



The Impact of Alternative Discount Rates on Multiemployer Pension Plan Funding

By Ben Ablin, ASA, EA, MAAA, and David Pazamickas, ASA, EA, MAAA

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Introduction

Pension obligation calculations require assumptions about pension payment commencement, duration, and amount. They also require discount rates to convert future expected benefit payments into present values. These present values are then used as the basis for a pension plan's funding requirements.

Under the current statute for multiemployer pension plan funding, each of the assumptions used must be reasonable, and, in combination, the assumptions must represent the plan actuary's best estimate of anticipated experience under the plan.¹ The discount rates, therefore, must represent a reasonable estimate of the long-term expected rate of return on plan assets.

This is in contrast to single-employer pension plan requirements, under which the discount rates are prescribed by statute. The prescribed rates are either the segment rates or the yield curve based on high quality corporate bond yields.²

This study uses the latest available Form 5500 data for all multiemployer plans to explore the impact of using alternative discount rates on the multiemployer pension plan system as a whole and breaks down the results to show how a representative multiemployer plan would be affected. Over 1,200 multiemployer pension plans were analyzed covering about 10 million participants with about 200,000 contributing employers.³

The analysis focuses on the effect of using discount rates based on current high quality corporate bond yields and current 30-year Treasury yields, and shows the impact on overall liabilities, funded percentage, zone status, contribution requirements, and withdrawal liability.

¹ Internal Revenue Code Section 431(c)(3).

² Internal Revenue Code Section 430(h)(2).

³ The appendix provides more information about the plans analyzed in the study.

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Highlights of the Study

The following highlights show the estimated impact of using alternative discount rate assumptions on various key measurements for multiemployer plans:

Overall Liability. The multiemployer system has aggregate unfunded liabilities of \$170 billion when measured with current discount rates. Using corporate bond rates, the amount of unfunded liability increases by 171% to \$461 billion. When using 30-year Treasury rates, the increase is 258% to \$609 billion.

Funded Percentage. The overall funded percentage of the multiemployer system is 73% when measured with current discount rates. This funded percentage falls to 51% if liabilities are determined using corporate bond rates, and to 43% when using 30-year Treasury rates.

Zone Status. Over 60% of multiemployer plans are currently certified in the green zone. If discount rates were based on current corporate bond yields, only 7% of multiemployer plans would be in the green zone. This percentage drops to 2% if discount rates were based on current 30-year Treasury yields. The required funding improvement and rehabilitation plans would force many plans that are likely to remain healthy under the current statute to decrease benefits to levels that would not represent a meaningful replacement of pre-retirement income for participants and/or increase contributions to levels that would make it difficult for employers to remain competitive.

Contribution Requirements. The majority of plans would see dramatically increased contribution requirements ranging from 1.7 to 2.4 times current contribution requirements when moving to corporate bond discount rates and from 2.0 to 3.0 times current contribution requirements when moving to 30-year Treasury discount rates. Because most of these increases are attributable to previously earned benefits, changes in future benefit levels for employees would have a limited impact in addressing the increased contribution requirements for many multiemployer plans.

Contribution Volatility. On top of increasing costs, the use of alternative discount rates would introduce additional contribution volatility for most plans. In other words, contribution requirements could change considerably from year-to-year solely due to fluctuations in the level of discount rates. This added volatility would be especially burdensome for multiemployer pension plans, since contribution rates are generally fixed for three or more years through the collective bargaining process. Having a stable funding target is important for any organization, and increasing contribution volatility is likely to exacerbate the concerns of the employers participating in these plans.

Withdrawal Liability. To the extent a multiemployer plan uses funding discount rates for withdrawal liability purposes, an employer's withdrawal liability exposure would increase substantially if corporate bond rates or 30-year Treasury rates were used instead. Many multiemployer plans would see an increase in unfunded vested benefits of 2.1 to 4.0 times current levels when moving to corporate bond rates and 2.7 to 5.5 times current levels when moving to 30-year Treasury rates.

Impact on a Representative Plan. The percentage of payroll required to fund a representative multiemployer pension plan that provides modest benefits of \$28,080 annually for 30-year career employees would more than double from 22% to 46% using corporate bond rates and would almost triple to 59% using 30-year Treasury rates.

