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Multiemployer Pension Plan Contribution Analysis

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Executive Summary

The multiemployer pension plan (MEPP) system in the United States includes approximately 1,300 plans that cover roughly 10 million participants—about 3.5 million of whom are retired— from about 200,000 employers in the private sector. The system carries significant unfunded liabilities. For 2013, total unfunded liabilities ranged from approximately $115 billion when measured for purposes of determining funded status "zones" under the Pension Protection Act of 2006 to $500 billion when measured using Treasury rates and the market value of assets. Note that Treasury rates dropped by roughly 100 basis points over this period, driving significant increases in costs under this measurement.

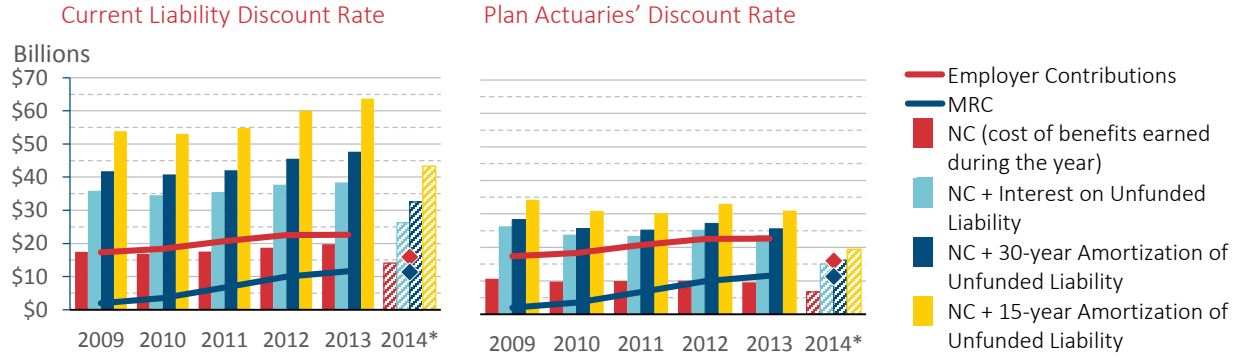
In general, contributions to these plans are negotiated between unions and employers, and benefits are set by the plan's board of trustees. Usually contribution levels are not directly linked with benefit levels and funded status, although there may be indirect links.

This study analyzes the funding progress of MEPP contributions for plan years 2009–2013 and 2014 based on Form 5500 data to the extent they were available as of Jan. 5, 2016. Note that reported employer contributions include and do not separately identify withdrawal liability payments, which are excluded from Minimum Required Contribution (MRC) calculations. Key findings over 2009–2013 include:

- The system's aggregate contributions increased on average 6.9% per year, significantly outpacing the average inflation rate of 2.1% per year. At the same time, contributions for a large percentage of plans were insufficient to prevent their unfunded liabilities from growing, let alone to close their funding gaps. For 2013, this applied to 46% of plans when liabilities are measured using the plan actuaries' discount rates and to 75% when liabilities are measured using Treasury rates.

- Also over this period, contributions to the system significantly exceeded legally defined MRCs, although the margin declined. For 2009, aggregate contributions were 8.75 times the aggregate MRC, and contributions for 94% of plans exceeded their MRCs. By 2013, aggregate contributions were twice the aggregate MRC, and contributions for 89% of plans exceeded their MRCs. Roughly 75% of plans had no MRC for these years.

AGGREGATE MEPP CONTRIBUTIONS COMPARED TO BENCHMARKS



* Figures for 2014 reflect that approximately 60% of plans have reported by Jan. 5, 2016.

- In general, MRCs are low even though there are large unfunded liabilities because many plans have accumulated large Credit Balances, which directly reduce required contributions. A Credit Balance indicates that historically the plan has contributed more than required by law; a Credit Balance is not directly related to funded status. Because MEPP contributions are negotiated in advance and determined for several years at a time, many MEPP practitioners consider the Credit Balance or some other mechanism that offers flexibility for meeting legally required contributions to be a valuable practicality for this system.

- Decreasing numbers of active participants compounds the funding pressures. The number of active participants fell roughly 2% per year. Because MEPP contribution rates are typically negotiated for several years in advance as a function of active participants (for example, amount per hour worked), decreasing numbers of active participants may mean that contributions actually received toward the end of the negotiated period may be significantly less than anticipated during negotiations.

- Many plans are expecting increased contributions in future years, in accordance with their funding improvement plans or rehabilitation plans. With about 60% of plans having reported by Jan. 5, 2016, results for 2014 appear more positive.

1 Introduction

A multiemployer pension plan (MEPP) in the United States covers employees—typically unionized—from more than one voluntarily participating employer. About 200,000 employers contribute to approximately 1,300 plans that cover roughly 10 million participants, about 3.5 million of whom are retired.

In general, MEPP contribution levels are not directly linked with benefit levels and funded status. Each participating employer has its own collective bargaining agreement (CBA) with terms and expiration date that could differ from other participating employers' CBAs. The rate of contributions is one of the terms of the CBA. While the CBA is in effect—typically three to five years—the agreed-upon contribution rates remain in effect, regardless of changes in the plan's funded status or benefit levels.

Benefits are set (within legal bounds) by the plan's board of trustees in decisions that are separate from negotiations between labor and management. While the board of trustees does not set contribution rates, it may establish minimum standards for rates based on the plan's funded position. If negotiated rates do not meet the standards, covered employees could receive reduced benefit accruals or employers could be expelled form the plan. The board of trustees is usually a relatively small group comprised of equal representation between labor (employees) and management (employers).

For contributing employers, financial disclosure regarding these defined benefit plans is generally limited to the employer's contributions and the plan's overall funded status.[1] Thus, from the employers' perspective, in some ways a multiemployer pension plan may seem more like a defined contribution plan than a defined benefit plan.

The method for determining contributions in the MEPP system differs dramatically from the single employer pension system. For single employer plans, each year actuaries determine minimum funding requirements defined by law and employers must contribute that amount or more. Employers set the benefits (within legal bounds) and are directly responsible for funding the benefits, and their financial statements reflect that responsibility through disclosing the plan's financial position.

This report explores the levels of contributions across the MEPP system over recent years and measures their progress against funding benchmarks. All analysis is based on data from Department of Labor Forms 5500 as publicly available on Jan. 5, 2016. Reporting for the 2014 plan year was not yet complete; approximately 60% of plans had reported for 2014.[2] Tabulations shown in this report represent relationships present among the data studied, but are not intended to, nor should be understood to imply causality among data elements.

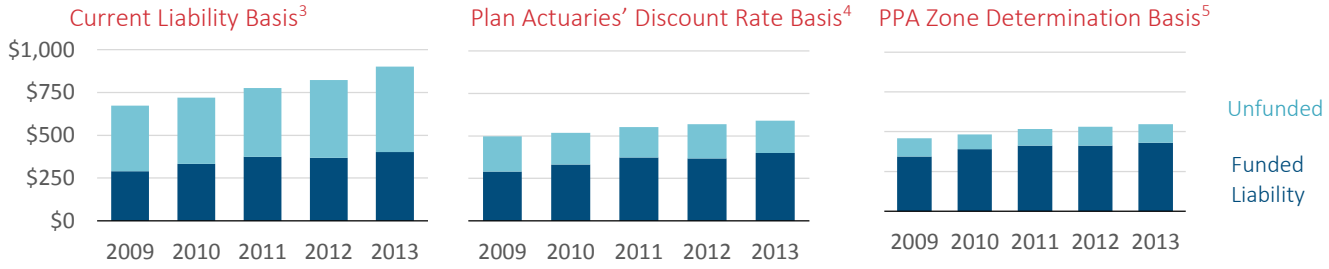
1 MEPP Funded Status

1.1 Aggregate Funded Status

The MEPP system carries significant unfunded liabilities regardless of the assumptions and methods used to measure them.

Figure 1-A

AGGREGATE LIABILITIES AND FUNDED STATUS



[1] If an employer is likely to completely or partially withdraw from a plan, then the employer's withdrawal liability must be disclosed.
[2] Figures for 2014 reflect that approximately 60% of plans have reported by Jan. 5, 2016. These plans have plan years beginning January through March.
[3] Unit Credit cost method with the Current Liability discount rate and market value of assets.
[4] Unit Credit cost method with the plan actuaries' discount rate and market value of assets.
[5] Unit Credit cost method with the plan actuaries' discount rate and actuarial value of assets.

Depending on the measurement basis, aggregate unfunded liabilities in the MEPP system for 2013—the most recent complete year of reporting—ranged from $115 billion to $500 billion. The system had significant unfunded liabilities in the aggregate because the vast majority of plans had unfunded liabilities. For 2013, 99% of MEPPs had an unfunded liability on a Current Liability basis, while 84% did on the PPA Zone Determination basis.

