR DEBT & PENSION INDICATORS (1 THRU 6 SCALE)											
Net Direct Debt / Full Value	2	3	3	3	3	3	3	3	3	3	3
Net Direct Debt / Operating revenues (x)	3	3	3	3	3	3	3	3	3	3	3
Adjusted Net Pension Liability (3-Year Average) to Full Value (%)	4	5	5	5	5	5	5	5	5	5	6
Adjusted Net Pension Liability (3-Year Average) to Revenues (x)	4	5	5	6	6	6	6	6	6	6	6
SCORE FOR TOTAL OF ALL INDICATORS (1 THRU 6 SCALE)	1.65	2.2	2.2	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.3
	^	^	^	^	^	^	^	^	^	^	^
	Strong Aa	Weak Aa	Weak Aa	Weak Aa	Weak Aa	Weak Aa	Weak Aa	Weak Aa	Weak Aa	Weak Aa	Weak Aa

Finally, the Risk Model can be used to explore different weightings on financial indicators. For instance, we could give greater weight to pensions and debt and less to cash and fund balances (perhaps because cash and fund balance measures are very similar, so weighting both heavily in the analysis could be seen as "double counting"). This feature of the Risk Model could be used to mimic how a ratings analyst might decide to weigh the indicators differently than Moody's standard documentation suggests. Unsurprisingly, weighting debt and pensions more puts downward pressure on the City's scores.

Develop and Maintain Strong Financial Policies

Financial policies can help the City maintain its good bond rating. An example is the City's General Fund Reserve Policy. GFOA's review of the City's policy finds that it includes all the critical features of a good policy and calls for a reserve equal to Moody's Aaa equivalent threshold. That said, it is important to recall that Moody's looks across all "operating funds", which includes more than the General Fund. **Hence, there could be an argument for defining reserve policies for other critical operating funds.**

The City also has a debt policy. The policy has many of the features of a good policy, but there may be some opportunities for improvement. Particularly salient to our discussion of bond ratings is debt affordability. The City's debt policy notes that "the City is subject to debt capacity limit for its general obligation bonds: 15% of assessed value." This amount of debt would be equivalent to the second lowest rating, Ba, under Moody's scoring. **Hence, there may be a case for defining a more locally appropriate debt affordability policy.** For example, even under the most aggressive assumptions of how much debt the City might issue, the Risk Model did not show that there was a high chance that debt issued in support of the Vison 2050 would bring the City's scorecard result below an "A" equivalent score on the measure

[8] Note that Moody's doesn't use the terms "strong" and "weak", but rather a numeric code. We elected to use the more descriptive terms of "strong" and "weak" in order to make the table more understandable.

comparing debt to property value of the tax base. The A rating is defined as debt equal to between 1.75% and 4% of property value. This might be a good starting point for defining a locally affordable limit. The City could "stress test" affordability by simulating larger issues to see how much pressure is placed on the scorecard result by increasing the amount of debt. It could be that the City's strong tax base and fund balance / cash practices would make it practical to incur debt beyond 4% of property value without putting the score at too much risk, but perhaps 15% is still too much. Of course, we must remind ourselves that bond ratings consider only the interest of the City's creditors. Just because creditors are willing to lend does not mean the City should borrow. More debt also places more of a burden on taxpayers. Taxpayer burden should be analyzed as part of developing a debt affordability policy. We'll discuss this more in one of our other recommendations, later in this report.

Another opportunity for improvement of the City's debt policy might be to define interest rate ceilings for issuing debt. GFOA understands that the City has an informal policy that considers "5%" the interest rate ceiling beyond which the City will not issue debt. Formalizing this policy, or something like it, could help make a positive impression on rating analysts. The GFOA Risk Model can be used to help the City stress test different policy choices because the user can customize the interest rate ceiling the Risk Model uses and adjust assumed behavior of the interest rate environment.

Finally, **a structurally balanced budget policy could be helpful**. The City has a good history of running budget surpluses. A municipal government is subject to legislative requirements to pass a balanced budget. However, the definition of a balanced budget is just that inflows equal outflows for the year and says nothing about the long-term sustainability of how the budget is balanced. For example, according to the law, an asset could be sold to pay for the compensation of permanent City staff positions. An asset is a one-time revenue while staff compensation is a recurring expenditure, so this strategy would not be advisable even if it is legal. A structurally balanced budget policy commits a local government to adopting a budget that is balanced using sustainable strategies. GFOA is happy to provide the City with templates for such a policy, if the City is interested in pursuing it. This kind of policy would support both a strong score in the "operating history" and, perhaps, the "institutional framework" measures in the Moody's system. For example, Moody's recognizes "unusually strong budget management and planning" as a "notching factor" that could justify a higher score for a municipality than the ratios in the scorecard might suggest. A structurally balanced budget policy could be an illustration strong budget management and planning.