Conclusions. Most plans would be forced to decrease benefits to levels that would not be appreciated by participants, and increase contributions to levels that would be unsustainable for employers. Using alternative discount rates would likely result in decreased plan participation and increased employer bankruptcies and withdrawals, which would hasten the demise of the system rather than fortify it.

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Overall Liability

Based on current discount rates, the 1,253 plans analyzed in the study had a total actuarial accrued liability of \$635 billion. If measured using high quality corporate bond rates, the total liability would increase by 46% to \$925 billion. If measured using 30-year Treasury rates, the total liability would increase by 69% to \$1,074 billion.

The total market value of assets for all plans in the study was \$465 billion, which means that \$170 billion of the \$635 billion liability calculated using current funding rates is unfunded. Using corporate bond rates, the amount of unfunded liability increases by 171% to \$461 billion. When using 30-year Treasury rates, the increase is 258% to \$609 billion.

Exhibit 1 below breaks down the changes in unfunded liability by current PPA zone status when moving from current rates to corporate bond rates and from current rates to 30-year Treasury rates.

Exhibit 1

Unfunded liabilities at various discount rates by PPA zone status (\$ billions).

Zone Status	Corporate			30-Year		
	Current Rates	Bond Rates	Increase vs. Current Rates	Current Rates	Treasury Rates	Increase vs. Current Rates
Critical & Declining	\$ 49.9	\$ 81.6	63%	\$ 49.9	\$ 98.6	97%
Critical	35.5	79.5	124%	35.5	101.4	185%
Seriously Endangered	0.9	1.9	120%	0.9	2.4	182%
Endangered	30.5	74.9	146%	30.5	95.2	212%
Green Zone	53.3	222.6	317%	53.3	311.6	484%
Total	\$ 170.2	\$ 460.5	171%	\$ 170.2	\$ 609.3	258%

Note: Items in the chart above may not sum to total due to rounding.

While the increases in unfunded liabilities for plans of all statuses is significant, of particular concern is the increase in unfunded liabilities for plans that are currently in the green zone. Unfunded liabilities for these plans increase by 317% when moving from current rates to corporate bond rates, which represents a greater than four-fold increase in unfunded liabilities that would need to be addressed through either increases in contribution rates, reductions in benefits, or both.

When measured using 30-year Treasury rates, the unfunded liability for current green zone plans increases to \$312 billion. This represents an almost six-fold increase over the unfunded liability at current rates. See the Section entitled "Contribution Requirements" later in this report for more information on how this would affect a plan's contribution rates.

It is important to note the role that leveraging plays in creating higher proportional increases in unfunded liabilities for plans that are closer to 100% funded versus plans that are less well funded. Consider a \$10 million liability increase for two plans. Plan X has liabilities of \$100 million and assets of \$90 million. Plan Y has liabilities of \$100 million and assets of \$60 million. A \$10 million increase in liability for Plan X represents a 100% increase in unfunded liabilities (\$10 million to \$20 million). However, a \$10 million increase in liability for Plan Y represents only a 25% increase in unfunded liabilities (\$40 million to \$50 million).

Funded Percentage

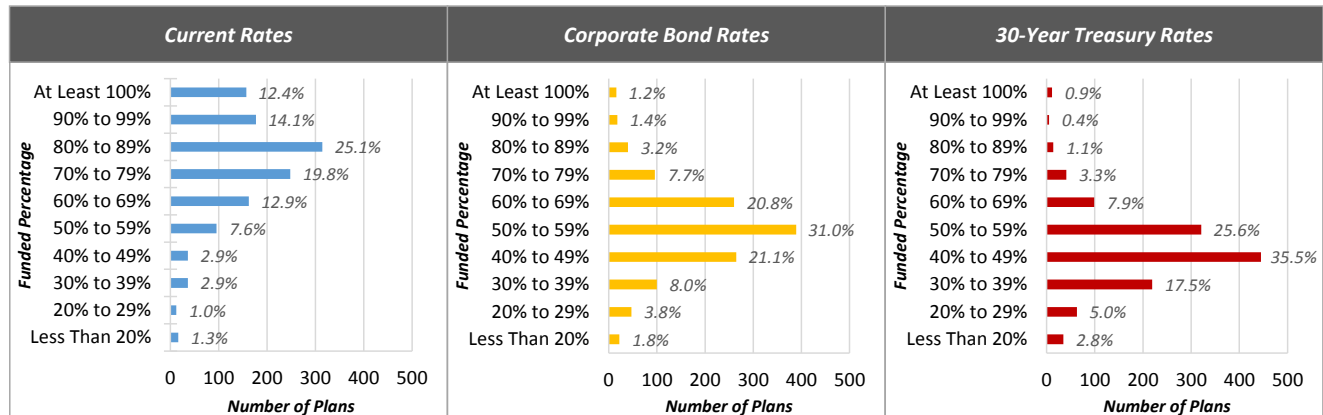
One of the most common ways to measure a plan's financial health is to consider its funded percentage. Funded percentage is calculated by dividing a plan's assets by its liabilities. Using current funding rates and market values of assets, the overall funded percentage of the multiemployer system is 73%. This funded percentage