Each of the three measurement bases reflects a different theoretical underpinning for the calculations. The Current Liability basis reflects the financial economic theory that pension obligations should be valued similarly to secured debt obligations and discounted at a risk-free interest rate. Therefore, it uses a discount rate developed from 30-year treasury bonds as defined by federal law for the calculation of Current Liability.[6] While the Current Liability discount rate may not conform to financial economic theory precisely, it is similar and readily available as reported on Form 5500 Schedule MB. Assets are valued at market value, and the mortality table used is also prescribed by law. Note that over the period studied, Current Liability discount rates dropped by roughly 100 basis points, which increased the resulting Current Liabilities significantly.

The Plan Actuaries' Discount Rate basis differs from the Current Liability basis only in the discount rate employed; all other assumptions are the same. Each plan's discount rate is selected by its actuary and usually reflects traditional practice for funding pension plans. Under this view, the discount rate represents the actuary's best estimate of long-term investment returns on the plan's assets over the life of the plan.

The PPA Zone Determination basis is the approach prescribed by law in identifying the status or zone in which a plan falls.[7] This approach uses the same actuarial cost method for determining liabilities as the Current Liability and Plan Actuaries' Discount Rate bases, but all other assumptions are selected by the plan's actuary for funding the plan. Assets are valued using the method selected by plan trustees for funding purposes and often employ smoothing techniques.

Section 8.3 shows a summary of discount rates used in the MEPP system under each measurement approach.

1.2 About Different Funded Status Measurement Approaches

Funded status results can vary dramatically under different measurement bases, including the approaches presented above. There are common interpretations of some approaches, even though there is no universally accepted view on the practical implications of the different bases. For example, it is common to interpret Current Liability as a market-based method that represents the amount of assets necessary to settle the pension obligations.

The other measurements above are expected return-based methods and represent estimates of the amount of assets necessary to support the pension obligations for ongoing plan sponsors. However, the expected return-based approach does not reflect the risk associated with the investment portfolio of the plan's assets.[8]

To illustrate, it is possible for a plan to be well funded on the Plan Actuaries' Discount Rate basis but poorly funded on a Current Liability basis. This situation could be interpreted as indicating two things. First, the plan has made strong progress towards accumulating assets that, in conjunction with future investment returns, are expected to be sufficient to pay all the benefits that participants have earned. Second, the accumulated assets are still far below the amount that would be necessary to effectively guarantee all of the benefit payments through the purchase of default-free securities.

Note that the funded status on the Current Liability basis is significantly lower than the other bases primarily because the discount rates used to determine liabilities are significantly lower. Please see section 8.3 for more information on the discount rates used for each basis. Further exploration of differences in these approaches is beyond the scope of this report.

[6] Internal Revenue Code Section 431 and associated regulations define minimum funding requirements for multiemployer pension plans.
[7] Internal Revenue Code Section 432 and associated regulations define criteria for multiemployer pension plan status categories, commonly referred to as "zones".
[8] American Academy of Actuaries, "Measuring Pension Obligations: Discount Rates Serve Various Purposes," *Issue Brief*, November 2013. http://actuary.org/files/IB_Measuring-Pension-Obligations_Nov-21-2013.pdf.

Regardless of the measurement approach, a plan's unfunded liability is the difference between its liabilities and assets. Its assets are an accumulation of its contributions over time with investment earnings, less benefit payments and administrative expenses. Consequently, one approach for shedding light on the system's unfunded liabilities is to examine its contributions.

2 Contribution Background

2.1 Pension Plan Annual Cost Components

Before studying contributions in the MEPP system, it may be helpful to define a few terms related to determining annual pension plan costs for pension plans. The following three elements make up the fundamental components of most actuarial funding policies for pension plans:

- **Normal cost (NC)** represents the cost attributed to the benefits that current active participants are earning this year. Normal cost may be determined using one of a variety of actuarial methods, depending on the specific purpose. For this analysis, normal cost is determined using the Unit Credit cost method—the method that most closely represents the cost for the year without smoothing or other techniques. The actuarial assumptions other than the discount rate are as used in Current Liability as reported on Form 5500 Schedule MB, including the estimated value of administrative expenses. The discount rate varies with the basis presented.
- **Unfunded liability (UL)** is the difference between a plan's total liability and assets. The liability is determined using the same method and assumptions as normal cost. This analysis measures assets at market value except when referencing the PPA Zone Determination Basis, which may use a smoothed value of assets.
- **Amortization** of unfunded liability is a means of paying the unfunded liability over time—in this case over a number of years—while recognizing the time value of money. The discount rate used is the same rate used in determining the liability and normal cost.

2.2 Regulatory Contribution Requirements

Federal law provides regulatory oversight of contributions in the MEPP system, including the MRC.[9] While complex, the basic elements of the MRC consist of:

- Normal cost as determined using an actuarial cost method selected by the plan's trustees and actuarial assumptions selected by the plan's actuary.[10]
- Amortization of any unfunded liability. The liability is determined using the same actuarial cost method and assumptions as used for the normal cost. The asset valuation method is determined by the plan's board of trustees, within limitations. The amortization period is set by law and varies depending on the source of unfunded liability, but 15 years is common.
- The sum of normal cost and amortization payment is offset by any **Credit Balance** or increased by any **Funding Deficiency** in the plan's Funding Standard Account. The Funding Standard Account is a means of tracking a plan's employer contributions relative to minimum funding requirements under the law; it is not a function of the plan's funded status. In general and in short, if cumulative employer contributions have exceeded cumulative minimum funding requirements, the plan has a Credit Balance. If the opposite has occurred, the plan has a Funding Deficiency. Thus, a plan can have both a significant unfunded liability and a significant Credit Balance—and many do.
- In addition, following exceptionally poor market returns in 2008, Congress provided **funding relief** for MEPPs in the form of extended amortization periods for increases in unfunded liability because of poor market returns recognized in 2009 or 2010, as well as expanded asset smoothing limitations for the same years.[11]

[9] Internal Revenue Code Sections 431 and 432 with associated regulations define minimum funding requirements for multiemployer pension plans.
[10] Section 8.3 shows the range of key assumptions and methods used across the MEPP system.
[11] Pension Relief Act of 2010 and associated guidance by the Internal Revenue Service.

2.3 How MEPP Contributions Are Determined

As described in section 1, contribution rates in the MEPP system are negotiated between unions and employers, subject to bargaining constraints set by the trustees. Typically contribution rates are expressed in the CBA as a function of active participants' work (for example, an amount per hour or week worked or a percentage of compensation). Plans with many contributing employers will have many separate CBAs—possibly with many different contribution rates—that go into effect at varying dates and remain in effect for varying lengths of time. Sometimes contribution rates are linked to benefit levels, but not always.

Plan actuaries value the plans annually for a variety of purposes, including to evaluate whether the employer contributions received met the legally required MRC.

Given the nature and length of CBAs, it is helpful for plans to have a means for absorbing differences between actual and legally required employer contributions. Credit Balances have played that role since the Employee Retirement Security Act of 1974. Credit Balances will be explored further in section 5.2.

3 Aggregate Analysis of Contributions

3.1 Overview

Having outlined the basics behind contribution determination, this section studies MEPP contributions in aggregate over plan years 2009–2013 from two slightly different perspectives: a funding perspective and a regulatory perspective.

The funding perspective compares employer contributions to benchmarks that represent the level of contributions required to fund the plans at various speeds, assuming that actuarial assumptions are met exactly and contributions remain constant:[12]

- NC: To fund current benefit accruals only (including administrative expense assumptions). At this level, funding covers the current benefit accruals of active participants but no more. The unfunded liability will continue indefinitely to grow with interest.
- NC + Interest on UL: At this pace, funding keeps up with current benefit accruals (including administrative expense assumptions) and prevents the unfunded liability from growing, but makes no progress toward closing the funding gap. For a plan with a stable population, the unfunded liability holds steady indefinitely. However, a plan with declining numbers of active participants will eventually run out of assets with which to pay benefits.
- NC + *n*-year Amortization of UL: At this speed, funding keeps up with current benefit accruals (including administrative expense assumptions) and the funding gap will be closed at the end of *n* years.

For this analysis, funding perspective benchmarks use the Unit Credit cost method and market value of assets—methods that most closely represent the actual costs and incorporate neither smoothing nor pre-funding.

The regulatory perspective compares employer contributions to minimum funding requirements as defined by federal law. For the MRC, the actuarial cost method and asset valuation method are selected by plan trustees, and actuarial assumptions are selected by the plan actuary. Typically, MEPP actuaries select assumptions using the expected-return approach, and often the trustees choose to employ smoothing techniques in determination of liabilities, normal cost and assets. The amortization period of any unfunded liability is prescribed.[13]

[12] If actual experience is financially more favorable than the actuarial assumptions or the contribution rate increases, a plan will be funded faster than the benchmark speed. Conversely, if actual experience is financially less favorable or the contribution rate decreases, a plan will take longer to fund than the benchmark time period. According to their funding improvement or rehabilitation plans, many plans are expecting increased contribution rates in the future.
[13] *Supra,* note 9.

