

Lynchval Systems Worldwide Inc.
Response

to

Ohio Retirement Study Council
Request for Proposal
Actuarial Consulting Services

Submitted To:
Bethany Rhodes

July 22, 2014



July 22, 2014

Dear Ms Rhodes,

Lynchval Systems Worldwide Inc. (Lynchval) is pleased to submit the proposal for the Ohio Retirement Study Council actuarial consulting services.

Our dedicated team has carefully reviewed the RFP and we are very confident that the Lynchval team will bring to bear the pertinent expertise needed to successfully implement this project, which will more than satisfy the Ohio Retirement Study Council requirements.

Lynchval welcomes the opportunity to work with you on this important implementation. We are confident that we can surpass your requirements and expectations because of our unrivaled actuarial and technology experience. Should you or your colleagues have any questions pertaining to the contents of this RFP, please do not hesitate to contact Salmi Rezvani, Vice President of Business Operations, at (703) 537-3439.

We look forward to working with the Ohio Retirement Study Council to provide the maximum solution and service.

Sincerely,

A handwritten signature in black ink, appearing to read 'Manu Mazumdar', is written over a light blue horizontal line.

Manu Mazumdar
President

Arrowpoint Technologies, Inc.
Lynchval Systems Worldwide, Inc.
KeyTech

Phone: VA Office 703-537-3410

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Statement of Confidentiality

This document contains proprietary and confidential information belonging to Lynchval Systems Worldwide, Inc., which shall not be disclosed, transmitted, duplicated, or used in whole or in part for any purpose other than evaluating this response to the Request for Proposal: Actuary Consulting Services dated June 12, 2014 prepared by the Ohio Retirement Study Counsel (ORSC).

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4.1 Proposal Summary

Provide a narrative summary of all the services and work products that are being offered. The purpose of the summary is to demonstrate your firm's understanding of this RFP.

Overview

The state of Ohio maintains five retirement systems that are covered by this proposal:

- (a) The Public Employees Retirement System (PERS) covering all state and local government workers,**
- (b) The State Teachers Retirement System (STRS) covering all teachers in public schools, colleges, and universities,**
- (c) The School Employees Retirement System (SERS) covering all public school, college, and university employees who are not teachers,**
- (d) The Ohio Police and Fire Pension Fund (OP&F) covering all full-time police officers and firefighters, and**
- (e) The State Highway Patrol Retirement System (HPRS) covering all state troopers.**

Ohio also maintains several other programs for employees that are not covered by this proposal:

- (a) The Ohio Public Safety Officers Death Benefit Fund, and**
- (b) The Volunteer Fire Fighters' Dependents Fund**

Ohio has established an advisory board, called the Ohio Retirement Study Council (ORSC), which oversees five retirement systems and reports the status of issues relating to benefits, funding, investments, and administrative procedures to the Ohio legislature. The ORSC also represents these plans when setting retirement policy or discussing the impact of potential legislation with the Ohio General Assembly. As such, the ORSC relies on its own professional advisors, which differ from the advisors of each of the five retirement systems. This proposal is to fill one of those advisor roles.

The duties of ORSC are codified and found in Chapter 17 of the Ohio Revised Code. Paraphrased, these include:

- (a) Periodically review of existing laws governing the retirement systems and submit any recommended changes to the legislature;**
- (b) Annually evaluate the operations of the retirement systems, including their investment funds, and report the results to the governor with any recommendations;**
- (c) Analyzes all proposed changes to retirement laws and reports the results to the legislature, and, depending on the issue, such reports may include anticipated costs to the retirement systems, effect on participants, actuarial implications, and/or the effect and desirability such proposed law will have as a matter of public policy;**
- (d) Semiannually evaluate the operations of the investment funds including asset allocations and performance of each fund, and report the results to the governor with any recommendations;**
- (e) At least once every ten years, prepare an actuarial audit of the annual actuarial valuations and every five years prepare an experience study to validate the actuarial assumptions for each retirement system;**
- (f) At least once every ten years, prepare a fiduciary audit for each retirement system;**

- (g) Provides each ORSC member with copies of all proposed rules submitted by the retirement systems and forwards their recommendations to the joint committee on agency rule review;**
- (h) Reviews the adequacy of the police and fire contributions rates and forwards any recommendations to ensure adequate financing to the legislature; and**
- (i) Prepares an independent actuarial study every three years to ensure adequate financing of the alternative retirement program as it pertains to the PERS, STRS, and SERS.**

This proposal concerns providing the services listed in items (c), (h), and (i) above. These are listed as items 3, 8, and 9 in the RFP prepared by ORSC.

Consulting Services – item(c)

This is an open ended engagement where the services cannot be defined until the legislature proposes a change affecting the retirement systems, the United States Congress proposes a change to public plans that could affect Ohio's retirement systems, or the ORSC poses a question regarding an issue relevant to the operation of the retirement systems. Possible services might be:

- Proposed changes to the plan provisions such as an increase in benefit levels, eligibility requirements for plan participation or retirement, actuarial equivalent factors or early retirement subsidies;**
- Proposed changes in investment strategy of the plan funds;**
- Proposed funding changes such as the time period to eliminate any unfunded liabilities of the plan or actuarial assumptions used in the valuations; or**
- Proposed changes in the administration or operation of the plan such as how benefits are best processed or the storage of plan data.**

Clearly, there may be other topics not on the list that may be the subject of an analysis or study.

For each analysis, unless otherwise specified, 35 copies of the final report will be submitted to the ORSC along with a PDF file. A preliminary report will be submitted to the ORSC Director for review before finalizing the results. In some circumstances, Lynchval may be required to present the findings to the ORSC, legislative committees, or the General Assembly or attend ORSC meetings. If requested, all relevant work papers substantiating the analysis will be provided to ORSC.

Ohio Police and Fire Pension Fund-item (h)

This requires a review the actuarial valuation report and an interpretation of the results regarding the funding adequacy of the Ohio Police and Fire Pension Fund. The review will include funding options and an analysis of those options providing information for ORCS or the legislature to decide on a funding strategy. An independent actuarial valuation is not prepared.

Based on the report included on the ORSC website, it is anticipated that the reports will be prepared in January for the prior plan year, such that the report prepared in January 2015 will analyze the January 1, 2014 actuarial valuation report.

Preliminary results will be presented to the Director of ORSC. When finalized, 35 copies of the report and a PDF file will be provided to the ORSC. Lynchval is expected to present the results to the ORSC. If requested, all relevant work papers substantiating the analysis will be provided to ORSC.

Alternate Retirement Plan – item (i)

This requires the performance of an actuarial valuation for eligible employees selecting the alternative retirement plan instead of PERS, STRS, or SERS, as appropriate. It is possible that due to funding levels or other constraints of PERS, STRS, or SERS not all plans will need to be analyzed. This actuarial valuation plus an analysis of the results and how the results affect PERS, STRS, or SERS is done sometime before July 1 on a triennial basis. Thus we expect the next report to be prepared sometime before July 1, 2017 and will be based on the July 1, 2016 valuation. This is consistent with the review as of June 28, 2005 found on the website.

As with the OP&F, preliminary results will be presented to the Director of ORSC before being finalized. The required number of reports will be provided and the results will be presented to ORSC at one of their meetings. All relevant work papers substantiating the analysis will be provided to ORSC if requested.

4.2 Capabilities and Experience

Consulting Services – item(c)

Lynchval has enjoyed a relationship with the Pension Benefit Guaranty Corporation (PBGC) as one of the vendors that analyzes proposed legislation that affects corporate plans and multi-employer plans for the last 15 years, winning mandatory rebids three times. The PBGC guarantees the benefits for single employer corporate plans and multiemployer plans should the employer become incapable of funding the participant's benefits. Consequently, changes to pension regulations are of great importance to the PBGC. Most, if not all, of these changes come from the United States Congress or subcommittees. We have modeled an assortment of proposals, including:

- **Pre-PPA (Pension Protection Act of 2006) proposals on new funding rules;**
- **Pre-Map21 (Moving Ahead for Progress in the 21st Century Act) proposals and subsequent alternatives around extending the interest corridors and the changing of amortization periods;**
- **NCCMP (National Coordinating Committee for Multiemployer Plans) proposals examining and modeling changing the nature of the PBGC guarantee so that plans can voluntarily reduce benefits to prevent insolvency, but not below 110% of the current PBGC guarantee; and**
- **Mercer collar, whereby required contribution for Year “n” cannot be outside a collar of Year “n-1” required contribution +/- 1% or 2% of prior year’s Target Liability.**

In addition, we have performed studies on the actuarial assumptions used by the PBGC to estimate their liabilities. These included a detailed Mortality Experience Study and an Expected Retirement Date Study. Copies of these reports are attached.

Also attached are two reports prepared for the PBGC and submitted to the U.S. Congress. The first, Multiemployer Pension Plans, describes the workings of multiemployer pension plans and the implications of PPA. The second, PBGC Insurance of Multiemployer Pension Plans, evaluates the adequacy of PBGC premiums to cover the potential costs of guaranteed benefits to participants plus administrative costs. This report is prepared on a quinquennial basis.

In our modeling projects, Lynchval can prepare results using varying assumptions for the next few years or for longer periods up to 120 years. Our modeling software can value changes in future plan provisions, changes in actuarial assumptions, changes in asset portfolios (both deterministic and stochastic projections), and changes in funding strategies. There is no limit to the number of participants that can be valued so that depending on the issue, all participants can be valued or we can group participants for faster processing. We can process the impact on current

participants as well as performing an open group forecast which estimates future new hires and their characteristics and the affect they will have on the retirement system in future years. We feel that any proposed legislation that addresses the retirement systems can be modeled with our system so that ORSC can clearly understand current and future results of the proposed legislation compared to the current legislation.

Ohio Police and Fire Pension Fund-item (h)

As experienced actuaries who have performed many valuations, we are often called upon by our software clients, who are actuaries in their own right, to provide consulting services and a review of their findings for their clients. We also have experience is making recommendations to our plan sponsor clients regarding issues pertaining to their plans. Being an actuary means ensuring that plans are adequately funded. A review of the current actuarial results and short term predictions are part of our analysis in this number one objective.

Alternate Retirement Plan – item (i)

Lynchval routinely prepares actuarial valuations for its clients. These include both plan sponsors and other actuarial firms. We maintain our own valuation system and can easily customize it to fit the needs of our clients. Lynchval has a database administrator that streamlines the data import process and reconciles the participant data from the prior valuation. In addition, we have seasoned actuarial analysts the code and review the valuation system. If a change in the product is necessary, this is made by experienced developers familiar with the valuation product. All results are reviewed and certified by an actuary. The number of participants in actuarial valuations range from 1 to over 10,000.

4.3 References

Company name (1)	Pension Benefit Guaranty Corporation
Customer Contact Information	Name: Badar Awan Title: IT Project Manager E-mail Address: awan.badar@pbgc.gov Telephone: (202) 326-4000 ext 6621
Services provided	Manage ME-PIMS and SE-PIMS PBGC proprietary products, analyze all proposed pension legislation affecting pension plans covered by PBGC
Company name (2)	Public Service Pensions Board (Government of Cayman Islands)
Customer Contact Information	Name: Jewel, Evans-Lindsey Title: Managing Director E-mail Address: Jewel.Evans-Lindsey@pspb.ky Telephone: (345) 244-7122
Services provided	Audit of Plan administration operations, reconciliation of participant data, streamlined Plan participant calculations on a custom designed administration system, review of new legislation requiring modifications to administrative procedures
Company name (3)	GEBCorp

Customer Contact Information	<p>Name: Stephen W. Vaughn</p> <p>Title: President and CEO</p> <p>E-mail Address: stevevaughn@gebcorp.com</p> <p>Telephone: (800) 736-7166</p>
Services provided	<p>Ongoing support regarding plan interpretation, administrative procedures, and review of Georgia law that impacts the public plans administered by GEBCorp</p>
Company name (4)	<p>Markley Actuarial Services</p>
Customer Contact Information	<p>Name: Lisa Fox</p> <p>Title: Actuarial Manager</p> <p>E-mail Address: lisafox@markleyactuarial.com</p> <p>Telephone: (717) 295-3178</p>
Services provided	<p>Ongoing support for actuarial issues such as asset liability modeling, non-discrimination testing, and developing the best funding strategy for Markley's clients</p>
Company name (5)	<p>Amtrak</p>

Customer Contact Information	Name: Roe Tana Title: Manager, Retirement Programs E-mail Address: RtanA@amtrak.com Telephone: (202) 906-2272
Services provided	Design and implementation of online participant access to benefit modeling, review of plan amendments requiring modifications to administrative procedures

4.4 Staff Qualifications

All actuary consulting services provided under this RFP will be supervised by Jeff Lane, who is the Chief Actuary of the firm. Jeff has a B.S. in Mathematics from Saint Joseph's University and an M.S. from Carnegie-Mellon University. He is an FSA (Fellow of the Society of Actuaries), an EA (Enrolled Actuary), and an MAAA (Member of the American Academy of Actuaries) with 30 years of experience in the pension field. His resume is attached.