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falls to 51% if the liabilities are determined using corporate bond rates, and to 43% when using 30-year Treasury rates. The distribution of funded percentages for all 1,253 plans in the study is shown in Exhibit 2 below.

Exhibit 2

Distribution of multiemployer plans by funded percentage at various discount rates using the market value of assets.



Note: The percentage next to each bar represents the proportion of plans in the stated funded percentage range.

Over half of multiemployer pension plans are at least 80% funded when liabilities are determined using current discount rates. However, only 6% and 2% of plans are at least 80% funded when liabilities are determined using corporate bond rates and 30-year Treasury rates, respectively.

Zone Status

Under the Pension Protection Act of 2006 (PPA)⁴, all multiemployer pension plans are classified into one of the following zones: green zone, endangered (yellow zone), seriously endangered (orange zone), critical (red zone), or critical & declining (deep red zone). Each year, the plan actuary is required to certify as to the zone status of a plan based on the criteria summarized in Exhibit 3 below.⁵

Exhibit 3

Simplified PPA zone status certification criteria for multiemployer plans.

Green Zone <i>At least 80% funded <u>and</u> no projected funding deficiency for at least 7 years</i>	
Endangered <i>Under 80% funded <u>or</u> a projected funding deficiency in the next 7 years</i>	Seriously Endangered <i>Under 80% funded <u>and</u> a projected funding deficiency in the next 7 years</i>
Critical <i>Projected funding deficiency in the next 4 or 5 years (other factors may apply)</i>	Critical and Declining <i>In critical status <u>and</u> projected to go insolvent within 20 years (15 years in some cases)</i>

Note: The funded percentage used for determining a multiemployer plan's PPA zone status is based on the actuarial value of assets, which smooths investment gains and losses.

⁴ As amended by the Multiemployer Reform Act of 2014.

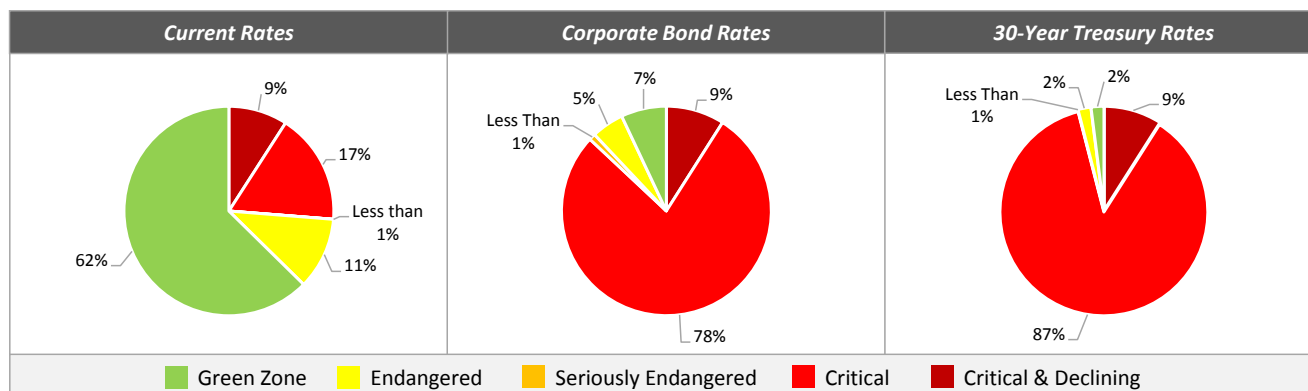
⁵ Other conditions also apply. Internal Revenue Code Section 432 governs multiemployer zone status certifications.