3.2 Aggregate Analysis

In aggregate, contributions across the MEPP system from 2009–2013 grew a total of approximately 31% or an average of 6.9% per year—significantly faster than inflation. Over the same period, the July CPI-U rose a total of 8.5% or an average of 2.1% per year, and the National Average Wage grew 10.3% or an average of 2.5% annually.

At the same time, the number of active participants in the system declined significantly, from 3.9 million in 2009 to 3.6 million in 2013—an average decline of approximately 2% per year. The percentage of the system's participants that are active declined faster—from 42% to 37%, an average of approximately 3% per year.

Given that contributions in this system are generally negotiated as a function of active participants, it stands to reason that the contribution rates that employers were paying increased even faster than aggregate contributions increased. This trend is explored further in section 5.

Plan Year	Number of Active Participants (millions)	Percentage of Participants that Are Active
2009	3.9	42%
2010	3.7	39%
2011	3.6	38%
2012	3.5	37%
2013	3.6	37%
2014*	2.6	36%

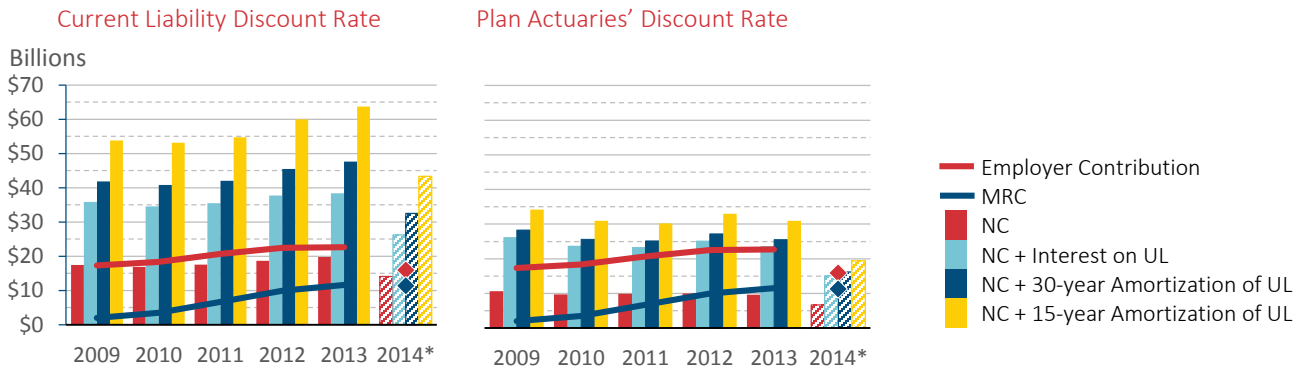
* Figures for 2014 reflect that approximately 60% of plans have reported by Jan. 5, 2016.

Despite declining numbers of active participants, total employer contributions grew at an annual rate of 6.9% from 2009 to 2013, outpacing the average inflation rate of 2.1% per year.

Although the system's contributions increased, there was limited progress against unfunded liabilities as shown. Figure 3-A compares contributions in aggregate with the aggregate funding perspective benchmarks described above as well as aggregate MRCs. The funding perspective benchmarks use the same actuarial approaches as set forth in section 1. Note that contributions include withdrawal payments as well as ongoing contributions according to CBAs. Withdrawal payments are not included in the MRC.

Figure 3-A

AGGREGATE MEPP CONTRIBUTIONS COMPARED TO BENCHMARKS[14]



* Figures for 2014 reflect that approximately 60% of plans have reported by Jan. 5, 2016.

From a regulatory perspective, aggregate contributions over this period greatly exceeded aggregate MRCs as defined by law. For 2009, aggregate contributions were 8.75 times the aggregate MRC. By 2013, aggregate contributions were 1.95 times the aggregate MRC. While the system's contributions in aggregate grew over this period, the aggregate MRC grew significantly faster.

[14] Except for actual contributions, funding perspective figures are estimated using the Unit Credit cost method, market value of assets, the actuarial assumptions selected by plan actuaries for funding purposes. Regulatory perspective figures are estimated using data reported on lines 8 and 9 of Form 5500 Schedule MB.

From a funding perspective, while employer contributions across plan years 2009–2013 in aggregate covered the cost of current years' benefit accruals, they were not enough to prevent unfunded liabilities from growing, let alone to close the funding gaps, assuming that the actuaries' assumptions were met exactly. To the extent that aggregate unfunded liabilities shrank over that period, it was because of favorable market returns or demographic experience, cost-cutting plan changes, or changes in actuarial assumptions or methods that reduced costs.

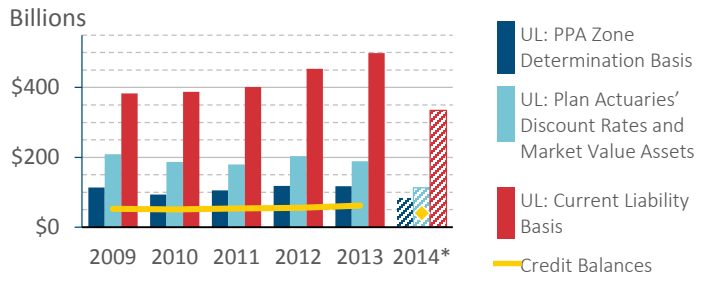
In general for 2009–2013, aggregate contributions were slightly less than amounts needed to prevent unfunded liabilities from growing on the Plan Actuaries' Discount Rate basis. However, they were significantly less than amounts needed to maintain existing unfunded Current Liability levels. Note that Current Liability basis benchmarks grew over the period studied primarily because Current Liability discount rates fell over the period.

> Over 2009–2013, in aggregate, contributions were not enough to prevent unfunded liabilities from growing.

Even though in aggregate the system's contributions were less than needed to prevent growth of existing unfunded liabilities, they significantly exceeded MRCs. This is primarily because of large Credit Balances, which reduce MRCs dollar for dollar. Examination of Credit Balances reveals that the system's aggregate Credit Balances were slowly growing over years 2009–2013, while there was limited progress toward reducing unfunded liabilities, as shown in Figure 3-B.

Figure 3-B

AGGREGATE UNFUNDED LIABILITIES AND CREDIT BALANCES



Plan Year	Aggregate Credit Balance	Aggregate Funding Deficiency[15]
2009	$52.5	$0.1
2010	50.9	0.2
2011	53.0	1.7
2012	55.4	3.8
2013	61.3	5.0

* Figures for 2014 reflect that approximately 60% of plans have reported by Jan. 5, 2016.

3.3 Individual Plan Experience Varied

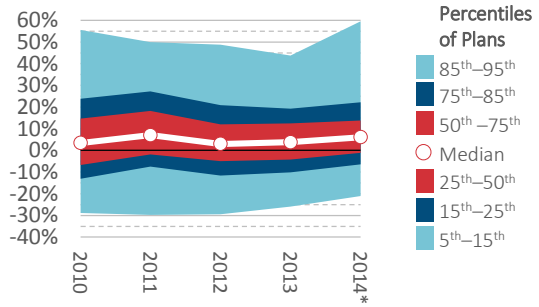
The analysis of section 3.2 on the following page shows trends that are generally smooth for the system in aggregate. The focus of this report is the overall impact on the system. As a side note for readers interested in individual plans, Figure 3-C on the following page shows that contribution increases for an individual plan may have varied dramatically from year to year. Further analysis is beyond the scope of this report. However, bear in mind that reported contributions include withdrawal liability payments, which may be one reason for variation among individual plans. The data available from Form 5500 does not identify the amount of employer contribution attributable to withdrawal liability payments.

Over 2009–2013 the median year-over-year increase in contributions for any given year ranged from 3% to 7%. However, individual plans generally experienced something quite different from the median. In any given year for the 5th through 95th percentiles of plans (90% of the plans included in the study), contribution increases ranged from a 30% decrease to a 60% increase.

[15] The dramatic increase in aggregate Funding Deficiency is primarily due to fewer than 10 plans; two of those plans have a combined 2013 Funding Deficiency of $4.4 billion.

Figure 3-C

DISTRIBUTION OF YEAR-OVER-YEAR CONTRIBUTION INCREASES



* Figures for 2014 reflect that approximately 60% of plans have reported by Jan. 5, 2016.

4 Contribution Index

Aggregate figures can be useful in understanding general context within a pension system. However, because MEPPs vary significantly in size, the largest plans may dominate and skew aggregate results. Studying distributions of individual plans' results can isolate the impact of a small number of large plans.