Based on the topic to be analyzed, one or more of the following will support his efforts:

Name	Title	Background	Years of Experience
Salmi Rezvani	Vice President of Business Operations	M.S. Economics, George Washington University PMP Certified, Project Management Institute Scrum Master ITIL Certified	27 years
Ishu Chhabra	Senior Vice President of Operations	M.S. Finance, Loyola College Life and Health Insurance Certificate	20 years
Lou Weintrab	Senior Actuary	B.S. Economics, Wharton School of Economics at the University of Pennsylvania FSA, MAAA, EA	15 years

Howard Small	Senior Actuary	B.S. Actuarial Science, Peter J. Tobin College of Business at St. John's University ASA, MAAA, MSPA, EA	35 years
Cheryl Manson	Senior Actuary	B.A. Mathematics and Economics, Colby College J.D., Chicago-Kent College of Law ASA	33 years
Alan Turk	Senior Actuary	B.S. Business Administration and Actuarial Science, Georgia State University ASA	32 years
Sergey Zelensky	Senior Actuarial Analyst	M.S. Physics, Moscow State University (Russia)	20 years
Venkat Mani	Senior Database Administrator	B.S. Applied Mathematics, Bharathidasan University (India)	9 years

***Salmi Rezvani*, has more than 18 years of experience managing enterprise level projects in both private and public sector and will have oversight of all aspects of the Lynchval/ORSC relationship. She will be the primary contact for ORSC and will coordinate Lynchval's resources ensuring the timely and consistent delivery of all services. Her main role will be to see that you receive the highest quality services that exceed your expectations.**

Ishu Chhabra, has been in the finance industry for over 20 years. Prior positions include being an investment management consultant and an investment advisor with firms such as T. Rowe Price, PriceWaterhouseCoopers, and Sungard. He also has extensive experience in the retirement services industry. He currently works with clients regarding portfolio management, analyzing investments, suggesting appropriate investment mixes, and providing general investment advice.

Louis Weintraub, concentrates on multiemployer plan issues and provides guidance to the PBGC. He provides specifications for enhancements to the PBGC's Single Employer Pension Insurance Modeling System (SE-PIMS). Previously he worked on international plans and multi-national plans.

Howard Small, has extensive background with public plans, being the Administrative Actuary of the New York City Retirement Systems for over five years. In this capacity, Howard oversaw the actuarial valuations for New York City's five retirement plans and performed forecasts and actuarial analyses on proposed legislation, which resulted in modifications to proposed or existing legislation. Examples include an open group forecast of New York City's post-retirement health insurance and a forecast of proposed amendments to the Correction Captains Association retirement plan. He also oversaw and directed an actuarial assumption study and used the results to forecast future contribution requirements to the retirement plans.

Cheryl Manson, is an experienced pension actuary and an attorney. As such she will assist Jeff in the review and interpretation of legislative regulations and proposals and peer review final reports for compliance issues. She reviews our software products to ensure compliance with pension laws, acceptable actuarial methods, and current trends. She will ensure that all your needs and all of Lynchval's internal client standards are met.

Alan Turk, is an experienced pension actuary and actuarial software developer instrumental with our Asset Liability Modeling product. His expertise will be utilized in many of the projects requiring sophisticated projections.

Sergey Zelensky, is an experienced actuarial analyst with experience in single employer corporate plans, multiemployer plans, and government plans. In addition to performing actuarial valuations, he is instrumental in the quality control process for our valuation software releases.

Venkat Mani, is a Senior Database administrator (DBA) with extensive experience designing, coding, testing and supporting next-generation database solutions in Oracle enterprise and SQL Server environments. He is Proficient in an assortment of technologies, including Oracle 9i/10g, DB2, Access, Sybase, MS SQL Server, JDBC, Visio, Apache Web Server, Java, C++, XML. Venkat has over nine years of IT working experiences with a proven background of technical problem solving.

4.5 Methodology

Consulting Services – item(c)

The methodology used will depend on the scope of the project. If the issue is relatively straight forward and requires a short response, it will be attended to directly. All responses are peer reviewed before released.

If the issue is complex, a Statement of Work (SOW) will be provided which outlines the phases of the project and estimated timelines. The SOW will include the actions and responsibilities of Lynchval and, if any, te ORSC. Lynchval will commence work upon approval of the SOW by the ORSC.

If the project is of long duration, or if there are multiple projects involved at a specified time, a project manager will be assigned to coordinate the project(s) and

ensure that the correct staffing is available to perform adequate quality control measures and necessary peer review while meeting completion dates.

Ohio Police and Fire Pension Fund-item (h)

The most recent valuation report (January 1, 2014, January 1, 2015, January 1, 2016, or January 1, 2017 as appropriate) will be reviewed in detail by the Chief Actuary. Funding alternatives suggested by the Chief Actuary will be modeled by an analyst and reviewed by an actuary as well as the Chief Actuary. The valuation report will be reviewed for reasonableness, but will not be duplicated. The actuary will draft the report to be reviewed by the Chief Actuary. An additional actuary may also peer review the results and report in complex situations.

Alternate Retirement Plan – item (i)

Lynchval expects that the prior actuarial report will be provided with the census and asset information used to prepare the report. The census and asset information as of July 1, 2016 will also be provided. Although not necessary, the census and asset information as of July 1, 2014 and July 1, 2015 would be helpful in reconciling the participant data and assets and may lead to insights to changes in the liabilities of the plan and/or changes in required contributions.

Plan provisions are reviewed and benefit projections for test lives are made for the prior and current valuations and certified by an actuary. The valuation system is coded for the prior valuation and the results first compared to the test lives as a quality control measure and then compared to the valuation prepared by the prior actuary for consistency. If there are major differences between our results and those of the prior actuary, we may request sample lives from the prior actuary to identify discrepancies. If the discrepancies are material, we will bring them to the attention of the Director of ORSC. We may also request that our summary of plan

provisions be reviewed by ORSC to ensure that our understanding matches that of ORSC.

When satisfied with the prior results, the July 1, 2016 valuation will be run and verified by an actuary. Any unexpected changes will be investigated by the use of a gain/loss analysis that identifies which assumptions were not met. For example, it may be determined that salaries increased more than expected, more individuals were hired than expected, or fewer participants retired than expected. If there are mandated changes, such as a change in interest rates, the effect of these changes will be documented for the valuation report.

A draft report will be prepared presenting the results. These are reviewed by actuaries and will be presented to the Director of ORSC for review and discussion purposes. The report will be revised as necessary and the final version sent to ORSC.

4.6 Additional Information

All required information has been included in the appropriate section.

4.7 Glossary

The following abbreviations have been used in this proposal:

ASA	Associate of the Society of Actuaries
DBA	Database Administrator
EA	Enrolled Actuary
FSA	Fellow of the Society of Actuaries

HPRS	State Highway Patrol Retirement System
ITIL	Information Technology Infrastructure Library
Lynchval	Lynchval Systems Worldwide, Inc.
MAAA	Member of the American Academy of Actuaries
MAP-21	Moving Ahead for Progress in the 21st Century Act
ME-PIMS	Multi Employer Pension Insurance Modeling System
NCCMP	National Coordinating Committee for Multiemployer Plans
OP&F	Ohio Police and Fire Pension Fund
ORSC	Ohio Retirement Study Counsel
PBGC	Pension Benefit Guaranty Corporation
PERS	Public Employees Retirement System
PMP	Project Management Professional
PPA	Pension Protection Act
SE-PIMS	Single Employer Pension Insurance Modeling System
SERS	School Employees Retirement System
SOW	Statement of Work
STRS	State Teachers Retirement System
TPA	Third Party Administrator

4.8 Cost Information

Consulting Services-item (c)

Since this the scope of requested work is not yet known, we cannot prepare time and expense estimates. A detailed estimate will be provided before each study is performed outlining anticipated personnel hours, expected date of completion, and estimated expenses to be incurred such as travel to ORSC meetings. Since these projects are similar to projects conducted for the PBGC, Lynchval will apply Federal rates extended by our contract. In particular, these rates are:

Staff Member	Hourly Rate
Senior Management/Chief Actuary	\$300
Senior Actuary	225
Actuary	185
Project Manager	165
Senior Analyst	180
Analyst	130
Database Administrator	145
Clerical Staff	80

Ohio Police and Fire Pension Fund-item (h)

The costs to review the actuarial report for the Ohio Police and Fire Pension Fund assume that we are not to duplicate the report, but merely review the results and evaluate available funding strategies and their impact on future contributions to the plan. The goal of this project is to ensure plan stability in the current year and in future years. An estimate of the cost of such a review follows. The "preparation of the final report category" includes any minor revisions suggested by the Director of ORSC. If no revisions are necessary, then the hours attributable to this section will be reduced. Likewise, if major revisions to the report are necessary, the number of hours will increase.

Item	Staff Member	Hourly Rate	Estimated Hours	Estimated Cost
Review of actuarial valuation and preliminary analysis	Chief Actuary	300	4	\$1,200.00
Analysis of funding strategy and alternatives	Analyst	180	30	5,400.00
	Actuary	225	8	1,800.00
	Chief Actuary	300	3	900.00
Draft report	Analyst	180	12	2,160.00
	Actuary	225	3	675.00
	Clerical Staff	80	3	240.00
Review report	Chief Actuary	300	3	900.00
Discussion of results and review of report with ORSC	Chief Actuary	300	1	300.00
Preparation of final report	Analyst	180	5	900.00
	Actuary	225	2	450.00
	Chief Actuary	300	1	300.00
	Clerical	80	4	320.00

	Staff			
Meeting preparation and presentation of report at ORSC meeting	Chief Actuary	300	3	900.00
Total Estimate			82	\$16,445.00

We estimate preliminary results within three to four weeks after the receipt of the final valuation report for the Ohio Police and Fire Pension Fund. Depending on the extent of any requested changes by the Director of ORSC, the final report will be completed one to two weeks after receipt of the Director's comments.

Alternate Retirement Plan-item (i)

The cost of the actuarial valuation for the alternate retirement plan is dependent on the integrity of the data, the complexity of the plan provisions, and the number of plans affected as of the valuation date. The latest valuation information available is as of July 1, 2004 and indicated 4,539 participants, an increase of 1,522 from the prior report. We anticipate that there will be a significant increase in plan participants for the July 1, 2016 actuarial valuation. We estimate the cost of the July 1, 2016 valuation and related report to be:

Item	Staff Member	Hourly Rate	Estimated Hours	Estimated Cost
Import data and data reconciliation	DBA	145	25	\$3,625.00
Review of plan provisions	Analyst	180	12	2,160.00

	Actuary	225	4	900.00
Review of plan provisions and actuarial assumptions	Chief Actuary	300	4	1,200.00
Coding of valuation program, review of test lives	Analyst	180	60	10,800.00
Review of valuation results	Actuary	225	12	2,700.00
	Chief Actuary	300	3	900.00
Draft of valuation report	Analyst	180	12	2,160.00
	Clerical Staff	80	8	640.00
Review of valuation report	Actuary	225	4	900.00
	Chief Actuary	300	2	600.00
Discussion of results and review of report with ORSC	Chief Actuary	300	1	300.00
Preparation of final report	Analyst	180	5	900.00
	Actuary	225	2	450.00
	Chief Actuary	300	1	300.00

	Clerical Staff	80	4	320.00
Meeting preparation and presentation of report at ORSC meeting	Chief Actuary	300	3	900.00
Total Estimate			162	\$29,755.00

We reserve the right to revise this estimate when more detailed information is available. Should the preliminary discussion with the Director result in major revisions, additional fees for these revisions may apply. Depending on existing workflow, we estimate that these preliminary results be available within five to seven weeks from receipt of all necessary valuation data which includes a participant census, financial information, and copies of all plan documents or references to regulations specifying plan provisions. A final report will be delivered within one week of the Director's review unless major revisions are required.

Supplemental Required Information

- 1 Has your firm, or any of its principals, officers, or any affiliate ever been a party to any litigation or allegations concerning fraud, negligence, criminal activity, violations of law or regulations, or fiduciary responsibility?

No, neither Lynchval Systems Worldwide, its affiliates or parent company, nor any employees, principals or officers have been a party to any litigation concerning fraud, negligence, criminal activity, violations or the law, or fiduciary responsibilities

- 2 Will the firm contractually agree to disclose all conflicts of interest that exist or occur and disclose all sources of revenue, affiliations, and details of other relationships that may present conflicts of interest?

Yes, Lynchval Systems Worldwide will agree to disclose any and all conflicts of interests that occur. At the current time, we have no engagements that present conflicts of interest.

- 3 Does the firm have any active contractual agreements with any of the five state retirement systems?

No, Lynchval Systems Worldwide does not have any contracts with any of the five state retirement systems, nor have they had any in the past.