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Based on current funding rules, over 60% of all multiemployer plans are in the green zone. Using corporate bond rates, and assuming all other funding rules remain unchanged, the percentage of green zone plans would fall to just 7%. Using 30-year Treasury rates, a mere 2% of all multiemployer plans would be in the green zone. See Exhibit 4 below for more detail.

Exhibit 4

Distribution of multiemployer plans by PPA zone status based on various discount rate assumptions.



Note: PPA zone status is based on funded percentages calculated using the actuarial value of assets and considers the other criteria summarized in Exhibit 3 in addition to the funded percentage. The other sections in this report generally focus on funding measures calculated on a market value of assets basis.

It is important to note that the number of critical & declining certifications would be virtually unaffected by changes to the discount rate assumption. The liabilities calculated by discounting future benefit payments serve as a budgeting tool and do not have a direct impact on whether or not a plan is projected to become insolvent within the next 15 to 20 years. Projected insolvency is dependent only on future cash flows and the expected rate of return on plan assets.

The number of plans that would enter critical status under alternative discount rate assumptions is astonishing. A plan that enters endangered or critical status must develop a funding improvement plan (FIP) or a rehabilitation plan (RP), respectively. While the options available to the Trustees for correction and the detailed requirements differ, the general goal of FIPs and RPs are the same. Namely, for the plan to return to the green zone over a period of approximately ten years.

In order for newly endangered and critical status pension plans to develop valid FIPs or RPs, significant changes to either benefit levels, contribution levels, or both would be required. As described in more detail in the “Impact on a Representative Plan” section later in this report, this would force many plans that are likely to remain healthy under the current statute to decrease benefits to levels that would not represent a meaningful replacement of pre-retirement income for participants and/or increase contributions to levels that would make it difficult for employers to remain competitive.

Contribution Requirements

Perhaps the most noteworthy impact of alternative discount rates on multiemployer pension plans is the effect such changes would have on employer contribution requirements. Under current statutory funding rules, a plan’s minimum required contribution is determined annually as the sum of the cost of benefits accrued during the year (normal cost), the cost of operating the plan, and a payment to amortize the plan’s unfunded liability, if any.

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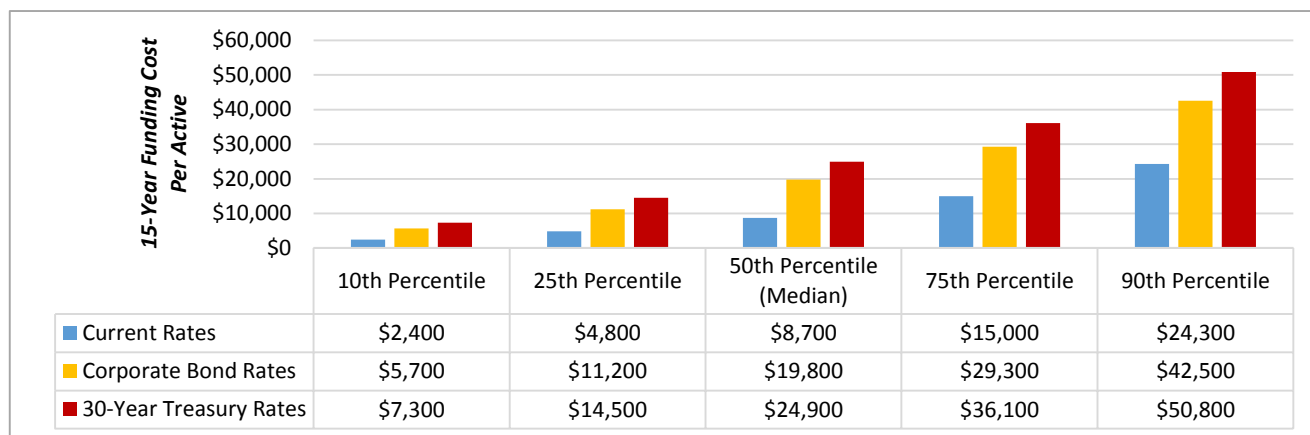
The actual contributions made to the plan are tracked against the minimum required contribution in the funding standard account. Plans that have historically contributed more than the minimum required contribution have a credit balance that can be used to offset current contribution requirements. Plans that have historically contributed less than the minimum required contribution have an accumulated funding deficiency that would increase current contribution requirements.