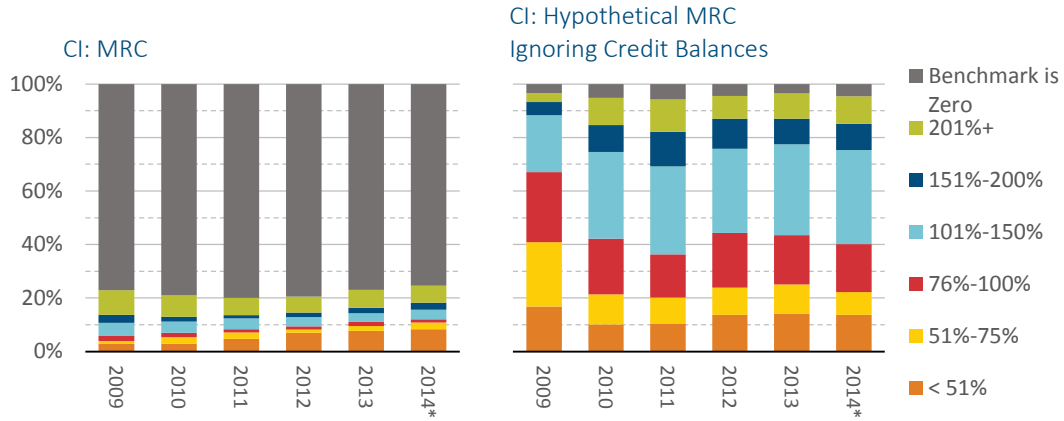
To facilitate comparison of plans that vary in size, consider a plan's contribution relative to a benchmark that is sized appropriately for the plan. A plan's **contribution index (CI)** is the ratio of its employer contribution to the benchmark. A contribution index of less than 100% means that the plan is funding less than or more slowly than the benchmark. This analysis uses the contribution benchmarks presented in section 3.

For example, when the benchmark is NC + 30-year amortization of UL, a CI of 80% means that the plan is contributing 20% less than the amount needed to close the funding gap in 30 years. It indicates that the plan will take longer than 30 years, if ever, to be fully funded, but it doesn't reveal how long it will take .[16]

4.1 CI: Regulatory Perspective

Figure 4-A

REGULATORY PERSPECTIVE CONTRIBUTION INDICES
PERCENTAGE OF PLANS IN CI RANGES



* Figures for 2014 reflect that approximately 60% of plans have reported by Jan. 5, 2016.

[16] *Supra,* note 12.

The graphs in Figure 4-A show the percentages of MEPP contribution indices that fall within selected ranges over plan years 2009–2013 when viewing contributions from a regulatory perspective (for an explanation of MEPP funding rules, please see section 10). Note that employer contributions include withdrawal liability payments, but such payments are not included in the MRC.

The overwhelming majority of MEPPs received contributions that exceed their MRCs. For 2009, contributions exceeded their MRC for 94% of plans. For 2013, contributions of slightly fewer plans—89%—exceeded their MRC.

> In general, MEPP employer contributions greatly exceeded their MRCs. For 2013, approximately two-thirds of MEPPs had no MRC.

Further examination of the data reveals that across these years, approximately three-quarters of the plans had an MRC of zero. This is primarily because they had large Credit Balances, which reduce MRCs dollar for dollar.[17]

While most plans' employer contributions have significantly exceeded MRCs, many fall short of a hypothetical calculation of the MRC that disregards Credit Balances. More specifically, for 2013, employer contributions for 89% of plans exceeded MRCs. If Credit Balances had hypothetically been excluded from MRC calculations, the percentage would have dropped to 57%.

A Credit Balance indicates that historically the plan has contributed more than required by law; a Credit Balance is not directly related to funded status. Because MEPP contributions are negotiated in advance and determined for several years at a time, many MEPP practitioners consider the Credit Balance or some other mechanism that offers flexibility for meeting minimum legally required contributions to be a valuable practicality.

4.2 CI: Funding Perspective

The vast majority of MEPPs were contributing at least the amount needed to fund ongoing benefit accruals for 2009–2013. Using plan actuaries' discount rates, 95% of MEPPs funded at this pace or faster, while at the lower Current Liability discount rate 69% of plans met or exceeded this pace. However, results for the other funding perspective benchmarks are markedly different, as shown in Figure 4-B on the following page. There are two sets of CI graphs—one set for each of the discount rate bases explored previously.

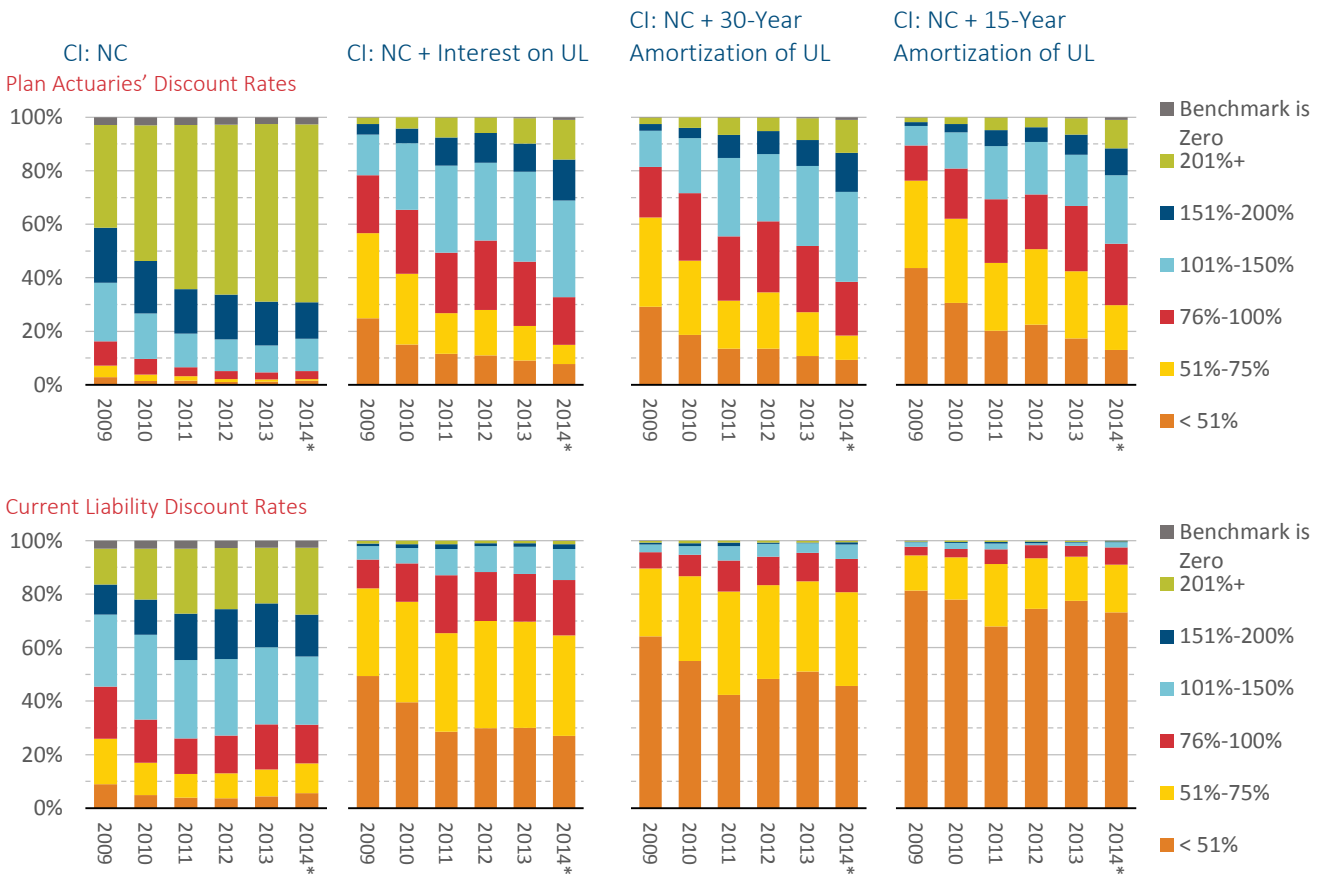
The distributions show that over 2009–2013, in general the pace at which MEPPs were funding increased—the proportion of plans with contribution indices in the higher ranges generally grew, while the proportion in the lower ranges generally shrank. For the roughly 60% of plans that had reported to date for 2014, results appear to continue the trend toward improvement.

> Overall, funding perspective CIs improved over 2009–2013. Yet, for 2013, roughly half of MEPPs received contributions that were less than the amount needed to prevent growth in unfunded liabilities using plan actuaries' discount rates, let alone make progress toward closing funding gaps.

[17] See appendix 10 for further explanation of how Credit Balances and MRCs are determined for MEPPs.