- 4 Has your firm, in the past two years, served as the consulting actuary of any of the state retirement systems? If so, what methods would be used to ensure that no conflict of interest is present in your work with respect to your contract with the retirement system or the ORSC?

No, Lynchval Systems Worldwide has not served as the consulting actuary of any of the five state retirement systems during the last 2 years.

- 5 Does the firm intend to utilize any subcontractors in delivering any elements of investment performance evaluation services? If yes, explain.

No, Lynchval Systems Worldwide does not intend to utilize any subcontractors with respect analyses of investment performance or any other project, study, or analysis presented in this RFP

6 Provide the following information about the firm:

A brief description of the structure of the firm, including the legal form of organization, the parent company, and any affiliated companies, strategic partnerships, and joint ventures.

Lynchval Systems Worldwide is a subsidiary of ArrowPoint Technologies PLC. The principal activity of Arrowpoint Technologies PLC is that of a holding company.

Since 1977 Lynchval has been providing a state-of-the-art Defined Benefit Administration, Benefit Calculation and Valuation System's Platform with a full suite of products serving the total needs of full service pension plans. As a fully integrated pension benefit calculation and administration platform, we are especially unique in the industry, because the pension software industry originated with us.

Additionally, Lynchval also provides domain knowledge specific consulting services, including Actuarial Consulting Services, Pension Conversion, Consulting Services and Government Consulting Services to both domestic and International clients. Through our products and services for our clients, Lynchval is privileged to provide the systems platform of choice for thousands and thousands of plans servicing millions and millions of pension plan participants and pensioners.

Our primary base of operations is located in Chantilly, Virginia with additional locations in Washington, D.C; Richardson, Texas; and Chennai, India. The company offers 5 primary products in concert with the attendant implementation, maintenance, and supportive services. Four (4) of these products are specifically designed for the defined benefits (DB) market; one (1) is focused on Other Post-Employment Benefits (OPEB); and the sixth supports all required testing for DB and DC plans, including cross-testing for multiple combinations of each. Lynchval is the leader in the pension administration market resulting in it being the most widely used product.

Our clientele is highly diverse. They include: third party administrators, large and small corporations, financial services institutions, actuarial firms, federal, state, and local governments, and multiple employer plans. The combination of our direct and indirect client base gives Lynchval our global footprint.

LV Admin is Lynchval's core DB Administration calculation product that integrates the entire product suite. LV Admin is an integrated system of DB administration software that provides one-stop functionality for the administration of both small and large defined benefit pension plans, including cash balance plans. The system provides the calculations and participant statements for those plans. It also instantly retrieves employee data, calculates and provides reports of retirement, termination, death, and disability benefits. LV Admin includes features required by both the government and private sector including strong security and audit trail features. The product is scalable. It is designed to handle high volumes of participants with calculation speeds clients both need and desire.

The LV Web is a web-based calculation product that allows plan participants, sponsors and administrators real time access to benefit estimates 24/7.

Our products are Open Database Connectivity (ODBC) compliant and therefore can read and write to any database on the market today. The LV Admin product system has been strategically designed with an ODBC open architecture to accommodate the best in technology without requiring proprietary database components. Further, it may be used in conjunction with standard report writers including Crystal Reports.

Lynchval continually enhances its products to ensure regulatory compliance with the latest technology, productivity enhancement features, and user friendliness. The company bi-annually provides releases that are focused on regulatory and productivity enhancements.

Lynchval Systems recognizes that the pension/retirement industry is ever changing. As a result, Lynchval continually enhances its existing products and design/build new products for the pension and employee benefits community. In addition,

Lynchval has added numerous consulting support services that greatly benefit our clients with the support services they need.

Supportive consulting services include:

- **Defined benefit administration data conversion and plan set-up services.**
- **Defined benefit administration ASP implementation for DB administration.**
- **Defined benefit actuarial valuation services.**
- **OPEB (Other Post-Employment Benefits) consulting services.**
- **Asset Liability Modeling (ALM) financial services.**
- **Handling of frozen or terminated defined benefit plan services.**

Within the past three years, have there been any significant developments in your organization such as changes in ownership, restructuring, or personnel reorganizations?

There has not been any development in Lynchval in ownership and restructuring within the past three years. As far as personnel reorganization, Manu Mazumdar was hired as the president of Lynchval in August 2011. Manu is widely regarded as a taught leader in the pension and actuarial industry.

7 Do you anticipate any significant structural changes in your organization in the next 12 months?

Lynchval does not anticipate any significant structural changes in our organization in the next 12 months.

8 Discuss rates of staff turnover for the past three calendar years, including the

professional staff that left the firm in each period and reasons for departure.

Lynchval has an exceptionally high retention ratio and is pleased to inform that we have not lost any senior staff in 2012, 2013 and year-to-date in 2014.

- 9 Describe your firm's philosophy as it pertains to providing actuarial services. What role does the firm see itself playing for a client such as the ORSC? What do you see as the value your firm can provide to the ORSC?

Lynchval believes that we are partners with our clients and strive to provide quality and meaningful solutions to enhance our relationship. These solutions vary with the type of client we serve. Many of our clients start by leasing our software products, but turn to us for additional support in the operation of their plan or to stream line their consulting business.

In the case of the ORSC, we envision being the “go to” firm whenever a nonstandard question or project presents itself. Our clients include plan sponsors, third party administrators (TPAs), and government agencies that rely on our expertise.

Since Lynchval is a software based company, we can provide extensive studies that other firms may not be capable of performing. For example, when a change is proposed to a retirement plan, not only can we provide the immediate impact, but using our sophisticated Asset Liability Modeling product we can provide expected results for the next 120 years based on varying sets of assumptions. Our modeling system can project asset portfolios on a deterministic or stochastic basis. As one of the contractors to the PBGC, we can offer additional insight to where the U.S. Congress might be headed, especially if such legislation pertains to public plans.

JEFFREY J. LANE, F.S.A., E.A., M.A.A.A., M.S.

SUMMARY Skilled consultant and creator of innovative modeling tools designed to find solutions for complex business issues, especially related to employee benefits

EXPERIENCE

Lynchval Systems Worldwide, Inc., Chantilly, VA

Chief Actuary (2008 – Present)

- Supervising actuary responsible for overseeing the integrity and development of software related to the Pension Benefit Guarantee Corporation's (PBGC) stochastic modeling system for all single employer plans ("SE-PIMS"), as well as the multiemployer plan system ("ME-PIMS");
- Developed an independent spreadsheet to analyze the universe of multiemployer plans and predict those plans most likely to become insolvent; The spreadsheet explores how various NCCMP proposals would extend the solvency horizon for those plans otherwise scheduled to become insolvent in the next 20 years;
- Initiated research for PIMS modeling on remedial measures trustees of underfunded multiemployer plans were actually adopting, including development of algorithm to predict those plans likely to declare "exhaustion of reasonable measures";
- During first two years at Lynchval led team of seven and was responsible for overseeing the actuarial content of the pension product portfolio as well as client consulting. Determined which tools and products were needed for clients, as well as the directed the initial design and development of these additional products;
- Created an interactive ALM modeling tool that allowed clients to compare the efficiency of alternative portfolios, using information gleaned from the Schedule SB, featuring easy user-navigation and generating an assortment of customized graphics ("ALM-lite"). This stochastic and deterministic forecasting tool relied on capturing the underlying duration of liabilities via key demographic statistics. Tool was purchased and implemented by an investment banking firm. The software reproduces the IRS full yield curve from 9 modeled spot rates, generates the underlying annuity factors with custom-built VBA functions, and performs up to 1,300 valuations per forecast year;
- Developed an independent ALM seriatim valuation benchmark to perform quality assurance for Lynchval's main ALM software product. This validation tool identified and helped fix several bugs in the firm's flagship ALM product;
- Produced mortality experience study for the PBGC (2011 updated study) which is used for all terminated plans.

Milliman Inc., Washington, DC

Research Actuary (2007 – 2008)

Lead Consultant (1992-2007)

- Acted as national point-person for client-related issues and questions from firm's consultants and actuaries. Responsible for keeping consultants apprised of ongoing developments in legislation through webinars, seminars and client action bulletins;
- Developed software tools showing the impact of legislative and accounting changes, including PPA'06 and FASB-158. Developed Executive Cash Balance Plan model with built-in Visual Basic functions to determine lump sums and annuity values pre- and post-PPA'06. Also developed IRC § 415 automated calculator reflecting final 2007 regulations;
- Performed as lead consultant for a dozen corporate and not-for-profit plans. Developed a plan-redesign tool to assist clients in evaluating the impact on both aggregate costs and

individual participant benefits when shifting from defined benefit plans and choosing from an array of customized defined contribution plans;

- Advised Corporate and Not-for-Profit's on diverse administration and benefit cost issues. Developed cost/expense projection models as well as asset/liability matching models for forecasting funding and plan termination shortfall under changing interest rate environment.
- Managed William's MONEY magazine project--spearheading effort to collect comprehensive benefits information from Fortune 300 companies. Developed algorithms to produce financial value of each benefit program that helped rank programs for MONEY's annual article, "America's Best Company Benefits"

- Assisted client with redesign of post-retirement medical program and consideration of cash and accounting costs under alternatives explored.

- Analyzed and advised clients on sufficient and distress plan termination for defined benefit plans, including helping PBGC with the plan termination of a 40,000+ participant case involving complex maximum guarantee and asset allocation calculations. Communicated and advised PBGC attorneys on interpreting plan document language and bargaining agreements. Also assisted PBGC with analyzing companies on the brink of distress termination.

Howard Johnson & Company, Washington, DC *Consultant (1991-1992)*

- Led marketing effort to create new pension business in start-up office. Spearheaded introductory meetings with Fortune 1000 firms and secured major client.
- Developed benefit calculation program and performed ongoing valuation, along with various consulting projects for three area clients.

Towers Perrin, Washington, DC *Consultant (1989-1991)*

- Worked on project team consulting to several Fortune 500 firms. Performed post-retirement medical valuations and assisted in valuing cost impact of COLA under CSRS for United States Postal Service. Completed an experience analysis for large-area insurance company.

A. Foster Higgins / Winklevoss & Associates, Princeton/Philadelphia *Actuarial Consultant (1984 - 1988)*

- Advised firm-wide users and maintained national post-retirement medical valuation software system for firm.
- Performed pension forecast valuations for several Fortune 500 firms and large public retirement systems, counseled clients regarding decisions about long-term funding objectives.

EDUCATION

Master of Science in Statistics, Carnegie-Mellon University
Bachelor of Science in Mathematics, Saint Joseph's University *Summa Cum Laude*
Level III candidate in CFA program

PROFESSIONAL

Fellow of the Society of Actuaries
Enrolled Actuary
Member of American Academy of Actuaries



Pension Benefit Guaranty Corporation
Actuarial Services Division

2011 Mortality Experience Study

Lynchval Systems Worldwide Inc.

May 20, 2011



Lynchval Systems Worldwide Inc.

PC Solutions for Benefit Professionals

May 20, 2011

Ms. Joan Weiss
Chief Valuation Actuary
Pension Benefit Guaranty Corporation
1200 K Street, NW
Washington, DC 20005

Dear Ms. Weiss:

Lynchval Systems Worldwide Inc. is pleased to present our final report on the 2011 Mortality Study we performed for PBGC. The study presents our recommendation for mortality tables to be used in producing financial statements for FY 2011, as well as future fiscal years, until such time as a subsequent mortality study can be conducted.

The study was prepared in accordance with generally accepted actuarial methods. We have performed such tests and reviews as we believe necessary to ensure the accuracy of our results.

I, Jeffrey J. Lane, am the Chief Actuary for Lynchval Systems Worldwide. I am a member of the American Academy of Actuaries, a member of the Society of Actuaries and an Enrolled Actuary, and I meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained in this report.

If you have any questions regarding this report, please feel free to contact me.

Respectfully Submitted,

Jeffrey J. Lane, FSA, EA, MAAA

cc: Bill House
Sara Tezera

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1 Executive Summary

The purpose of this study is to provide a basis for selecting the appropriate mortality tables for measuring the liabilities for PBGC financial statements in fiscal year 2011 and beyond. The basic criteria used to recommend tables for fiscal year 2011 and beyond are consistent with the criteria used in prior years' studies, and are considered accepted actuarial practice. The recommended tables must:

- (i) properly reflect, or "fit", PBGC mortality experience;
- (ii) incorporate a target margin, or cushion, of 10% relative to the fitted baseline tables;
- (iii) accommodate the continued force of mortality improvement during participants' lifetimes.

The margin of 10% relative to the fitted table is intended to account for deviations in the sample experience data and capture changes in the future underlying demographics, such as the change in industry mix of the PBGC population.

The 2011 mortality study was based on 3,675,717 life years of exposure and 113,053 deaths occurring during eight fiscal years, 2002 through 2009 inclusive, of which approximately 68.5% was male experience. Unlike in prior years, the male and female experience rates were independently used to derive the mortality recommendations for FY 2011. This change in approach was due primarily to the increase in available exposure data (life years) associated with healthy females. For the 2004 mortality study, there were 508,081 healthy female life years of exposure and 11,388 female deaths, while the 2011 study examined 1,142,289 healthy female life years and 29,393 female deaths.