Since the data needed to perform funding standard account calculations is not in the Form 5500 database, this report uses 15-year funding cost as a proxy for a plan’s contribution requirements. 15-year funding cost includes the normal cost, the cost of operating the plan, and a payment to amortize the plan’s unfunded liability over a period of 15 years. The plan would need annual contributions equal to the 15-year funding cost or greater to become 100% funded within 15 years.

The exhibit below shows the 15-year funding cost per active participant at various percentiles. Each of the percentiles represents the percentage of plans whose per-active 15-year funding cost is at or below the figures shown. For example, using current funding rates, 75% of plans have a per-active funding cost of \$15,000 or less. The other 25% of plans have a per-active funding cost that is higher than this amount.

Exhibit 5

Distribution of 15-year funding cost determined at various discount rates per active participant.



Note: Results are rounded to the nearest \$100.

The majority of plans would see contribution requirements ranging from 1.7 to 2.4 times current contribution requirements when moving to corporate bond discount rates and from 2.0 to 3.0 times current contribution requirements when moving to 30-year Treasury discount rates.

Such increases would further strain employers who are already struggling to maintain current contribution levels and would make it difficult for even the healthiest employers to remain competitive in their industry. While a portion of the increased costs could be defrayed through benefit reductions, the impact would be limited because the vast majority of the cost increases are attributable to benefits that have already been earned.

In addition to increasing costs, another troubling aspect of using discount rates based on either corporate bond or 30-year Treasury yields is the increased volatility that comes as a result of changes in the rates from one valuation date to the next. Actuarial valuations are performed annually and it is not uncommon for these rates to change by 25 to 50 basis points or more over the course of a year, even with smoothing mechanisms in place

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(for example, averaging rates over a period of 24-months). A 50 basis point change in rates would change the annual contribution requirements for many plans by 10% to 20% or more.

This added volatility is especially burdensome for multiemployer pension plans, since contribution rates are generally fixed for three or more years through the collective bargaining process. Having a stable funding target is important for any organization, and increasing contribution volatility is likely to exacerbate the concerns of the employers participating in these plans. It is worth noting that the increased costs and volatility associated with the use of discount rates based on high quality bond yields are a major reason for numerous single-employer plan freezes and terminations.

Withdrawal Liability

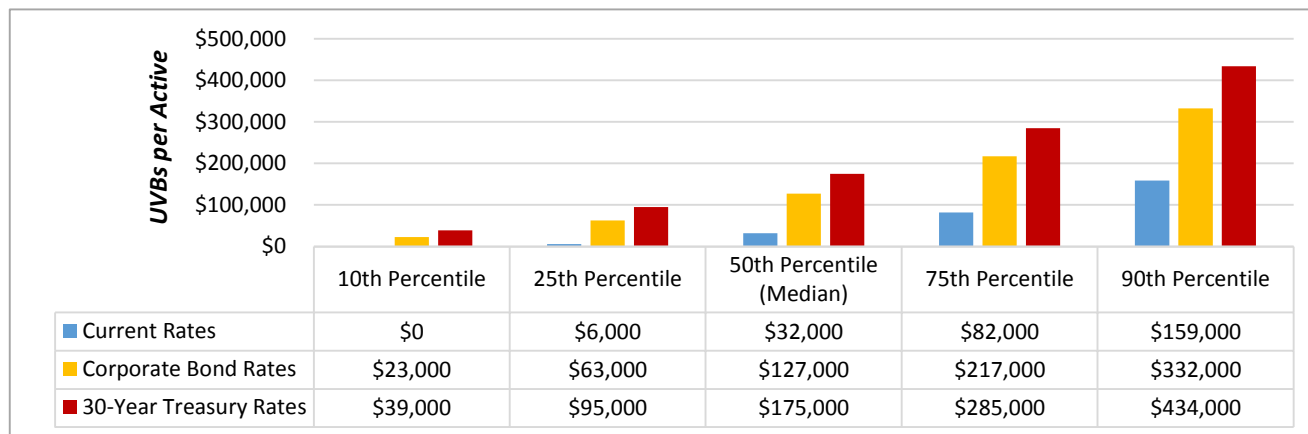
An employer that contributes to a multiemployer pension plan may be subject to employer withdrawal liability (EWL) if it withdraws from the plan. EWL represents an employer's share of the plan's unfunded vested benefits (UVBs) - the amount by which the actuarial present value vested benefits exceed the value of assets.