Figure 4-B

FUNDING PERSPECTIVE: PERCENTAGE OF PLANS IN RANGES OF CONTRIBUTION INDICES



* Figures for 2014 reflect that approximately 60% of plans have reported by Jan. 5, 2016.

Nonetheless, contributions for many plans were less than the amounts needed to maintain the existing unfunded liability, let alone make progress toward closing the funding gap. For 2009, contributions for 78% of plans were less than needed to prevent unfunded liabilities from growing when measuring liabilities using plan actuaries' discount rates. The percentage improved to 46% for 2013. Using Current Liability discount rates, the percentages were 93% and 88%, respectively. Note that over the period studied, Current Liability discount rates fell over 100 basis points, causing the Current Liability basis contribution benchmarks to increase over the period.

> For 2013, using plan actuaries' discount rates, roughly one-third of MEPPs received contributions sufficient to close the funding gap within 15 years.

The following are some additional observations based on 2013 data, assuming that all actuarial assumptions are met:

- The median CIs for maintaining the current level of unfunded liability were 104% using plan actuaries' discount rates and 61% using Current Liability discount rates.
- Approximately half of MEPPs were on track to close their funding gap within 30 years using plan actuaries' discount rates. Using Current liability discount rates that proportion drops to 5%.
- Roughly one-third of plans were on track to fund their unfunded liabilities in 15 or fewer years on the Plan Actuaries' Discount Rate basis, compared to only 2% on a Current Liability Discount Rate basis.

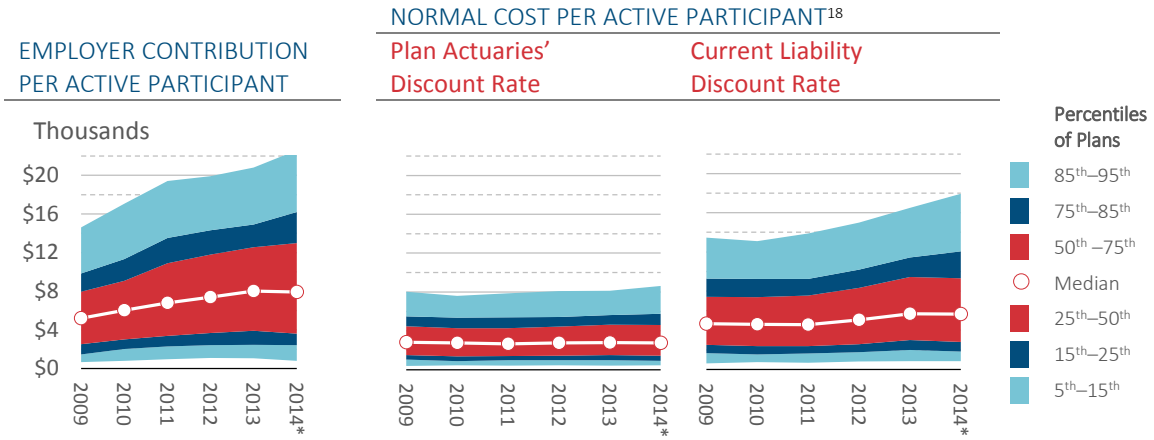
5 Analysis per Active Participant

In the MEPP system, contributions are generally negotiated and expressed as a function of active participants—for example, a dollar amount per hour worked. Consequently, exploring contributions and their components as a function of active participants may be helpful.

5.1 Contributions and Normal Cost per Active Participant

Section 3 showed that in aggregate, contributions rose over 2009–2013 while at the same time the total number of active participants in the MEPP system decreased. In general, for a system in which contributions are negotiated as a function of active participants, a declining number of active participants increases pressure for contribution rates to be increased. Figure 5-A compares contributions and normal costs on a per capita basis. Note that contributions per active participant include withdrawal liability payments.

Figure 5-A



* Figures for 2014 reflect that approximately 60% of plans have reported by Jan. 5, 2016.

Contributions per active participant increased significantly over 2009–2013, and more so than the normal cost per active participant.[18] In other words, contribution rates increased faster than the cost of active participants' benefits increased. More specifically:

- For the vast majority of plans, employer contributions per active participant rose over 2009–2013. Median employer contributions per active participant rose an average of 11.4% annually from roughly $5,200 for 2009 to roughly $8,000 for 2013.
- When using plan actuaries' discount rates, the distribution of normal cost per active participant remained essentially flat over this period. The median for 2013 was approximately $2,800—the same as for 2009. While individual plans may have experienced changes—even significant changes—the system as a whole changed very little.
- Using Current Liability discount rates, the normal cost per active participant generally increased for most plans. The median increased by an average 5.0% annually, from $4,700 for 2009 to $5,700 for 2013.
- Based on reporting to date for 2014, the medians and percentiles below the median are approximately flat or slightly down, while the values at percentiles above the 75th percentile tend to be increasing.

> Contributions per active participant increased 11.4% annually over 2009–2013. However, declining numbers of active participants muted the impact on total contributions, which grew only 6.9% per year.

[18] Section 5.1 presents normal cost values as of the end of the year.

Over this period, Current Liability discount rates declined quite a bit and the required mortality rates decreased slightly. Given that the normal cost per active participant remained essentially flat on a Plan Actuaries' Discount Rate basis while it increased on a Current Liability Discount Rate basis, it is reasonable to conclude that declining discount rates are the primary reason for the general increase in normal cost per participant on a Current Liability basis.

On the Plan Actuaries' Discount Rate basis—the basis more closely linked to MEPP system funding—the normal cost per active participant remained more or less constant while the contribution per active participant increased significantly. Thus, on a per capita basis, more of 2013 MEPP system contributions went toward funding unfunded liabilities (on the Plan Actuaries' Discount Rate basis) than in 2009.

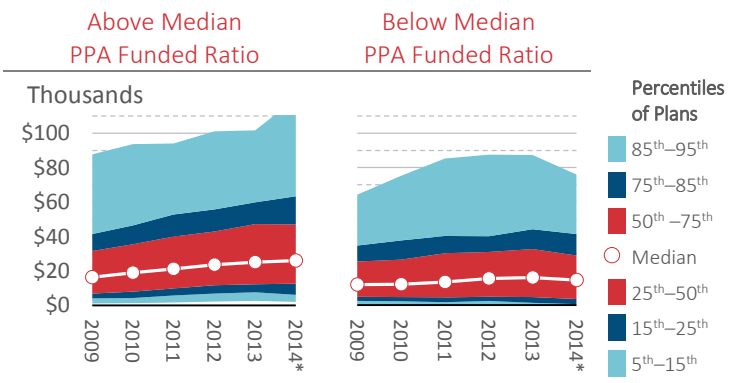
5.2 Credit Balances per Active Participant

Credit Balances play a significant regulatory role in MEPP system contributions and funding. To compare Credit Balances across plans, an examination of Credit Balances per capita could be meaningful. In general, Credit Balances per active participant rose steadily over the years 2009–2013. The median Credit Balance per active participant increased at an average clip of 10% annually—from $13,800 at the start of 2009 to $20,500 at the start of 2013. Based on the 60% of plans reporting to date for 2014, the median Credit Balance per active participant is down slightly from 2013, bringing the average annual rate of increase down to 7.3% per year.

Figure 5-B shows that Credit Balances per active participant generally increased whether plans were better funded or less well funded, as defined by a plan's PPA funded ratio being above or below the median. This funded ratio measurement was selected for this purpose because it is linked to MEPP funding regulations.

Figure 5-B

DISTRIBUTION OF CREDIT BALANCE PER ACTIVE PARTICIPANT



MEDIAN CREDIT BALANCE PER ACTIVE PARTICIPANT

	Above Median Funded Ratio	Median for All Plans	Below Median Funded Ratio
2009	16,407	13,847	11,925
2010	18,946	14,584	11,979
2011	21,298	16,875	13,286
2012	23,624	19,734	15,379
2013	25,062	20,549	15,986
2014*	26,047	19,710	14,444

* Figures for 2014 reflect that approximately 60% of plans have reported by Jan. 5, 2016.

In general, the distribution for above-median plans sits slightly higher than its below-median counterpart. For example, the median Credit Balance per active participant among above-median plans exceeds the median among below-median plans, as seen in the graphs and table of Figure 5-B. However, many plans in the below-median half of the system have greater Credit Balances per active participants than some plans in the above-median half. For example, while Figure 5-B doesn't show this level of detail, in 2013, the Credit Balance per active participant for one-third of the below-median plans exceeded the median for above-median plans.

> Over 2009–2013, Credit Balance per active participant generally increased for most plans, although more slowly for plans with funded ratios in the bottom half of the MEPP system.

6 Construction Industry Analysis

For interested readers, section 9 shows many of the graphs presented in sections 2 through 5 for plans in the construction industry. In general, results for the construction industry are very similar to results for the system as a whole.