Manage the Risk Posed by Pensions

As we've discussed, pensions are the Achilles' heel of the City's bond rating. The City has been considering strategies to manage its pension risk and has established an irrevocable supplemental (Section 115) pension trust. This could help support a good bond rating. This is supported by conversations the City's Finance Director has had with bond rating agencies: the City's current pension challenges has kept it from achieving an Aaa rating and continued deterioration in pension position could even lead to the City slipping to an A or a lower rating.

Support a Strong Tax Base

If pensions are the City's Achilles heel, then its aegis is its tax base. Not only is the tax base directly responsible for 30% of the City's score on the Moody's scorecard, it directly impacts other measures as well. For example, the Moody's scorecard method compares debt and pensions to the full value of taxable property in the City. Of course, the tax base also determines how much revenue the City can raise, which influences fund balances and the City's ability to balance its budget. Therefore, the City should take active steps to preserve and to enhance its tax base. GFOA has found that there are unrealized opportunities for municipal governments to better reflect the financial interests of municipal government in land use planning. After all, land use planning will have an important influence on how the tax base develops and how the tax base develops will have an important impact on the quality of life in Berkeley (like the City's ability to invest in infrastructure!). The City can learn more about GFOA's findings and recommendations for how to make the connection between land use planning and city finances in this report **[Note to reader: as of the date the City of Berkeley's report was posted the GFOA report on the intersection between land use planning and municipal finances has not be released to the public. It will be available soon]**.

Develop and Maintain Measures of Tax Burden

General Obligation (GO) debt is paid for by a special tax levy. Therefore, more GO debt does not place a direct pressure on the City's budget. It does, however, place burden on the City's taxpayers. Voters approve the City's ability to authorize debt. In that way, voters are speaking as to whether debt is affordable to them or not. However, voters are unlikely to have a perfect understanding of the long-term implications of debt for their tax burden. In the past, the City has developed measures that show the average tax burden for a City of Berkeley homeowner. It may be wise to develop the ongoing capacity to monitor and project tax burden, especially if the City plans to continue making use of GO bonds and tax measures. The scope of the GFOA Risk Model covers only City government finances, but the Risk Model does provide much of the information that the City would need to examine the tax burden placed on residents and businesses by future debt. For example, it gives the full range of principal and interest that would need to be covered by taxes every year of the 30-year analysis period. It also provides range of the potential size of the tax base.

Be Strategic about Debt Issuance

The City already has $117 million in previously authorized debt that it plans to issue in the next few years. This is included in the Risk Model and in the information we've presented in this report. What the risk model doesn't capture is the City staff's capacity to manage the debt issuance and, critically, to manage

the projects that the debt is intended to finance. Prioritizing projects to make sure the City doesn't take on more than it can handle will not only make the best use of limited staff capacity it will help limit the total amount of debt the City takes on. The City has old debt that will gradually be paid down in the coming years. There is some opportunity to moderate the increase in the City's total debt burden by timing the issuance of new debt with expiration of old debt. That said, we must recognize that the amounts of new debt being contemplated do significantly exceed the amount by which old debt will decrease in the next number of years. So, a total increase in the City's debt burden would be inevitable under the assumption that there $117 million would be issued along with some significant additional amount to support other projects including the Vision 2050 project.

Section 5 – Conclusion and Summary

In conclusion, the City's performance on the key financial indicators used in the Moody's scorecard appears to be robust under a variety of circumstances. That said, the final bond rating the City receives is not purely a function of these indicators. Human judgment, applied by bond ratings analysts, determine the final score. Their judgment could be swayed, negatively, by the risks posed by debt and pensions, which we described earlier in this report. We have outlined a number of opportunities for the City to take proactive measures to preserve and protect its bond rating and, thus, its capacity to borrow at favorable interest rates.

To conclude, let's recap the key take-aways from this report.