UVBs are allocated to an employer according to the plan's adopted methodology, usually based on the employer's level of contributions to the plan. The information necessary to calculate an employer's EWL exposure in a multiemployer plan is not publicly available.

As a proxy for EWL, Exhibit 6 shows the distribution of UVBs per active participant under various discount rate assumptions. The exhibit shows the results at various percentiles, each of which represents the percentage of plans whose UVBs are at or below the figures shown. For example, using current funding rates, 75% of plans have per-active UVBs of \$82,000 or less. The other 25% of plans have per-active UVBs higher than this amount.

Exhibit 6

Distribution of unfunded vested benefits determined at various discount rates per active participant.



Note: Results are rounded to the nearest \$1,000.

To the extent a multiemployer plan uses funding discount rates for withdrawal liability purposes, an employer's withdrawal liability exposure would increase substantially if corporate bond rates or 30-year Treasury rates were used instead. Consider the per-active UVBs between the 25th and 75th percentile in Exhibit 6 above (half of the plans analyzed). These plans would see an increase in per-active UVBs of 2.1 to 4.0 times current levels when moving to corporate bond rates and 2.7 to 5.5 times current levels when moving to 30-year Treasury rates.

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Increases in withdrawal liability can cause hardship for employers that contribute to multiemployer plans – even if they do not withdraw from a plan. Lenders typically review an employer’s potential exposure to withdrawal liability when determining creditworthiness. The large increases in withdrawal liability associated with using alternative discount rates could make it difficult or impossible for employers to access the capital needed for their business. This is especially true for small businesses that have limited options to raise capital.

It is important to note that actuarial assumptions and methods used to determine UVBs may be different than those used to determine statutory funding requirements. If a multiemployer plan uses a discount rate less than current funding rates for withdrawal liability purposes, then the impact of using alternative discount rates for EWL purposes will be diminished.

Furthermore, employers are not required to pay EWL as a lump sum. Instead, they typically make periodic payments until the EWL obligation is paid off, with accumulated interest. The amount of the periodic payment is calculated using a statutory formula and is determined independently from the employer’s share of the plan’s UVBs. In general, these periodic payments are limited to 20 years, regardless of whether or not the employer’s EWL obligation has been paid off. As such, the impact of alternative discount rates on EWL may be lessened to the extent an employer’s EWL obligation is limited to 20 years of periodic payments.

Impact on a Representative Plan

While the other sections of this report focus on the impact of alternative discount rate assumptions on the multiemployer system as a whole, this section focuses on the impact on one representative multiemployer plan. In many ways, this plan is typical of the majority of plans analyzed in this study. It is 80% funded and is currently in the green zone. It has an average monthly benefit accrual of \$78, which would result in an average annual pension benefit of about \$28,080 for a 30-year career employee. This is characteristic of the relatively modest, but meaningful benefits provided by the vast majority of multiemployer plans.

Like many multiemployer plans, the plan is on track to being 100% funded within 15 years if experience is as assumed. If experience is favorable, it will attain full funding in less than 15 years. If experience is unfavorable, it will take longer than 15 years to fully fund the plan. In which case, the plan would likely enter endangered or critical status, and the plan sponsor would take the steps necessary (either reductions in benefits, increases in contributions, or both) to ensure the plan returns to financial health within the timeframe specified under current law.

Exhibit 7 shows the impact of using alternative discount rate assumptions on the plan’s liability, unfunded liability, funded percentage, and zone status.

Exhibit 7

Summary information for representative multiemployer plan (\$ millions).