The recommended tables were derived by fitting standard industry published tables to PBGC experience, after adjusting the latter to reflect a 10% margin (dividing the underlying experience rates by 1.1). The "margin" provides a cushion for: (i) random deviations of the sample data; and (ii) future mortality experience improving more than anticipated. The published table with the best overall fit to PBGC experience for healthy males, with the 10% margin, is the RP-2000 Combined Healthy (CH) Male table, projected to the current valuation year under Scale AA for males, and then set back one year. Similarly, the table with the best overall fit to PBGC healthy female experience (with the 10% margin) is the RP-2000 Combined Healthy Female table, projected by Scale AA for females to the current valuation year and set back one year. This table was explicitly fit to PBGC healthy female experience and coincidentally merits a similar set-back as applied for the male table. Lynchval determined the optimal published table fit by performing least squares analysis.

Lynchval also analyzed the PBGC experience for disabled males, split between those disabled participants satisfying the Social Security definition of disabled and those disabled participants who did not satisfy the Social Security definition of disabled. A disabled participant under Social Security's definition is incapable of gainful employment. The exposures for disabled females were insufficient to study

independently — they represented 0.5% of total exposures with 518 deaths over the eight year study period. Lynchval concluded that the adjusted published tables that were recommended for male disabled participants also be used for PBGC female disabled participants, with the noteworthy distinction that we reference the published table's corresponding female rates, rather than the table's male rates.

For disabled male participants meeting the Social Security definition, Lynchval concluded that the published (healthy) GAM-94 table for males continues to provide the best overall fit to PBGC experience when adjusted by the margin. However, after projecting the GAM-94 mortality rates to the current exposure or valuation year under Scale AA, Lynchval set the rates forward 6 years (versus the current PBGC disabled table's usage of a 7 year set forward).

For those disabled male participants not meeting Social Security's definition, Lynchval concluded that the projected GAM-94 table for males (as described above) and adjusted with a 3-year set forward provided the best overall fit to PBGC experience with the underlying margin embedded.

Mortality studies have consistently shown that mortality rates continue to improve over time. In the current tables employed by PBGC through the date of this study, the continued application of mortality improvement in future years is reflected by projecting mortality for a number of years beyond the current valuation year, such years being based on the duration of the PBGC liabilities computed in the preceding fiscal year. Lynchval believes this "static" projection method adequately approximates future mortality improvement over the average participant's future lifetime. Thus, the actual table used in a given fiscal year will reflect both the mortality improvement to that year (from the applicable base year for the published table) and beyond the current year based on the average duration computed in the preceding September 30 valuation (rounded to the nearest whole year). The mortality improvement factors are based on the published "Scale AA" factors.

There are two ways to reflect mortality improvement beyond the current year: (i) providing generational mortality improvement so that each birth-year cohort has its own table; or (ii) projecting rates at all ages to a uniform future year ("static" projection). Acknowledging the dramatic change in the PBGC software architecture that would be necessary to accommodate generational mortality improvement, combined with the modest increase in calculation refinement, Lynchval is comfortable recommending the static projection method.

The recommended tables presented in this report reflect these various requirements and Lynchval proposes their use for producing financial statement valuations. These tables may not be appropriate for other uses.

Table 1 on the next page summarizes the mortality standards that this study recommends for use in valuing various groups of participants beginning with FY 2011.

Table 1 – Summary of Mortality Table Recommendations for FY 2011

	(1)	(2)	(3)
Valuation Group	Published Mortality Table	Projection Years under Scale AA ¹	Set Forward (+) or Back (-)
Healthy Male	RP-2000 Combined Healthy (CH) Males	21 years = 2011 - 2000 + duration	-1
Healthy Female	RP-2000 CH Females	21 years	-1
Disabled Male Meeting Social Security Definition	GAM-94 Static Males (Healthy)	27 years = 2011 - 1994 + duration	+6
Disabled Female Meeting Social Security Definition	GAM-94 Static Females (Healthy)	27 years	+6
Disabled Male Not Meeting Social Security Definition	GAM-94 Static Males (Healthy)	27 years	+3
Disabled Female Not Meeting Social Security Definition	GAM-94 Static Females (Healthy)	27 years	+3

¹ The mortality improvement is projected beyond the current fiscal year (under Scale AA) by the calculated duration for the preceding fiscal year (10 year duration for FY10). The additional ten years of improvement reflects the continued force of mortality improvement dynamically over time relative to a snapshot of experience data.

Basic Mechanics in Developing Mortality Rates Summarized in Table 1

To compute the recommended mortality rate at a particular age “x”, using the specifications in Table 1:

1. Obtain the mortality rate $q(x)$ from the mortality table listed in Column (1) in Table 1;
2. Obtain the annual mortality reduction rate at age x , $r(x)$, from the published Scale AA table;
3. Compute the total static mortality improvement factor, created by raising the expression, $(1.0 - r(x))$ to the power “P”, where P is the number of years in Column (2) shown in Table 1;
4. Multiply the mortality rate, $q(x)$ from Step 1, by the total static mortality improvement factor developed in Step 3, to produce an improved or projected mortality rate, $q'(x)$;
5. Set the projected $q'(x)$ from Step 4 forward or back by the number of years in shown in Column (3) of Table 1.

At the vast majority of ages, the recommended tables have lower mortality rates than the current tables. Therefore, updating the mortality tables, without any other changes, would increase PBGC’s liability.

Since PBGC determines its valuation interest rates so that the annuity values produced are consistent with current market annuity prices, most of the liability impact of the mortality assumption change will be offset by a change in the valuation interest rates. However, it is still important for the mortality tables to reflect expected PBGC experience because the mortality tables are also employed by PBGC in projecting the evolving liabilities in future years (ASD develops multi-employer cash flows for future years and the Policy Research and Analysis Department (PRAD) analyzes future claims from both multi- and single employer plans). Also, under Actuarial Standard of Practice Number 35, Measuring Pension Obligations, actuaries are required to use valuation assumptions that are individually best-estimate.

2 Selecting Appropriate Tables to Match Updated PBGC Mortality Experience from 2002-2009

2.1 Background

The purpose of this study is to provide a basis for selecting appropriate mortality tables to be used when measuring liabilities for purposes of PBGC financial statements for Fiscal Year 2011 and beyond. A mortality study was last performed in September 2004, resulting in adoption of the current tables used to perform PBGC's valuations.

The tables selected during the 2004 study were utilized for financial statement valuations for Fiscal Years 2004 through some of the quarterly closings for FY 2011. They are derived from the Group Annuity Static Mortality tables of 1994, published with an original Task Force prescribed margin of 7%. This original table, produced by the SoA UP-94 Task Force, is also known as "GAM-94 Static". For PBGC valuation purposes, the gender-specific GAM-94 Static tables were modified to accommodate expected mortality improvement, projecting under Scale AA a number of years beyond the current valuation year based on the duration of the liabilities determined by the previous September 30th valuation.

The rates were then set forward, at all ages, by one year for healthy participants, and seven years for disabled participants. A set-forward of one year advances the baseline ages one year, so that the original table rates are all moved down one age (e.g., the rate originally applicable for a 66 year-old participant is assumed to be applicable to a 65 year-old). Generally, the effect of a set-forward is to "worsen" (increase) mortality rates, as contrasted with the improvement effect of the aforementioned projection step.

The primary focus of the analysis in this study was to assess the continued appropriateness of the current mortality tables for PBGC valuation purposes, and to recommend more appropriate tables to the extent necessary.

2.2 Prior Study vs. Current Study

The current "GAM-94 Static-based tables" were recommended in the conclusions of the 2004 PBGC Mortality Experience Study. As noted, these tables have been employed by PBGC for annual valuations from FY 2004 through several of the quarterly closings for FY 2011. The results of the previous study were presented in a report dated September 9, 2004.

The 2004 study was based on 1.7 million life years of exposure (73% of that exposure being male participants), measured during the eight fiscal years from 1994 through 2001. In contrast, the 2011 study involves nearly 3.7 million life years, measured during the eight fiscal years from 2002 through 2009. Sixty-nine percent of this study's exposure is based on male mortality experience.

There also has been a shift in the underlying participant demographics by industry. For example, from 2003 to 2009 there was a shift in the percentage of new claims by sector: the Primary Metals sector's share of new claims dropped from 53.5% to 27.2%, while the Air Transportation claims grew from 16.7% to 32.9% of total claims. This shift alters the industry composition of the population whose plans are trusted by PBGC.

In the 2004 study, Lynchval explored an RP-2000 based table, as well as the eventually recommended table based on GAM-94 Static rates. RP-2000 is the only mortality table derived exclusively from retirement plan data, as opposed to insurance company group annuity mortality experience. Furthermore, it employs data from a median year or "central year" of 1992, while the central year of the GAM-94 table is 1988.

However, the 2004 Experience Study concluded that the GAM-94 based table provided a better fit to PBGC's mortality experience from 1994-2001.

This study recommends using RP-2000 tables for healthy participants, projected by Scale AA, and applying a one year set back. These tables provide a better fit to the 2002-2009 margin-adjusted experience data (dividing experience rates by [1+10% margin]) than the GAM-94 Static table provides. The PBGC's 10% margin is implemented differently than the SoA. Under the SoA standard a "10% margin" would entail adjusting all rates by multiplying by .9 (=100% - 10%).

The underlying RP-2000 Combined Healthy table is projected using Scale AA to each of the study years associated with the PBGC experience data (years 2002 through 2009), and then set back 1 year. The resulting set of rates (or curve) closely follows the pattern of PBGC margin-adjusted exposure rates by age. The recommended rates are further adjusted for future mortality improvement, projecting under Scale AA by the duration (rounded to the nearest year) computed at the prior 9/30.

Also, because the 2004 study predominantly reflected male mortality experience, the female experience mortality table was not explicitly fitted. Rather, adjustments analogous to those used for the male population (i.e., the same approach used to fit the GAM-94 Static male table to 1994-2001 male PBGC experience was applied to the GAM-94 Static female table). Thus, the female table that was recommended for the fiscal 2004 valuations and beyond was actually produced by projecting the GAM-94 Static table for females 10 years² beyond the applicable fiscal year and then setting the ages forward one year – the same projection and set-forward periods that had made it possible to fit the male experience. The resultant female table generated a female mortality margin of 22% in 2004 (the derived female table rates were on average 78% of PBGC's female experience, versus the 91% target associated with a 10% margin). This was deemed acceptable in the prior study because the experience was predominantly male (i.e., insufficient female experience).

The 2011 mortality study analyzed over 1 million life years of female exposure and observed over 29,000 female deaths during the eight year study period. As an anecdotal illustration of the credibility of the female data, the Internal Revenue Service currently

² The duration of the liabilities from the prior 9/30 valuation was 10 years.

requires a plan to incur at least 1,000 deaths, by gender, during a 4 year period in order to employ its own experience table for valuations under PPA, rather than using a mandated RP-2000 based table. Therefore, the new approach which analyzes the female experience separately is appropriate.