- The City has important strengths that bolster its ability to borrow, including a strong tax base, fund balances, and a history of balanced budgets. That said, the City's current policy identifies a limit on borrowing equal to 15% of assessed value. Borrowing this much would place the City at the equivalent of a Ba score or the second lowest score for the key financial indicator of debt compared to the value of property in the City. That would, of course, exert strong downward pressure on the City's bond rating. The City should develop a more locally appropriate debt limit, rather than relying on statutory limits (which are set without regard to local context). For example, debt equal to 4% of property value would still provide room for the City to issue more debt (the City is currently at less than 2%), while keeping that measure with the scoring tier equivalent to an A rating. The GFOA Risk Model can be used to "stress test" different policies.
- An unfavorable turn in the economic environment could impact the City's bond rating. The Risk Model can be used to simulate high interest rate environments and stagnant (or even declining) housing markets. Unsurprisingly, these conditions increase the chances that the key financial indicators we analyzed will slip into territory associated with a lower bond rating. This is important because some observers believe that a higher interest rate environment and stagnant or declining property market are real possibilities.
- Growth in the City's tax base supports borrowing and repayment of debt. Hence, the City should consider how it can use the City's land use planning capabilities to support the financial capacity of City government. Land use planning could be used to improve the revenue productivity of the land uses in the City's jurisdiction.
- The City's pension liabilities are a drag on the City and its capacity to borrow. Pensions are clearly the weak spot in the City's bond rating given how the pensions stand today. Some observers believe that the current discount rates assumed for the pensions' investments may be too optimistic. Lower discount rates would increase the size of the liability even further. This emphasizes the need for the City to find ways to manage its pension debt.
- The City can adopt certain financial policies to maintain good management practices. This will help make a positive impression on bond rating analysts. It is important to remember that even though our Risk Models shows the City is likely to perform consistently with an Aa rating in most scenarios: A) in many scenarios the City's position deteriorates from strong Aa to a weak Aa; and B) ratings are ultimately the product of the judgment of the bond ratings analyst. An analyst's

enthusiasm for the City's debt might dampened enough by this deterioration that the analyst decides on a ratings downgrade for the City.

- Though our analysis focused on the direct impact of debt on the finances of City government, the City should also be mindful of the burden on taxpayers. The Risk Model provides much of the information the City would need to estimate burdens on taxpayers under different scenarios.
- The City already has $117 million in previously authorized debt that it plans it issue in the next few years. Given the City's interest in issuing more debt to support the Vision 2050 and other programs, the City should remain mindful of the City staff's capacity to manage new debt issuance and, critically, to manage the projects that the debt is intended to finance. Prioritizing projects to make sure the City doesn't take on more than it can handle will not only make the best use of limited staff capacity, it will help limit the total amount of debt the City takes on.
- By following a prudent borrowing strategy, managing pensions, and following other recommendations in this report the City should have a good chance of making a positive impression on bond ratings analysts and maintaining its ratings, all while preserving some additional capacity for the City to borrow.

Appendix 1 – Limitations of GFOA's Analysis

This section highlights the most important limitations of our analysis.

Our analysis is not predictive. GFOA does not forecast bond ratings. Rather, our model generates hundreds or even thousands of different scenarios to show how the future could unfold. This helps the City think more broadly about risk so that it can be more prepared for whatever future event does eventually come to pass. Finally, it is important to note that low probability events are still possible events. Hence, even if our model says an event has a low probability, then that does not mean it won't occur.

GFOA is not a risk management consultant. We worked with the City to find out which risks to bond ratings are most salient and then modeled those risks quantitatively to judge the potential impact. It is not our place to determine what the City's attitude towards risk should be or to substitute GFOA's attitude towards risk for the City's. GFOA builds models to help you explore the questions, but ultimately you have to make the decisions.

Our analysis is based on historical records. Historical data is often a good way to model potential future outcomes. However, historical data will not be perfect.

Our analysis is not inclusive of every risk the City could possibly face. We examined the City's past history and worked with City staff to identify the risks that posed the most clear and present danger to the City's bond rating. However, it is possible that the City could experience a shock that no one was expecting or that the City could be impacted by a low probability, but high consequence event.

The calculation of the key indicators is subject to some interpretation. Though Moody's does produce detailed documentation of their methods, there is still some interpretation required. For example, the measure of fund balance is supposed to include all "operating funds". It is ultimately up to the analyst to decide which funds are operating funds and which aren't. It could be that GFOA would have a different interpretation than Moody's. That said, given that our Risk Model did duplicate the City's current score, our interpretation should at least be close.

Good decisions do not always lead to good outcomes. Excel simulation tools can enhances one's perception and understanding of uncertainty and risk.[9] However, when dealing with uncertainty, even the best decision may not lead to a good outcome, if luck goes against you.[10]

[9] "To survive in an increasingly unpredictable world, we need to train our brains to embrace uncertainty," Emre Soyer, Quartz Magazine, January 9, 2017 https://qz.com/879162/to-survive-in-an-increasingly-unpredictable-world-we-need-to-train-our-brains-to-embrace-uncertainty/.

[10] This is one of the primary lessons in: Annie Duke. *Thinking in Bets: Making Smarter Decisions When You Don't Have All the Facts*. Portfolio. 2019.