7 Conclusions and Future Research Opportunities

The MEPP system carries significant unfunded liabilities, and the trend of decreasing numbers and proportions of active participants compounds the funding pressures. Yet in aggregate, the system's contributions markedly increased over 2009–2013, significantly outpacing inflation.

Despite this trend, nearly one-half of MEPPs in 2013 received contributions below the level required to prevent growth in unfunded liabilities measured at plan actuaries' discount rates. Two-thirds of plans received contributions below the level needed to close the funding gap within 15 years.

When measuring liabilities using Current Liability discount rates, the figures jump—more than three-quarters of plans received contributions that were insufficient to prevent unfunded liabilities from growing, and more than 95% received contributions below the level needed to close the funding gap within 15 years.

From a regulatory perspective, in general, contributions to these plans significantly exceeded MRCs by law for plan years 2009–2013. In fact, roughly 75% of plans had no MRC for these years. Note that reported employer contributions include withdrawal liability payments, but such payments are excluded from MRCs.

In general, MRCs are low because plans have accumulated large Credit Balances, indicating that in the past they have received greater contributions than required by law. Because MEPP contributions are negotiated in advance and determined for several years at a time, many MEPP practitioners consider the Credit Balance or some other mechanism that offers flexibility for meeting minimum legally required contributions to be a valuable practicality.

Many plans are expecting employer contributions to increase, in accordance with their funding improvement or rehabilitation plans as required by the Pension Protection Act of 2006. Early indications for 2014, based on roughly 60% of plans reporting by Jan 5. 2016, show improving trends.

The analysis presented in this report does not consider, among other things, the impact of future anticipated contribution increases. Nor does it reflect the potential impact of benefit adjustments under the Multiemployer Pension Reform Act of 2014. Both are prospects for future research, as is exploration of other aspects of the MEPP system that potentially influence its sustainability.

8 Appendix

8.1 Summary of Plans and Contribution

The table below shows a summary of the multiemployer pension plans included in the study.

In $Billions[19]	2009	2010	2011	2012	2013	2014*
All Industries						
Total Number of Plans	1,344	1,325	1,308	1,311	1,301	757
Plans Excluded for Incomplete Data	225	204	155	148	140	57
Number of Plans Included in Study	1,119	1,121	1,153	1,163	1,161	700
Number of Plans	1,119	1,121	1,153	1,163	1,161	700
Number of Participants						
Active	3,882,513	3,675,123	3,645,378	3,522,774	3,583,944	2,597,440
Retired	3,011,818	3,101,503	3,267,736	3,285,869	3,344,080	2,464,841
Inactive	2,412,316	2,539,754	2,693,798	2,684,981	2,690,476	2,089,190
Total	9,306,647	9,316,380	9,606,912	9,493,624	9,618,500	7,151,471
Market Value of Assets	$290.21	$332.58	$374.47	$367.99	$402.29	$302.57
Actuarial Value of Assets	$346.71	$393.41	$416.30	$415.79	$433.87	$309.61
Current Liabilities	$672.92	$720.36	$775.23	$821.92	$901.03	$637.11
Normal Cost for Current Liability	$16.68	$16.12	$16.43	$17.32	$19.08	$13.56
Liabilities for PPA Zone Determination	$458.22	$482.38	$517.14	$530.13	$546.27	$386.86
Normal Cost for Funding Purposes	$8.52	$8.06	$8.11	$8.41	$8.58	$6.21

8.2 Assumptions and Methods Used in This Analysis

Data elements as available on Department of Labor Form 5500 as of Jan. 5, 2016 have been used. Items not available were estimated by adjusting the available data elements and the assumptions noted in this section.

Current Liability basis uses current liability and normal cost values as reported on Form 5500 Schedule MB, with the current (market) value of assets reported on the same form.

Plan Actuaries' Discount Rate Basis differs from the Current Liability Basis only in the discount rate employed; all other assumptions and methods are the same. Using the specific assumptions outlined below, Current Liability values are adjusted to estimate their values at a different discount rate. The discount rates are selected by each plan's actuary for funding purposes. Again, the market value of assets is used.

The PPA Zone Determination basis is the approach prescribed by law in identifying the status or zone in which a plan falls.[20] This approach uses the Unit Credit cost method (the same actuarial cost method used for Current Liability and Plan Actuaries' Discount Rate bases), but all other assumptions are selected by the plan's actuary for funding the plan. Assets are valued using the method selected by plan trustees for funding purposes and often employ smoothing techniques.

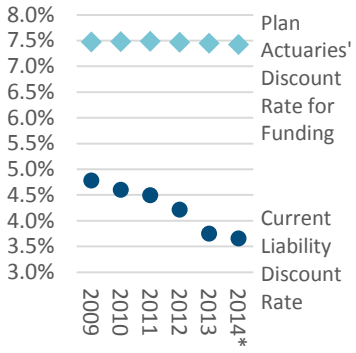
To adjust from reported Current Liability values to estimated Unit Credit liabilities and normal cost at different discount rates, the following values, measured at a 7.0% discount rate, for duration and convexity have been assumed:

[19] Some figures may not add because of rounding.
[20] Internal Revenue Code Section 432 and associated regulations define criteria for status categories, commonly referred to as "zones."

	Duration	Convexity
Normal Cost	17.5	-1.4
Active Liability	15.5	-1.1
Term Vested Liability	14.0	-1.0
Retiree Liability	6.0	-0.4

8.3 Summary of MEPP System Discount Rates and Asset Allocations

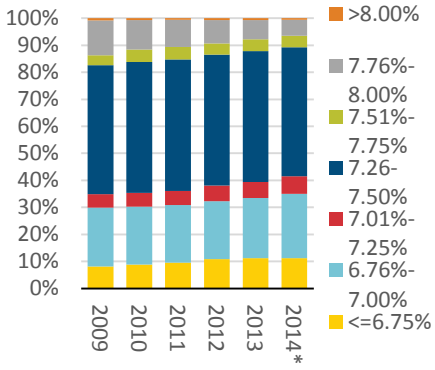
AVERAGE DISCOUNT RATE
Weighted by Liabilities



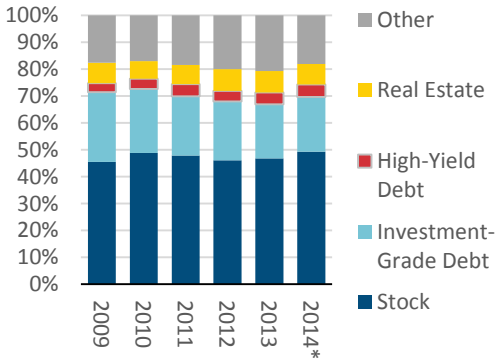
AVERAGE DISCOUNT RATE
Weighted by Liabilities

	Plan Actuaries' Discount Rate	Current Liability Discount Rate
2009	7.36%	4.76%
2010	7.35%	4.59%
2011	7.33%	4.50%
2012	7.30%	4.19%
2013	7.28%	3.74%
2014*	7.26%	3.66%

PLAN ACTUARIES' DISCOUNT RATES
Proportion of Plans within Ranges of Discount Rates



MEPP AGGREGATE ASSET ALLOCATION



* Figures for 2014 reflect that approximately 60% of plans have reported by Jan. 5, 2016.

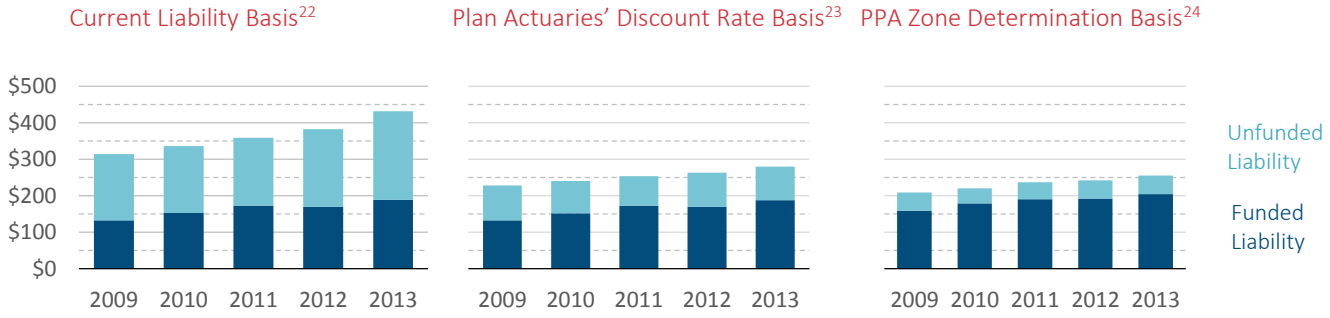
9 Appendix: Construction Industry Graphs