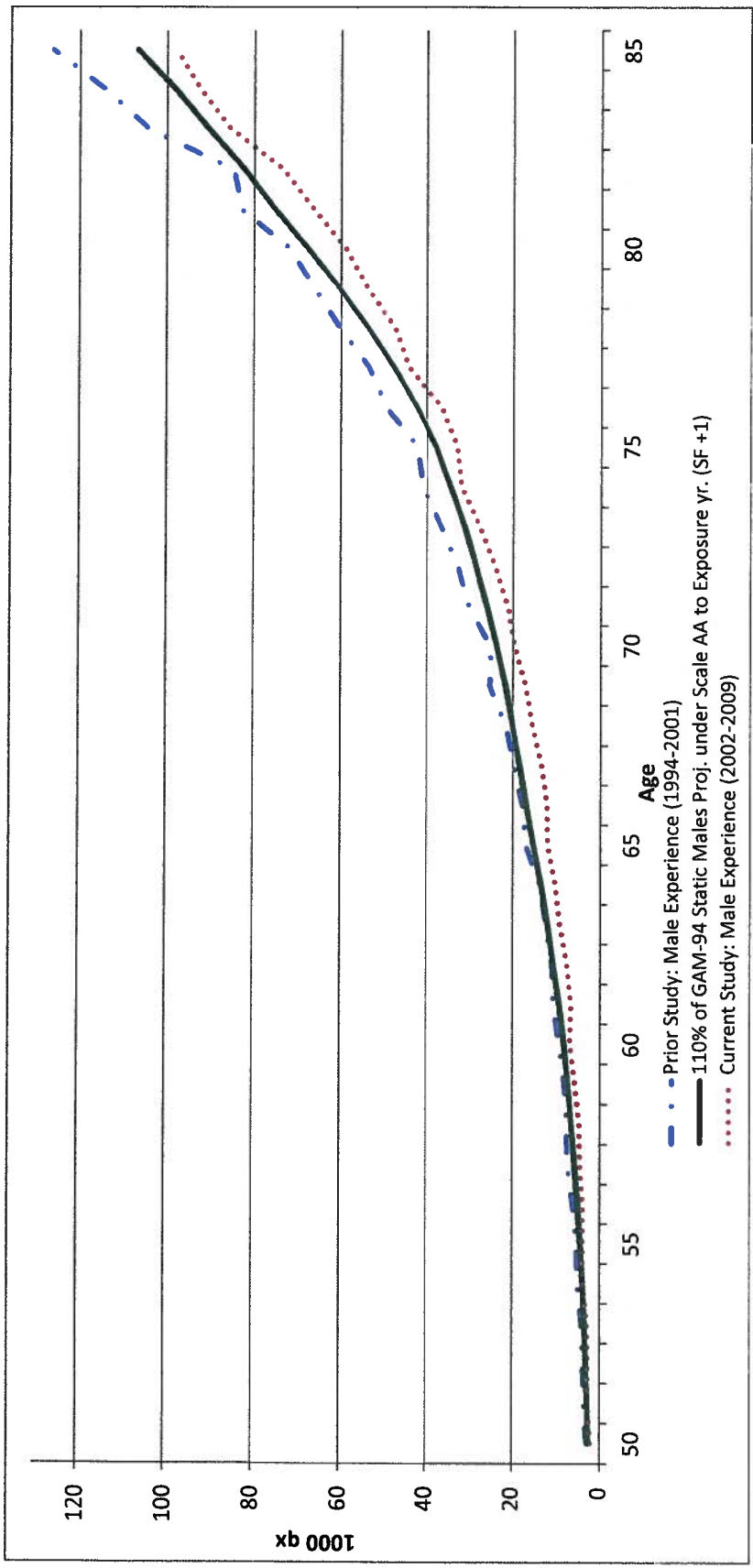
Also, the spread weight methodology that was employed in the 2004 study, for weighting mortality experience across ages, was eliminated with this study. Rather, the current study weights mortality experience by the benefit amount. The spread weight method is designed to give additional weight to mortality rates at later ages, overstating the representation of those data points with the least amount of exposure.

Chart 1 below shows the improvement in PBGC's mortality experience for healthy males, between the prior study's period of 1994-2001 and the current study period of 2002-2009. The experience rates shown in Chart 1 are not adjusted for the 10% margin. A comparison of the healthy male mortality experience from the 2004 study with the current study's experience shows that healthy male mortality rates have decreased to approximately 70% of those from the prior study.

It is also apparent from the chart that the fitted healthy male mortality standard from the 2004 study (GAM-94 Static male table projected to 2006 and set forward 1 year with the inherent margin of 10% removed) is inadequate in capturing updated mortality experience. The mortality rates from the GAM-94 Static male table projected to 2006 (the central year of the exposure data), and set-forward 1 year and then adjusted by the 10% margin³, are well above the experience rates from 2002-2009. If the old standard were still valid, the line for this GAM-94-based table should overlay the experience line in the chart fairly closely.

³ The GAM-94 Static table set forward one year, as used by PBGC, had a 10% built in margin. Using that table to calculate expected deaths would understate the expected mortality by 10%.

CHART 1: Comparison of Healthy Male Experience from Prior Study (1994-2001 data) vs. Updated Study (2002-2009 data)



2.3 GAM-1994 Static vs. RP-2000 Mortality Tables

The GAM-1994 Static table was developed by a Society of Actuaries (SoA) Task Force assigned with developing mortality tables suitable for establishing reserves for group annuity contracts. This Task Force published tables in 1995. These tables were based in part on insured group annuity mortality experience collected from eleven large insurance companies during the period 1986-1990 (this was the source of the core mortality information that is used to develop rates for ages 66-95). Rates for ages prior to age 66 were developed from participants in the Civil Service Retirement System (CSRS), blending CSRS annuitant and non-annuitant data for ages 51-65. The smoothed experience rates were projected from the central year of the study, 1988, to 1994 using Scale AA⁴ to produce the GAM-94 Basic table. The Task Force applied a margin of 7% to the Basic table in creating the GAM-94 Static table. The 7% reduction in mortality rates (the “margin”), provides a cushion for random deviation and to account for deviations in the underlying census due to white collar / blue collar mix, high income / low income annuitants and geographic mix.

The Retirement Plans Experience Committee (RPEC) initiated a study in 1995 at the request of the SoA. This study produced the RP-2000 table – as noted, the only table whose rates are based exclusively on retirement plan mortality experience, as opposed to insurance group annuity contracts. The underlying data consisted of mortality experience from over 100 pension plans during plan years 1990 through 1994, reflecting nearly 11 million life-years of exposure. Nearly 40% of the total exposure came from the Transportation sector (currently the source of about 33% of PBGC’s claims). Scale AA⁵ was again employed in projecting mortality rates under this table. The RP-2000 study produced separate tables for disabled participants – but not separated between those disabled participants who meet the Social Security’s definition of disability (incapable of obtaining substantial gainful employment) and those who do not satisfy the Social Security’s definition of “disabled”.

2.4 Testing the 2004 Mortality Recommendations

Lynchval performed a review of the fit of the current tables used to reflect healthy and disabled mortality to the respective rates from the updated experience gathered from 2002-2009 and adjusted for the 10% margin.

The standard mortality tables such as GAM-83, GAR-94, UP-94 and RP-2000 were developed using amounts rather than lives. Such an approach results in tables that are liability weighted, giving greater emphasis to the experience of participants with larger liabilities. In a similar manner, this analysis utilized benefits-weighted exposures to derive the mortality recommendations rather than counts.

Chart 2 (males) and **Chart 3** (females) show the healthy mortality experience, adjusted for the 10% margin, contrasted with the current and recommended mortality tables.

⁴ Scale AA was developed for use with the GAM-94 tables.

⁵ The RPEC study showed that the rate of mortality improvement had not changed sufficiently from Scale AA to warrant developing a new projection scale.

It can be seen that the current mortality assumptions no longer provide a good fit for PBGC's experience. The results indicated that there was a need to change the mortality table to fit the participant experience more closely.

2.5 Improved Fit to PBGC Updated Experience for Healthy Males and Females Using RP-2000 Based Tables

Chart 2 compares: (i) PBGC healthy male experience mortality from 2002-2009, adjusted by the margin; (ii) the RP-2000 Combined Healthy Male table, projected under Scale AA to each exposure year and then set back one year (the recommended baseline healthy male table); and (iii) the current baseline study table derived from GAM-94 Static male rates, projected to each exposure year in this study (2002 – 2009), and set forward one year.

Similarly, **Chart 3** compares: (i) PBGC healthy female experience mortality from 2002-2009 (adjusted by the margin); (ii) the RP-2000 Combined Healthy Female table, projected under Scale AA to each exposure year and set back one year (the recommended baseline healthy female table); and (iii) the current baseline study table derived from GAM-94 Static female rates, projected to each exposure year in this study (2002 – 2009), and set forward one year.

Lynchval performed a least-squares fit of the RP-2000-based tables to the PBGC experience in order to determine the adjusted published table which optimally fit the margin-adjusted PBGC mortality experience.

CHART 2: Healthy Male Mortality Experience (with margin) vs. Current and Recommended Tables

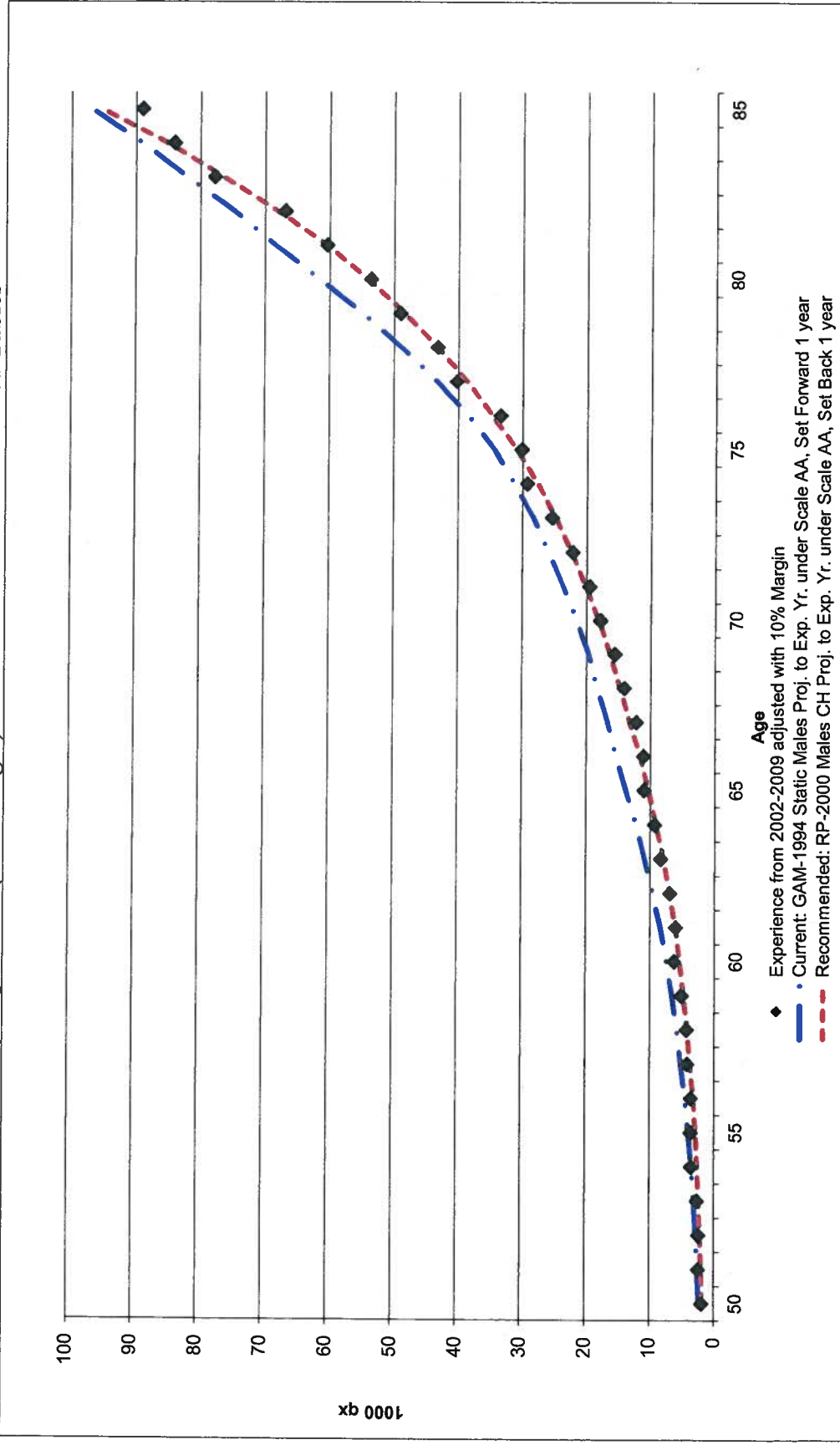
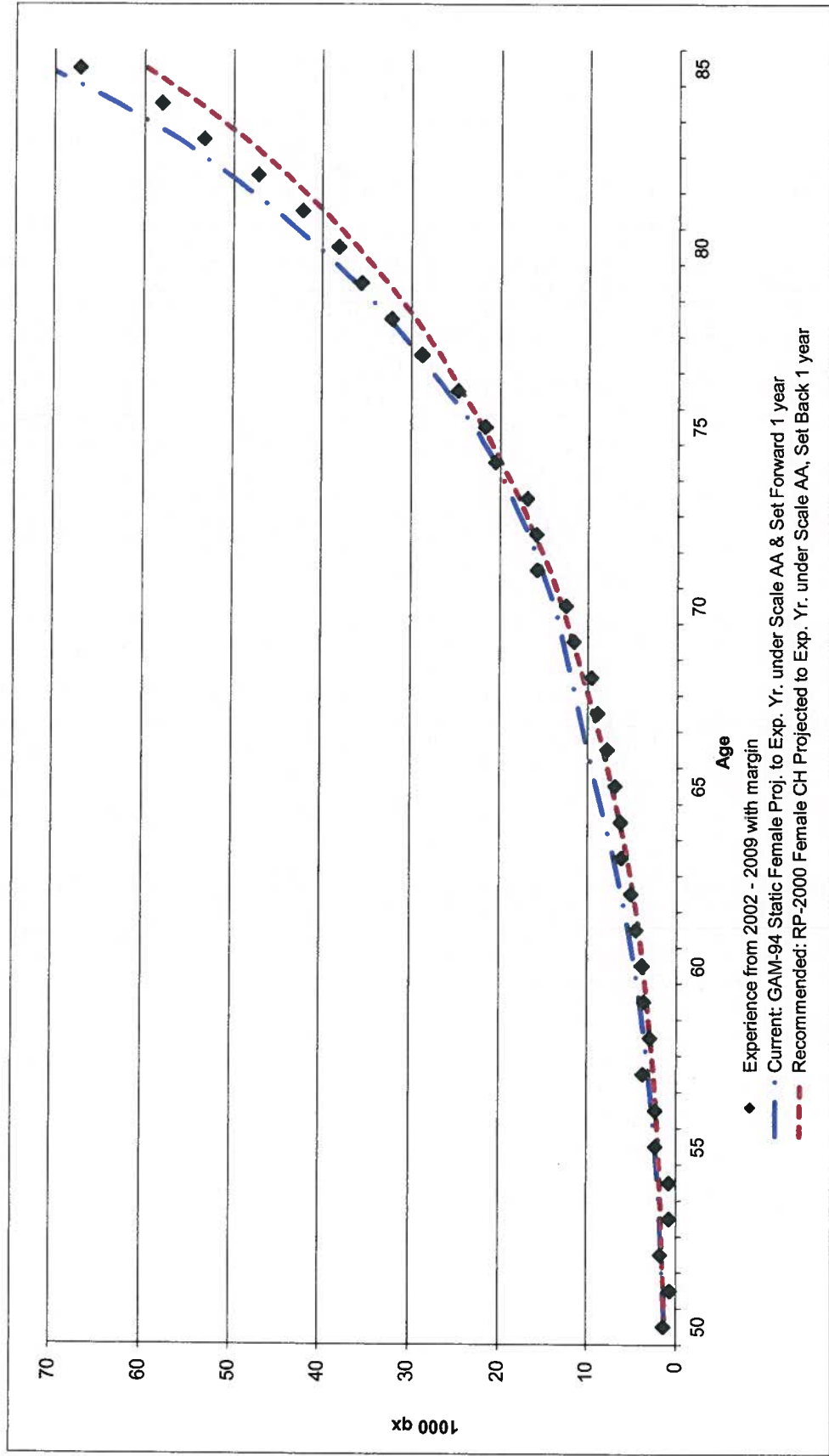