	Current Rates	Corporate Bond Rates	30-Year Treasury Rates
Actuarial Accrued Liability	\$ 127	\$ 182	\$ 213
Market Value of Assets	102	102	102
Unfunded Liability	\$ 25	\$ 80	\$ 111
Funded Percentage	80%	56%	47%
PPA Zone Status	Green Zone	Critical	Critical

Unfunded liability increases three-fold when moving to corporate bond rates and more than four-fold when moving to 30-year Treasury rates.

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In this case, as for many other plans, using alternative discount rates would force a relatively healthy green zone plan - that is likely to remain healthy under the current statute - into critical status. The plan would be forced to take immediate and drastic action to combat a problem it does not currently have. The magnitude of the effect can be seen in Exhibit 8 which shows hourly plan costs compared to hourly wage rates under the various discount rate assumptions.

Exhibit 8

Comparison of 15-year funding costs to wage rates for representative multiemployer plan (\$ per hour).

	Plan Cost (\$ per Hour)			Plan Cost as a % of Wages (\$35 per Hour)		
	Current Rates	Corporate Bond Rates	30-Year Treasury Rates	Current Rates	Corporate Bond Rates	30-Year Treasury Rates
Unfunded Liability	\$ 3.64	\$ 9.36	\$ 12.27	10%	27%	35%
Normal Cost	3.37	5.91	7.57	10%	17%	22%
Operating Expenses	0.68	0.68	0.68	2%	2%	2%
Total Plan Cost	\$ 7.69	\$ 15.95	\$ 20.52	22%	46%	59%

There are two main levers a plan sponsor could use to address the increases in plan costs shown above: increases in contributions and decreases in benefits.

Solely changing contributions would require contribution rates that are 2.0 to 2.7 times current levels, depending on the discount rates used. It is unlikely that employers would be able to sustain such increases and remain competitive in the marketplace. Furthermore, it is unlikely that participants would value a compensation package with 45%-60% of pay going towards funding a relatively modest pension benefit.

Solely decreasing benefits would impact only the normal cost in the chart shown above. Even if future benefit accruals were frozen, contribution requirements would still represent about 30%-40% of pay using the alternative discount rates shown since the vast majority of contributions would be used to pay down unfunded liabilities for benefits already earned.

The percentage of payroll required to fund the pension plan would more than double to 46% using corporate bonds and would almost triple to 59% using 30-year Treasury rates.

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Conclusions

The impact of using alternative discount rates for multiemployer plan funding would be staggering. Overall liabilities, unfunded liabilities, and withdrawal liabilities would dramatically increase, and contribution requirements would rise accordingly.

Most plans would be forced to decrease benefits to levels that would not be appreciated by participants, and increase contributions to levels that would be unsustainable for employers. Using alternative discount rates would likely result in decreased plan participation and increased employer bankruptcies and withdrawals, which would hasten the demise of the system rather than fortify it.

Funding standards that provide for discount rates based on reasonable estimates of the long-term expected rates of return on plan assets are still appropriate for multiemployer pension plan funding. Using discount rates based on high quality corporate bond or 30-year Treasury yields is appropriate for plans invested predominantly in those types of assets, but is not well-suited for ongoing plans invested in a diverse mix of asset classes including equities, bonds, real estate, and others.

Appendix – Assumptions and Methods

Discount Rates

The following discount rates were used in the analysis:

Current Rates: As disclosed on the Form 5500 Schedule MB for each plan analyzed. For reference, about three out of every four plans used a discount rate between 7.00% and 7.50%.

Corporate Bond Rates: A discount rate of 2.99% for benefit payments expected to be made within five years, 4.04% for benefit payments expected to be made in the next 15 years, and 4.43% thereafter. These are the applicable interest rates under Internal Revenue Code Section 417(e)(3)(D) for plan years beginning in April, 2018. This “segment rate” structure results in an effective discount rate between 4.10% and 4.20% for most plans.

30-Year Treasury Rates: A discount rate of 3.07%, which is the average 30-Year Treasury Constant Maturity Rate for the month of April, 2018.

PPA Zone Status

The calculations required to determine a plan’s zone status are complex and require projections of the plan’s funding standard account. The zone statuses under current discount rates are those actually reported on Form 5500 Schedule MB. The zone statuses under the alternative discount rates shown in this report were estimated based on funded percentages.