9.1 Construction Industry Plan Summary

In $Billions[21]	2009	2010	2011	2012	2013	2014*
All Industries						
Total Number of Plans	1,344	1,325	1,308	1,311	1,301	757
Plans Excluded for Incomplete Data	225	204	155	148	140	57
Number of Plans Included in Study	1,119	1,121	1,153	1,163	1,161	700
Construction Industry Only						
Number of Plans Included in Study	592	607	622	636	633	348
Number of Participants						
Active	1,704,539	1,563,910	1,472,110	1,439,908	1,458,489	1,059,258
Retired	1,204,990	1,240,480	1,294,887	1,320,389	1,362,433	996,111
Inactive	845,638	926,347	992,161	970,582	982,030	763,047
Total	3,755,167	3,730,737	3,759,158	3,730,879	3,802,952	2,818,416
Market Value of Assets	$132.20	$152.28	$172.91	$169.62	$188.66	$132.02
Actuarial Value of Assets	$158.53	$179.63	$191.30	$192.91	$205.20	$136.47
Current Liabilities	$314.40	$336.41	$359.38	$382.96	$431.53	$280.39
Normal Cost for Current Liability	$8.80	$8.17	$8.07	$8.50	$9.57	$6.23
Liabilities for PPA Zone Determination	$209.12	$220.40	$237.02	$242.09	$254.92	$164.52
Normal Cost for Funding Purposes	$4.30	$3.91	$3.83	$4.05	$4.12	$2.28

9.2 Construction Industry Aggregate Analysis

AGGREGATE CONSTRUCTION INDUSTRY LIABILITIES AND FUNDED STATUS



[21] Some figures may not add because of rounding.
[22] Unit Credit cost method with the Current Liability discount rate and market value of assets.
[23] Unit Credit cost method with the plan actuaries' discount rate and market value of assets.
[24] Unit Credit cost method with the plan actuaries' discount rate and actuarial value of assets.

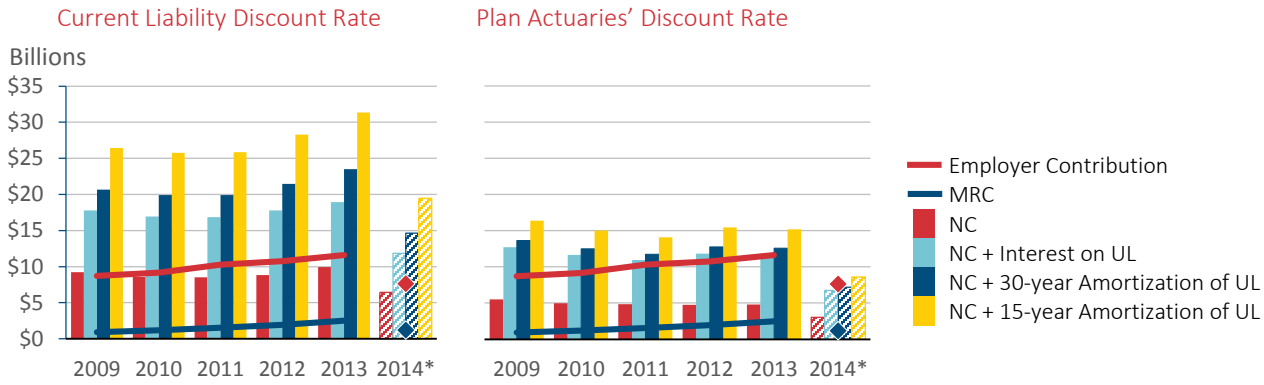
CONSTRUCTION INDUSTRY AGGREGATE ACTIVE PARTICIPANT ANALYSIS

Plan Year	Number of Active Participants (millions)	Percentage of Participants that Are Active
2009	1.7	45%
2010	1.6	42%
2011	1.5	39%
2012	1.4	39%
2013	1.5	38%
2014*	1.1	38%

* Figures for 2014 reflect that approximately 60% of plans have reported by Jan. 5, 2016.

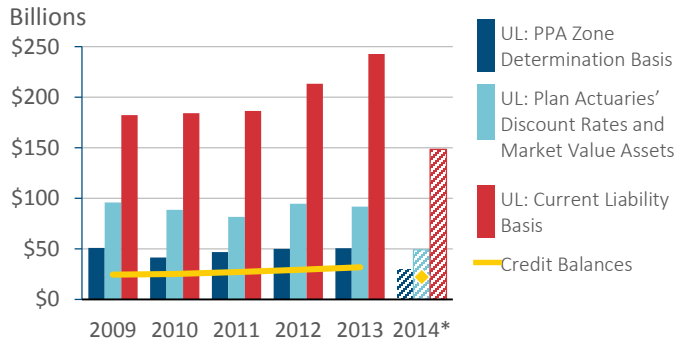
CONSTRUCTION INDUSTRY AGGREGATE CONTRIBUTIONS COMPARED TO BENCHMARKS [25]

Note that employer contributions include withdrawal liability payments, which are not included in MRCs.



* Figures for 2014 reflect that approximately 60% of plans have reported by Jan. 5, 2016.

CONSTRUCTION INDUSTRY AGGREGATE UNFUNDED LIABILITIES AND CREDIT BALANCES



Plan Year	Aggregate Credit Balance in Billions	Aggregate Funding Deficiency[26] in Billions
2009	$24.54	$0.02
2010	25.11	0.08
2011	27.06	0.21
2012	29.28	0.39
2013	31.65	0.65

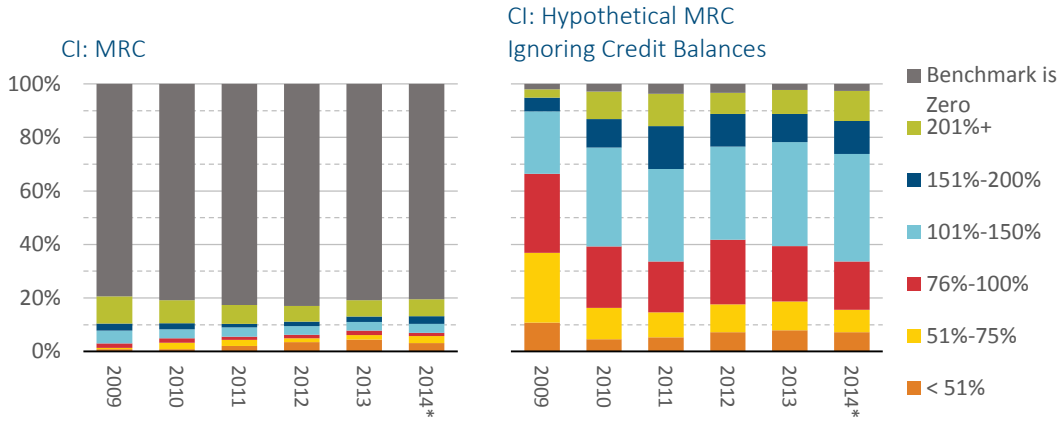
* Figures for 2014 reflect that approximately 60% of plans have reported by Jan. 5, 2016.

[25] Except for actual contributions, funding perspective figures are estimated using the Unit Credit cost method, market value of assets, the actuarial assumptions selected by plan actuaries for funding purposes. Regulatory perspective figures are estimated using data reported on lines 8 and 9 of Form 5500 Schedule MB.
[26] The dramatic increase in aggregate Funding Deficiency is primarily due to fewer than 10 plans; two of those plans have a combined 2013 Funding Deficiency of $4.4 billion.