CHART 3: Healthy Female Mortality Experience (with margin) vs. Current and Recommended Tables



2.6 Fitting Published Mortality Tables to Updated PBGC Experience for Disabled Lives, Separated by Social Security Disabled Status

The 2004 study also examined the appropriate disabled mortality to employ for FY 2004, and beyond. The 2004 PBGC Mortality Experience Study concluded that since the mortality results for disabled participants who meet the Social Security definition of disability did not differ significantly from the rates for disabled participants not meeting the Social Security definition, a single table would be employed for valuing both groups of disabled participants. The Social Security Administration defines a Social Security “disabled” annuitant as someone who is incapable of obtaining any gainful employment due to his/her disability. The current PBGC disabled tables, applying to both groups of disabled participants, were derived from the GAM-94 Healthy Tables projecting rates to the exposure year under Scale AA, but increasing the number of set-forward years (from 1 year for healthy participants to 7 years for disabled participants).

Contemporary published disability mortality tables are scarce – especially tables separated by Social Security disabled status. In particular, the prescribed disability mortality table under Revenue Ruling 96-7, permitted for computing the IRS target/current liability, exclusively applies to Social Security disabled participants. Also, the RP-2000 disability mortality tables were developed without distinguishing between Social Security and non-Social Security disableds.

Lynchval recommends that separate mortality rates be fitted for those disabled participants (“disableds”) meeting the Social Security definition versus disableds not meeting the Social Security definition. **Chart 4** below shows the difference in PBGC male disabled mortality experience (before any adjustments for margin) from ages 50 through 85 during the period 2002 – 2009, with experience rates separated by Social Security disabled status (i.e., Social Security disabled vs. non-Social Security disabled). Please note that there is a material difference in mortality rates between the two groups.

Lynchval attempted to fit both the RP-2000 Male Combined Healthy table and the RP-2000 Male Disabled table to the PBGC male disabled experience, but concluded that the GAM-94 Static Table (with appropriate adjustments) was a better fit to PBGC male disabled experience than any of the RP-2000 tables. Furthermore, using the RP-2000 disabled table would preclude reflection of any mortality improvement over time, as the only scale available for modeling improvement, Scale AA, was produced by studying the mortality patterns of healthy participants.

Lynchval eventually concluded that the GAM-94 Static Male Table, projected to the exposure year under Scale AA and with an appropriate set-forward, optimally fit the margin-adjusted male disabled experience (both for those meeting and not meeting the Social Security definition of disabled). Lynchval experimented with various set-forwards and set-backs to the projected GAM-94 rates and concluded that those male disableds meeting the definition of Social Security disabled merited a set forward of 6 years. For those male disableds who did not satisfy the Social Security definition, a set forward of 3 years was found to be appropriate.

Since the female disabled data were not sufficient to have an independent study, the adjustments made to the GAM-94 Static Male table to fit the table to male disabled experience were similarly applied to the GAM-94 Static Female table in order to derive the female disabled tables (both Social Security and non-Social Security disabled tables). There is a modest probability of Social Security disabled participants recovering to non-Social Security disabled status. However, Lynchval believes the probability is modest enough to ignore and that recovery probabilities diminish with age.

Chart 5 below shows the results of Lynchval's efforts to fit the PBGC male Social Security disabled mortality experience (adjusted for the margin) to the GAM-94 Static Male table, projected to the exposure year under Scale AA, with all rates set forward 6 years. Lynchval also shows the 2004 Fitted Male disability table, based on projected GAM-94 Static Males set forward 7 years (the current baseline standard for disableds who meet the Social Security definition of disabled).

Chart 6 below shows the results of Lynchval's efforts to fit the PBGC disabled male mortality experience, for those not meeting the Social Security definition, to the projected GAM-94 Static table with rates set forward 3 years (the recommended baseline table) versus the current baseline standard based on the projected GAM-94 Static table with rates set forward 7 years.

CHART 4: PBGC Disabled Male Mortality Experience from 2002-2009

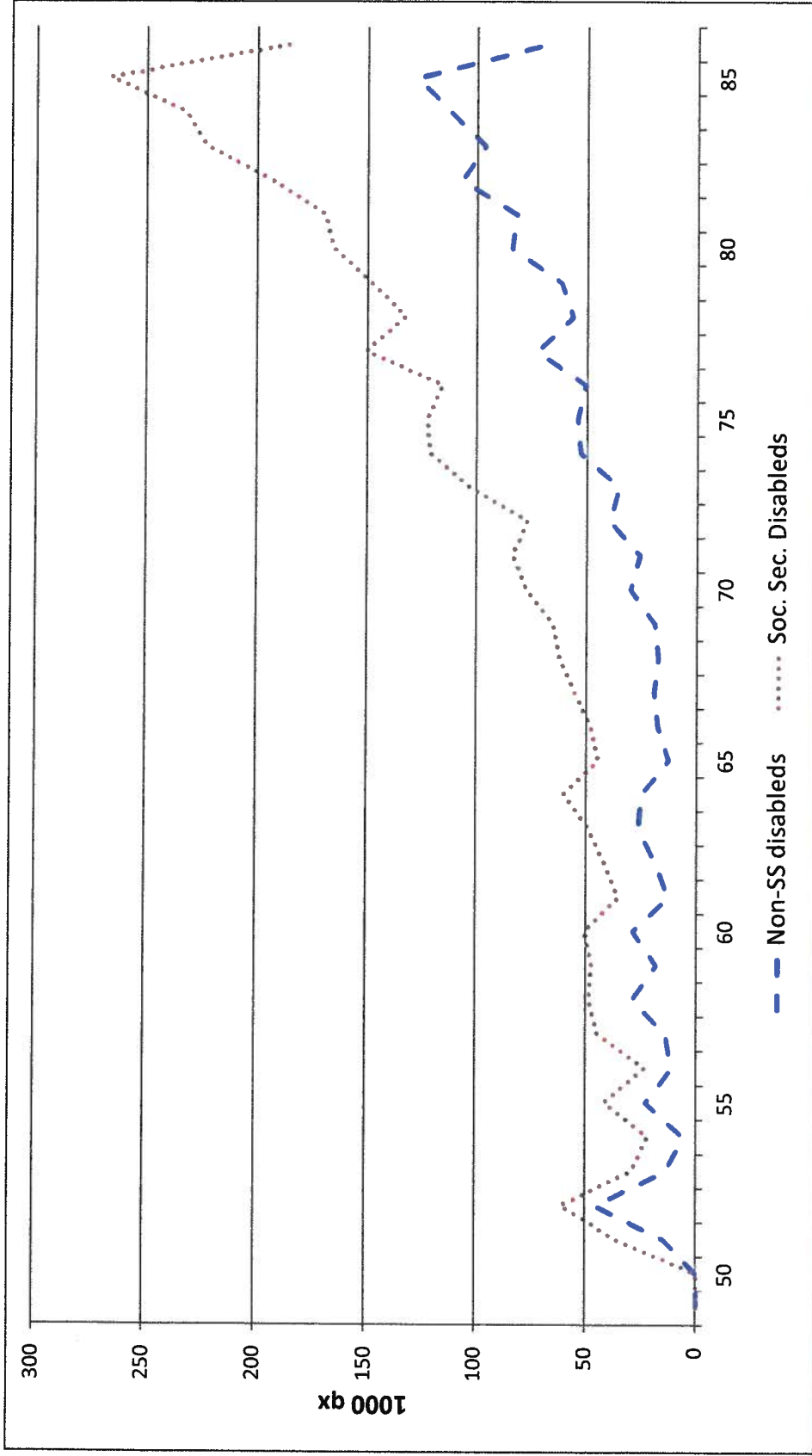


CHART 5: Disabled Male under Social Security Definition -- Mortality Experience from 2002 - 2009 vs. Current and Recommended Tables