Liability Estimates

Unadjusted unit credit liability values reported on Form 5500 Schedule MB were used to determine pension obligations under current valuation discount rates. Standard actuarial techniques were used to adjust these values to liabilities based on corporate bond rates and 30-year Treasury rates.

Data

The analysis is based on publicly available Form 5500 data as of June 7, 2018 from the Department of Labor website. In general, this covers multiemployer pension plans with plan years beginning from September 1, 2015 through August 1, 2016. The asset and liability values used were as of the beginning of the plan year.

Certain plans were excluded from the analysis as follows: (1) plans whose most recent Form 5500 was a final filing, (2) plans whose most recent Form 5500 filing indicates the plan has adopted a resolution to terminate, and (3) plans with missing or questionable data for key information.

In total, 1,253 multiemployer pension plans were analyzed covering about 10 million participants with about 200,000 contributing employers. Some participants have earned benefits under more than one multiemployer plan. Similarly, some employers contribute to more than one multiemployer plan. The participant and employer counts referenced in this report reflect the counts reported for each plan.

The assumptions and methods used in this analysis were developed for the typical multiemployer pension plan and may not be appropriate for some individual plans. Alternative assumptions and methods may result in different numerical outcomes, but the overall conclusions presented in this analysis are likely to be similar.

Questions? Contact Us.

If you have questions or comments about this study, please contact your Horizon Actuarial consultant or one of the authors below:



Ben Ablin, ASA, EA, MAAA

240.247.4542

ben.ablin@horizonactuarial.com

Ben Ablin is a consulting actuary in the Washington, DC office of Horizon Actuarial. Ben consults on a number of topics including plan design, funding strategies, administration, negotiations, scenario analysis, PPA, and MPRA. Ben is the primary author of Horizon Actuarial's Survey of Capital Market Assumptions, and is a frequent public speaker, for example, at meetings of the International Foundation of Employee Benefit Plans (IFEBC). Ben is a graduate of the University of North Carolina at Chapel Hill, an Associate of the Society of Actuaries, a Member of the American Academy of Actuaries, and an Enrolled Actuary under ERISA.



David Pazamickas, ASA, EA, MAAA

240.247.4513

david.pazamickas@horizonactuarial.com

David Pazamickas is a consulting actuary in the Washington, D.C. office of Horizon Actuarial. Dave consults on a number of topics including pension plan funding, design, actuarial valuations, and projections. He is also an expert in developing funding improvement plans and rehabilitation plans, withdrawal liability, and asset-liability modeling. Dave is a member of the American Academy of Actuaries Multiemployer Plans Committee. In addition to multiemployer plans, Dave has consulted with employers sponsoring single-employer and other postemployment benefit plans. Dave is a graduate of the State University of New York at Geneseo. He is an Associate of the Society of Actuaries, a Member of the American Academy of Actuaries, and an Enrolled Actuary under ERISA.

About Horizon Actuarial

Horizon Actuarial Services, LLC is a leading consulting firm that specializes in providing innovative, independent, and unbiased actuarial solutions to multiemployer benefit plans. We proudly serve over 120 pension and health and welfare plans in various industries, including construction, trucking, professional sports, hospitality, entertainment, retail food, and communication.

Horizon Actuarial Services, LLC was created in October of 2007, when Watson Wyatt Worldwide, a leading multinational consulting firm, announced that it was exiting the multiemployer and Taft-Hartley plan consulting business. After providing consulting services to multiemployer plans for nearly 60 years, Watson Wyatt decided to focus on its corporate clients, thus spinning off its multiemployer business to a new company - Horizon Actuarial Services, LLC.

Over the years, we have gained tremendous experience helping our clients to address an extensive range of issues, from pension plan implementation, to health and welfare fund reserve analysis, and everything in between. We provide a wide array of services related to defined benefit pension plans, including annual actuarial valuations, PPA compliance, plan design, asset-liability modeling, actuarial reviews, and merger and spin-off studies.

Also as a result of our years of experience comes an understanding of the unique dynamics of multiemployer plans. We have always viewed our role as consultants whose responsibility it is to protect the interest of the plan participants by keeping all trustees, both labor and management, well informed and well equipped to navigate the challenges facing their plans.

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