9.3 Construction Industry Contribution Indices

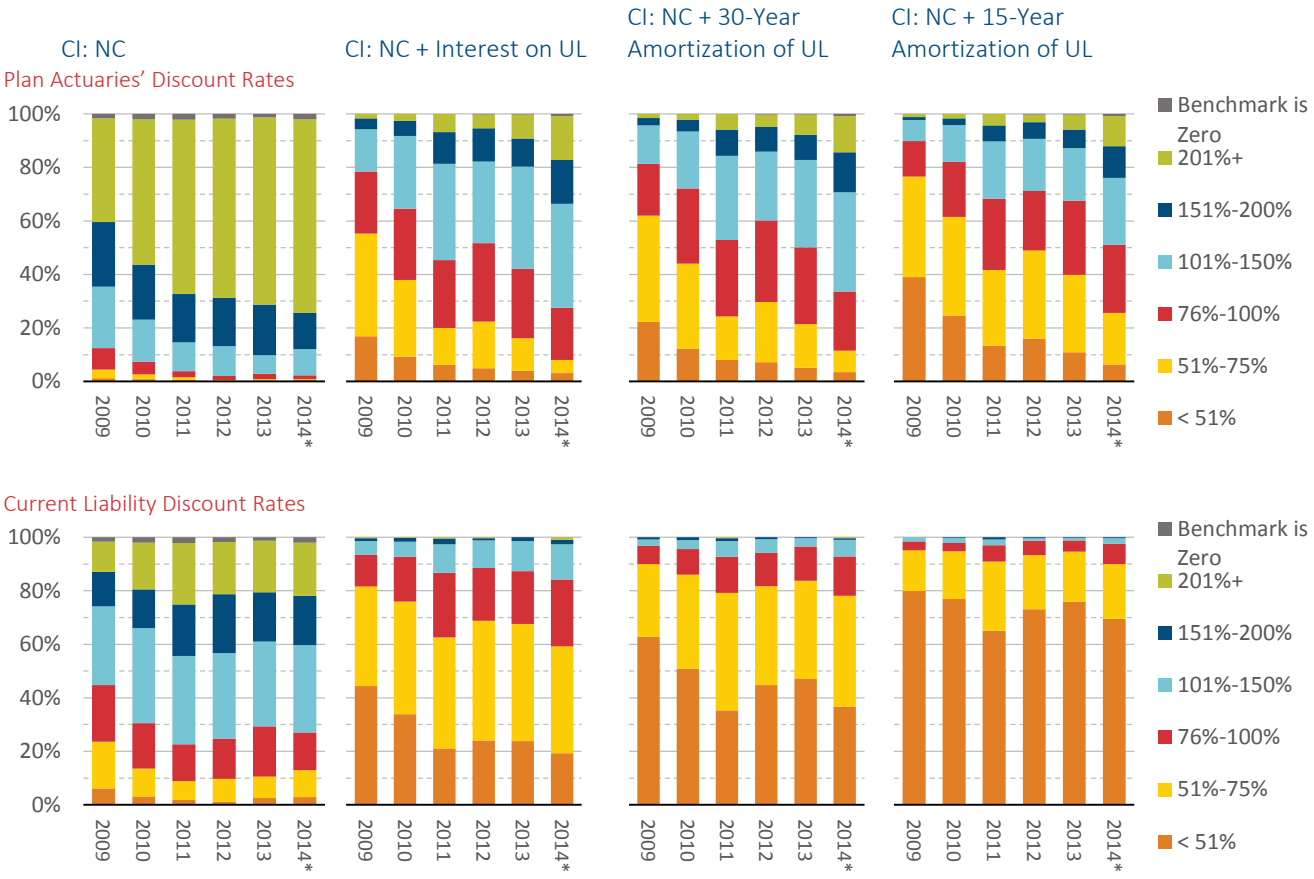
Note that employer contributions include withdrawal liability payments, which are not included in the MRC.

PERCENTAGE OF CONSTRUCTION PLANS IN CI RANGES: REGULATORY PERSPECTIVE



* Figures for 2014 reflect that approximately 60% of plans have reported by Jan. 5, 2016.

PERCENTAGE OF CONSTRUCTION PLANS IN CI RANGES: FUNDING PERSPECTIVE

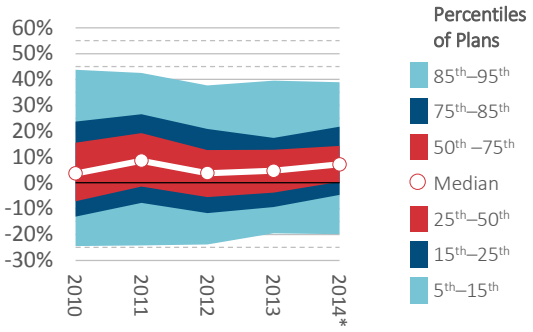


* Figures for 2014 reflect that approximately 60% of plans have reported by Jan. 5, 2016.

9.4 Distribution Construction Industry of Contribution Increases

Note that employer contributions include withdrawal liability payments.

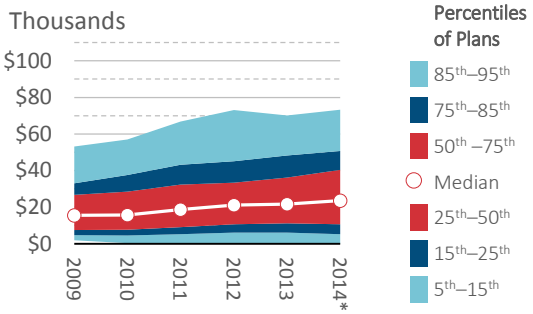
DISTRIBUTION OF CONSTRUCTION INDUSTRY CONTRIBUTION INCREASES



* Figures for 2014 reflect that approximately 60% of plans have reported by Jan. 5, 2016.

9.5 Construction Industry Credit Balances and Funding Deficiencies

DISTRIBUTION OF CREDIT BALANCE PER ACTIVE PARTICIPANT



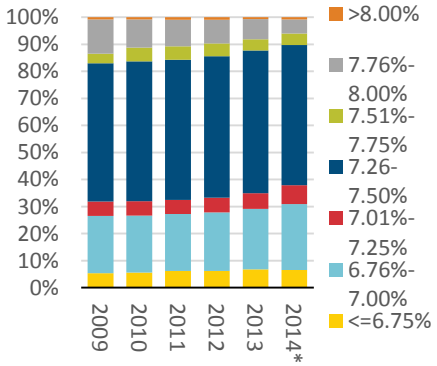
MEDIAN PER ACTIVE PARTICIPANT

	Credit Balance	Funding Deficiency
2009	$15,493	$0
2010	15,606	0
2011	18,640	0
2012	21,145	0
2013	21,622	0

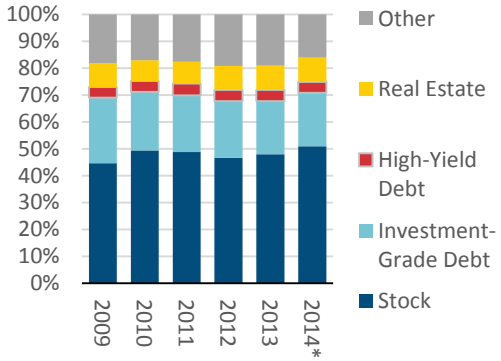
* Figures for 2014 reflect that approximately 60% of plans have reported by Jan. 5, 2016.

9.6 Construction Industry Plan Actuaries' Discount Rates and Asset Allocations

PLAN ACTUARIES' DISCOUNT RATES
Proportion of Plans within Ranges of Discount Rates



MEPP AGGREGATE ASSET ALLOCATION



* Figures for 2014 reflect that approximately 60% of plans have reported by Jan. 5, 2016.

10 Appendix: MEPP Funding Requirements and Credit Balances Explained

Under federal law, the multiemployer pension system has different rules than the single employer pension system for determining MRCs.[27] For both systems, MRCs include the basic components described in section 2:

1. The cost of current benefit accruals, plus
2. Amortization of any unfunded liability.

However, the way that those costs are to be measured is different between the two systems. In addition, there can be additional elements that increase or decrease the MRC, and each system handles them differently. While not exhaustive, and there are exceptions, following is a summary of the key general differences between the two systems.

Component	Multiemployer	Single Employer
Liability and Normal Cost Measurement		
• Discount Rate	Selected by actuary; typically selected using expected return-based approach	Discount curve specified by law using market-based approach
• Actuarial Cost Method	Selected by plan trustees among acceptable methods; may include smoothing techniques	Unit Credit cost method, reflecting the market value approach without smoothing or advance funding techniques
• Mortality Assumptions	Selected by actuary	Specified by law
• Other Actuarial Assumptions	Selected by actuary	Selected by actuary
Asset Measurement	Market value of assets may be smoothed over up to 5 years	Market value of assets may be smoothed over up to 2 years
Amortization of Increases or Decreases in Unfunded Liabilities	Generally 15 years	Generally 7 years
Additional Costs	Unpaid or underpaid MRCs in prior years (Funding Deficiency)[28]	Unpaid or underpaid MRCs in prior years (Funding Deficiency). In addition, especially poorly funded plans must accelerate funding.
Offsetting Credits	Credit is accumulated for having paid more than the MRC in prior years (Credit Balance). The Credit Balance directly reduces the MRC dollar for dollar, regardless of the plan's funded status.	Credit is accumulated for having paid more than the MRC in prior years (Carryover Balance or Prefunding Balance) and may be applied toward the MRC over time. Only plans 80% funded or better may elect to use these balances toward the MRC.

Note that a Credit Balance is not a function of a plan's funded status. It is a means of tracking actual contributions relative to minimum funding requirements under the law. Simplified and in short—for the sake of general understanding only—if cumulative employer contributions have exceeded cumulative MRCs, the plan has a Credit Balance. If the opposite has occurred, the plan has a Funding Deficiency.

[27] Internal Revenue Code Sections 431 and 432 and associated regulations define minimum funding requirements for multiemployer pension plans, whereas Internal Revenue Code Section 430 and associated regulations define minimum funding requirements for single employer pension plans.
[28] If a plan is in "Critical" status under Internal Revenue Code Section 432, there is generally no penalty for paying less than the MRC (i.e., accumulating the Funding Deficiency).

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