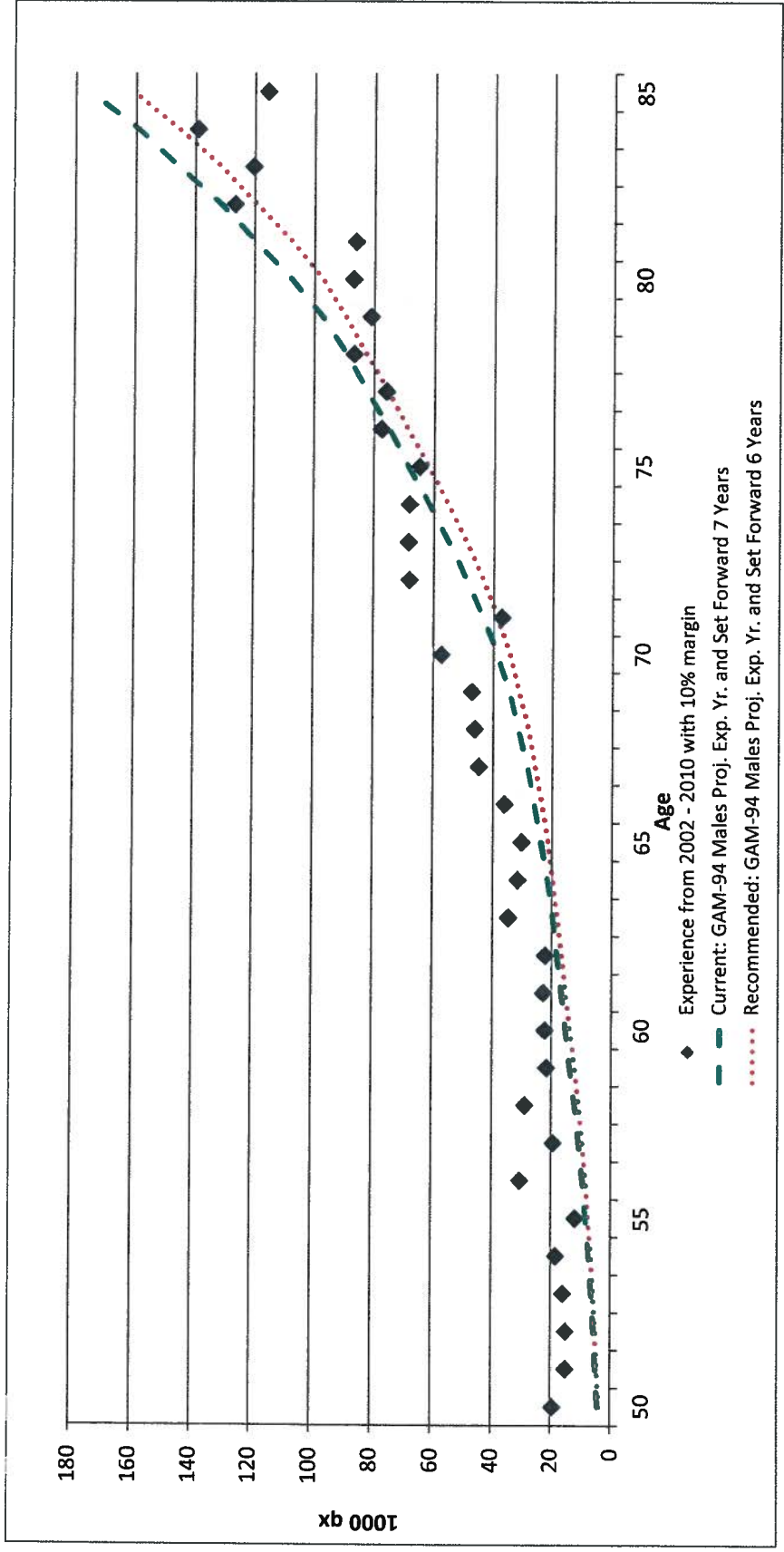
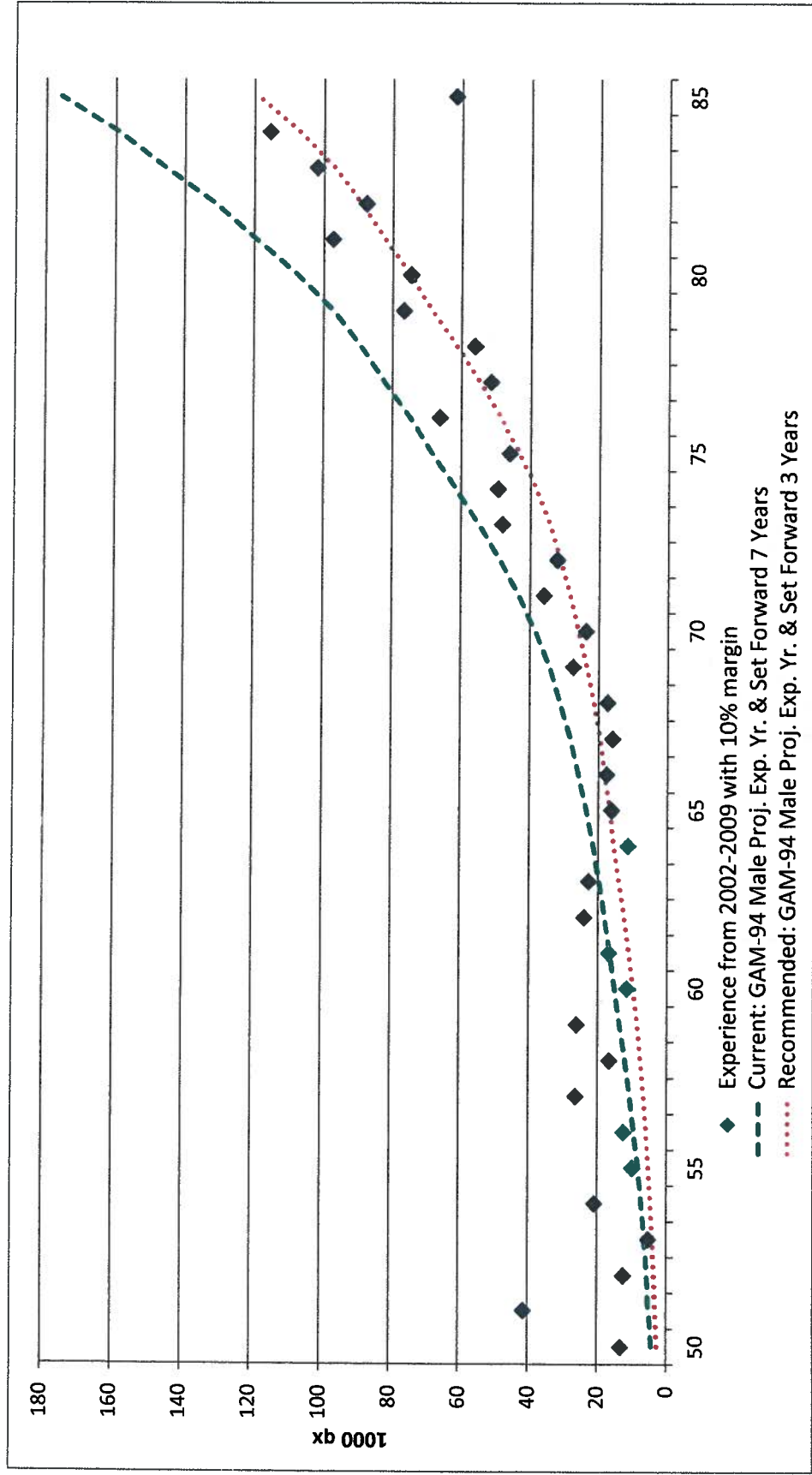


CHART 6: Disabled Male NOT under Social Security Definition – Mortality Experience from 2002 - 2009 vs. Current and Recommended Tables



3 Deriving the Recommended Tables

3.1 Adjustments Required of the Fitted Tables to Derive the Final Recommended Valuation Tables

Section 2 set forth the methodology for adjusting published tables to match PBGC's underlying experience for healthy participants, Social Security disabled participants and non-Social Security disabled participants (all adjusted for the margin). The final step to produce the recommended tables was to reflect the fact that the mortality rates will continue to improve with elapsed time. Thus, on average, a 40-year-old today would have a higher probability of survivorship from age 60 to 61 than a current 60-year-old could expect, as 20 years of medical advancement would be available to the future 60-year-old. To this end, Lynchval further "improved" (reduced) the rates from the Tables recommended in Section 2 by projecting rates for an additional period beyond the current fiscal year. The additional mortality improvement period is the computed duration of liabilities from the prior 9/30 valuation (rounded to the nearest year).

3.2 Static versus Generational Mortality Improvement

The SoA Task Force which produced the 1994 Group Annuity mortality table strongly believed that the use of generational mortality improvement was appropriate when developing reserves for Group Annuities — especially given the empirical evidence of continuous improvements in mortality over time. Generational tables entail having a separate mortality table for each birth year cohort. Creating separate tables by year of birth involves a significant overhaul of most pension software systems — as they must transform from a single mortality table and vector of annuity factors, to a structure which accommodates 80 - 100 tables per year and two-dimensional annuity arrays. This presents a huge architectural redesign project, even for the most flexible pension software systems. A viable alternative is to project the entire table of rates to a uniform year in the future (the "static" mortality projection approach). The Retirement Plans Experience Committee (RPEC) that developed the RP-2000 tables states:

The RPEC recommends that, in view of the long history of improvement in non-disabled mortality rates in all of these sets of data, pension valuations should take trends in long term mortality improvement into account. From a theoretical standpoint, the RPEC believes that the use of generational mortality improvement, as in the GAR-94 table, is an appropriate way of reflecting this improvement. In cases where it is not material or cost effective to incorporate generational mortality improvement into a calculation, the actuary should project mortality improvement on a comparable static basis.

Scale AA was developed in conjunction with the publication of the 1994 Group Annuity Tables, derived from blending longitudinal improvements in CSRS data and Social

Security data. The improvement factors from Scale AA were also utilized with the RP-2000 mortality table.

Table 2 shows the male annuity factors produced by projecting the Healthy Male RP-2000 mortality rates with improvement factors under Scale AA (before any setback). The table shows the annuity factors if the healthy rates are projected from 2000 to 2011 (the static basis) in Column (iii), compared with the annuity factors computed with generational mortality improvement, in Column (iv).

Scale AA provides an age-specific rate of annual mortality rate reduction (“ $r(x)$ ”), which applies to the corresponding age-related rates of mortality, “ $q(x)$ ”. These reduction rates ultimately produce an annual improvement factor, $(1-r(x))$, which is compounded based on the number of elapsed years from the date of the original study to the year the participant is expected to reach age “ x ”. At age “ x ”, we need to be concerned about the rate of mortality at the current age, as well as the expected mortality rates for future ages beyond “ x ”, as the underlying annuity is based on survivorship to future years. The mechanics of implementing generational mortality improvement to produce a mortality rate “ t ” years from today, or when the participant will be age “ $x+t$ ”, is to scale down today’s mortality rate for a participant age “ $x+t$ ”, $q^{\text{current}}(x+t)$, based on the elapsed time “ t ”. Thus, the anticipated mortality rate for a participant age “ x ” today, “ t ” years into the future, or $q^{\text{projected}}(x+t)$, is produced by multiplying $q^{\text{current}}(x+t)$ by the improvement factor $(1-r(x+t))^t$. In other words, a 40-year-old today would have an expected mortality rate at age 60 that has 20 years of mortality improvement relative to the participant who is age 60 today.

The generational mortality improvement method requires the development of separate mortality tables for each birth-year cohort. To circumvent this complication of developing a very large number of separate tables, many practitioners make an approximation for the continued application of mortality improvement, by projecting, or improving, mortality rates for all ages a uniform number of years beyond the current year. This “static” mortality projection approach attempts to approximate the overall impact of time-varying improvements associated with generational mortality improvement, by computing an “average” period of improvement (based on the duration of underlying liabilities).

Column (vi) in Table 2 shows the annuity factors when mortality rates are projected under Scale AA on a static basis to year 2021 (10 years beyond the annuity factors shown in column (iii) for FY 2011) – as a proxy for capturing the average improvement over a participant’s lifetime computed under the generational approach. The number of additional years of projection used for this purpose, ten, was determined as the underlying duration of PBGC liabilities computed at 9/30/10 (see Appendix D).

The critical question is: “Whether the extra refinement in computing the annuity factors under the generational method, versus projecting to a uniform year under the static method, is worth the arduous task of re-architecting PBGC software?” Lynchval’s analysis below shows that there are very modest differences in annuity factors between those factors produced under the generational method, versus a static method that

projects rates uniformly ten years beyond the current year. Thus, Lynchval recommends continued use of the static projection method.

Note that the annuity factors in Column (vi) are reasonably close to the annuity factors produced using generational mortality improvement in column (iv) – especially for immediate annuity factors at ages less than or equal to 70 – ages where the annuity factors are higher in magnitude than the annuity factors at older ages. The annuity factors at the relatively younger retirement ages are more important in determining the overall liability, due to their higher values and the relatively higher total benefits in-pay at these ages.

Table 2: Annuity Factors Computed with Static vs. Generational Mortality Improvement

Monthly Annuity Factors⁶ for RP-2000 Healthy Males Projected Under Scale AA: Static v. Generational Improvement						
(i) Age Now	(ii) Ret. Age	(iii) Static Proj. to 2011	(iv) Generational Projection	(v) % change (iv) + (iii)	(vi) Static Proj. to 2021	(vii) % change (iv) + (vi)
45	65	4.7099	5.1746	9.9%	4.9028	5.5%
45	45	17.8750	18.3718	2.8%	18.1076	1.5%
50	65	5.9013	6.3749	8.0%	6.1369	3.9%
50	50	16.7437	17.2373	2.9%	17.0151	1.3%
55	65	7.4114	7.8708	6.2%	7.6930	2.3%
55	55	15.3853	15.8530	3.0%	15.6916	1.0%
60	65	9.3849	9.8022	4.4%	9.7115	0.9%
60	60	13.8202	14.2389	3.0%	14.1568	0.6%
65	65	12.0980	12.4452	2.9%	12.4541	-0.1%
70	70	10.2811	10.5391	2.5%	10.6365	-0.9%
75	75	8.3771	8.5423	2.0%	8.6841	-1.6%
80	80	6.5083	6.6000	1.4%	6.7341	-2.0%
85	85	4.8511	4.8945	0.9%	5.0072	-2.3%

⁶ Annuity factors were determined using interest rates of 4.41% for 25 years and 4.51% thereafter. 100% of the Combined Healthy Male table rates were referenced and projected under Scale AA to 2011 and 2021 (10 years beyond the valuation year representing the duration of PBGC liabilities at 9/30/10).

The tables below summarize the recommended tables and their associated adjustments versus the current standard and show the impact on the immediate annuity factors by age.

Table 3 – Healthy Male Mortality: Current FY 2011 Standard vs. Recommended

Baseline Table and Adjustments	Current Mortality Standard Continued for FY 2011	Recommended Mortality Standard for FY 2011
Baseline Table	GAM-94 Static Males	RP-2000 Combined Healthy Males
Projection Years under Scale AA	27 years = 2011 - 1994 + 10 (the Duration of liabilities from the prior 9/30 valuation)	21 years = 2011 - 2000 + 10 (the Duration of liabilities from the prior 9/30 valuation)
Set forward (+) or back (-)	+ 1	- 1

Table 4 – Healthy Female Mortality: Current FY 2011 Standard vs. Recommended

Baseline Table and Adjustments	Current Mortality Standard Continued for FY 2011	Recommended Mortality Standard for FY 2011
Baseline Table	GAM-94 Static Females	RP-2000 Combined Healthy Females
Projection Years under Scale AA	27 years, = 2011 - 1994 + 10	21 years, = 2011 - 2000 + 10
Set forward (+) or back (-)	+1	-1

The impact upon the annuity factors of adopting the recommended healthy mortality tables versus the current healthy mortality standards for FY 2011 is shown in **Table 5** below.

Table 5 – Healthy Participants: Impact on FY 2011 Annuity Factors upon Changing from Current Mortality Standard to Recommended Tables

Current Standard: 2004 Study				Recommended Standard: 2011 Study		Impact in Adopting Recommended	
Age Now	Ret. Age	GAM-94 Static Tables with Projection under Scale AA to 2021 and set forward 1 Year		RP-2000 Healthy Combined Table Projected under Scale AA to 2021, and set back 1 year		Increase in Factors by Adopting Recommended Mortality vs. Current Mortality Standard	
		Male $\ddot{a}^{(12)}(x)$	Female $\ddot{a}^{(12)}(x)$	Male $\ddot{a}^{(12)}(x)$	Female $\ddot{a}^{(12)}(x)$	Male Increase	Female Increase
45	65	4.8183	5.3066	5.0768	5.3567	5.36%	0.94%
45	45	17.9866	18.5606	18.3011	18.6138	1.75%	0.29%
50	65	6.0344	6.6265	6.3532	6.6925	5.28%	1.00%
50	50	16.8735	17.5313	17.2515	17.6083	2.24%	0.44%
55	65	7.5778	8.2929	7.9590	8.3737	5.03%	0.97%
55	55	15.5452	16.3048	15.9756	16.3970	2.77%	0.57%
60	65	9.6029	10.4534	10.0263	10.5421	4.41%	0.85%
60	60	14.0350	14.9040	14.4794	14.9982	3.17%	0.63%
65	65	12.3988	13.3662	12.8046	13.4404	3.27%	0.56%
70	70	10.6688	11.7076	11.0113	11.7756	3.21%	0.58%
75	75	8.7804	9.8574	9.0818	10.0214	3.43%	1.66%
80	80	6.9045	7.9397	7.1140	8.1971	3.03%	3.24%
85	85	5.2788	6.0568	5.3257	6.3854	0.89%	5.43%

Note: Monthly annuity factors were computed with 4.41% for 25 years and 4.51% thereafter

Appendix A shows the mortality rates by age for Healthy Males and Females under the current mortality standard versus the recommended table.

Table 6 – Mortality for Disabled Male Participants Meeting Social Security
Definition: Current FY 2011 Standard vs. Recommended

Baseline Table and Adjustments	Current Mortality Standard Continued for FY 2011	Recommended Mortality Standard for FY 2011
Baseline Table	GAM-94 Static Males	GAM-94 Static Males
Projection Years under Scale AA	27 years = (2011-1994 + Duration of 10)	27 years = (2011-1994 + 10)
Set forward	+7	+6

Table 7 – Mortality for Disabled Female Participants Meeting Social Security
Definition: Current FY 2011 Standard vs. Recommended

Baseline Table and Adjustments	Current Mortality Standard Continued for FY 2011	Recommended Mortality Standard for FY 2011
Baseline Table	GAM-94 Static Females	GAM-94 Static Females
Projection Years under Scale AA	27 years = (2011-1994 + Duration of 10)	27 years = (2011-1994 + 10)
Set forward	+7	+6

Table 8 – Disableds Meeting Social Security Definition: Impact on FY 2011 Annuity Factors upon Changing from Current Mortality Standard to Recommended Tables

Current Standard: 2004 Study				Recommended Standard: 2011 Study		Impact in Adopting Recommended	
Age Now	Ret. Age	GAM-94 Static Tables with Projection under Scale AA to 2021 and set forward 7 Years		GAM-94 Static Tables with Projection under Scale AA to 2021 and set forward 6 years		Increase in Factors by Adopting Recommended Mortality vs. Current Mortality Standard	
		Male $\ddot{a}^{(12)}(x)$	Female $\ddot{a}^{(12)}(x)$	Male $\ddot{a}^{(12)}(x)$	Female $\ddot{a}^{(12)}(x)$	Male Increase	Female Increase
40	65	2.9562	3.3991	3.1110	3.5481	5.24%	4.38%
40	40	17.7803	18.3709	17.9866	18.5606	1.16%	1.03%
45	65	3.7090	4.2513	3.9013	4.4361	5.18%	4.35%
45	45	16.6251	17.3012	16.8735	17.5313	1.49%	1.33%
50	65	4.6670	5.3304	4.9028	5.5560	5.05%	4.23%
50	50	15.2559	16.0377	15.5452	16.3048	1.90%	1.67%
55	65	5.9335	6.7366	6.2153	7.0063	4.75%	4.00%
55	55	13.7155	14.6055	14.0350	14.9040	2.33%	2.04%
60	65	7.7038	8.6497	8.0260	8.9601	4.18%	3.59%
60	60	12.0648	13.0466	12.3988	13.3662	2.77%	2.45%
65	65	10.3012	11.3502	10.6688	11.7076	3.57%	3.15%
70	70	8.3908	9.4707	8.7804	9.8574	4.64%	4.08%
75	75	6.5625	7.5574	6.9045	7.9397	5.21%	5.06%
80	80	4.9620	5.7056	5.2788	6.0568	6.38%	6.15%
85	85	3.6080	4.1893	3.8516	4.4646	6.75%	6.57%

Note: Monthly annuity factors were computed with 4.41% for 25 years and 4.51% thereafter

Appendix B shows the mortality rates by age for Disable Participants under the Social Security definition, comparing the current mortality standard rates versus the recommended table rates.

Table 9 – Mortality for Disabled Male Participants Not Meeting the Social Security Definition: Current FY 2011 Standard vs. Recommended

Baseline Table and Adjustments	Current Mortality Standard Continued for FY 2011	Recommended Mortality Standard for FY 2011
Baseline Table	GAM-94 Static Males	GAM-94 Static Males
Projection Years under Scale AA	27 years = (2011-1994 + Duration of 10)	27 years = (2011-1994 + 10)
Set forward	+7	+3

Table 10: Mortality for Disabled Female Participants Not Meeting the Social Security Definition: Current FY 2011 Standard vs. Recommended

Baseline Table and Adjustments	Current Mortality Standard Continued for FY 2011	Recommended Mortality Standard for FY 2011
Baseline Table	GAM-94 Static Females	GAM-94 Static Females
Projection Years under Scale AA	27 years = (2011-1994 + Duration of 10)	27 years = (2011-1994 + 10)
Set forward	+7	+3

Table 11: Disableds Not Meeting Social Security Definition: Impact on FY 2011 Annuity Factors upon Changing from Current Mortality Standard to Recommended Tables

Current Standard: 2004 Study GAM-94 Static Tables with Projection under Scale AA to 2021 and set forward 7 Years				Recommended Standard: 2011 Study GAM-94 Static Tables with Projection under Scale AA to 2021 and set forward 3 years		Impact in Adopting Recommended Increase in Factors by Adopting Recommended Mortality vs. Current Mortality Standard	
Age Now	Ret. Age	Male $\ddot{a}^{(12)}(x)$	Female $\ddot{a}^{(12)}(x)$	Male $\ddot{a}^{(12)}(x)$	Female $\ddot{a}^{(12)}(x)$	Male Increase	Female Increase
40	65	2.9562	3.3991	3.5616	3.9771	20.48%	17.00%
40	40	17.7803	18.3709	18.5588	19.0838	4.38%	3.88%
45	65	3.7090	4.2513	4.4612	4.9698	20.28%	16.90%
45	45	16.6251	17.3012	17.5661	18.1730	5.66%	5.04%
50	65	4.6670	5.3304	5.5928	6.2107	19.84%	16.52%
50	50	15.2559	16.0377	16.3677	17.0635	7.29%	6.40%
55	65	5.9335	6.7366	7.0433	7.7914	18.70%	15.66%
55	55	13.7155	14.6055	14.9602	15.7641	9.08%	7.93%
60	65	7.7038	8.6497	8.9802	9.8677	16.57%	14.08%
60	60	12.0648	13.0466	13.3905	14.3018	10.99%	9.62%
65	65	10.3012	11.3502	11.7276	12.7225	13.85%	12.09%
70	70	8.3908	9.4707	9.9283	10.9876	18.32%	16.02%
75	75	6.5625	7.5574	8.0055	9.0885	21.99%	20.26%
80	80	4.9620	5.7056	6.2350	7.1773	25.65%	25.79%
85	85	3.6080	4.1893	4.6602	5.3731	29.16%	28.26%

Note: Monthly annuity factors were computed with 4.41% for 25 years and 4.51% thereafter

Appendix C shows the mortality rates by age for Disableds who are not Social Security eligible under the current mortality standard versus the recommended table.

4 Data and Methodology

4.1 Data

As for the 2004 study, data for the 2011 study were drawn from all plans in PBGC's payment database which were IPV ready at the time of data extraction. Between 2004 and 2010, PBGC migrated its payment data from the in-house Oracle database, utilizing Genesis pay source tables, to the newer Spectrum pay source tables. However, since historical pay sources for deceased participants at the time of conversion were not converted to Spectrum, data for the study was taken from a combination of the Genesis tables, which continue to be refreshed from Spectrum, and the Spectrum tables.

The 2011 study was based on 3,675,717 life years of exposure, and 113,053 deaths occurring during the eight fiscal years 2002 through 2009, inclusive, of which approximately 69% was male experience. In comparison, the 2004 study was based on 1,714,439 life years of exposure, and 50,527 deaths occurring during the eight fiscal years 1994 through 2001, inclusive, of which approximately 73% was male experience. Thus, the 2011 study had almost 114% more exposure on a life year basis than the 2004 study.

There was also much more extensive female mortality experience associated with the 2011 study. For the 2004 mortality study, there were 508,081 healthy female life years of exposure and 11,388 female deaths, while the 2011 study possesses 1,142,289 healthy female life years and 29,393 female deaths. The substantial increase in PBGC healthy female exposure for the 2011 study allowed Lynchval to confidently fit an independent published table to PBGC healthy female experience.

At the time of the 2004 study, and as part of our data validations, Lynchval measured the average time it took for a death to be reflected in Genesis (PBGC's participant database). The results showed that if the data were extracted at least one year after the end of the exposure period, it would not be necessary to adjust for unreported deaths. With continued improvements in turnaround time for updating Genesis, Lynchval is confident that no adjustment for unreported deaths is necessary for the 2011 study.

The data extracted from Genesis and Spectrum were examined for reasonability and internal consistency and Lynchval believes that the information is substantially complete and appropriate for the mortality study.

4.2 Methodology

The current study was carried out in two steps. The first step was to evaluate whether the table selected by the previous study (the GAM-94 Static Table, set forward 1 year and projected to each experience year with Scale AA) was still appropriate and met the requirement of including a 10% margin. If the first step showed that the mortality table needed to be changed, the second step was to select an appropriate replacement table.

4.2.1 Mortality Rates

The mortality rates for the eight year study period covering PBGC fiscal years 2002 to 2009 were calculated as follows:

- Lynchval counted deaths and exposures by both number of participants and by benefits at each age in each year;
- Expected deaths were computed by projecting the test table to the exposure year using Scale AA, and multiplying the exposure by the mortality rate at each age;
- Actual deaths were compared to the expected deaths for each age in each year of the study;
- Overall results were obtained separately for each year of exposure for male and female tables, and for the three health categories of healthy, disabled not receiving Social Security and disabled receiving Social Security;
- Finally, the exposures, actual deaths and expected deaths for each of the eight exposure years were consolidated into a summary table for each gender/health category; and
- Experience $q(x)$ rates were developed by dividing the actual weighted deaths (by counts or benefits) by the exposure counts or benefits for each age, and across each gender and health category.

Table 12: Summary of Data Analyzed for 2011 Study by Participant Category

EXPOSURES BY CATEGORY (Fiscal Years 2002-2009)						
Category	Counts	Deaths	Benefits	Deaths	%Counts	%Benefits
Male Healthy	2,465,367	80,533	1,457,399,587	40,972,501	67.1%	78.8%
Female Healthy	1,142,289	29,393	359,509,234	7,122,820	31.1%	19.4%
Male Dis no SS	23,423	1,021	16,706,845	537,004	0.6%	0.9%
Female Dis no SS	5,516	154	2,145,357	44,758	0.2%	0.1%
Male Dis w/ SS	29,319	1,588	12,475,458	605,904	0.8%	0.7%
Female Dis w/ SS	9,803	364	2,299,805	80,493	0.3%	0.1%
Total	3,675,717	113,053	1,850,536,286	49,363,481	100.0%	100.0%

4.2.2 Selection of Mortality Table

The mortality tables were selected as follows:

- For healthy lives and male disabled lives a standard mortality table was selected and projected under Scale AA to the applicable exposure year. Lynchval then adjusted the curve with a set back or set forward, such that overall the table would produce a good fit for the margin-adjusted mortality experience over the ages that were well represented;
- A “good fit” was objectively determined by choosing the adjusted published curve which provided the minimum least squares sum of deviations around the margin-adjusted experience rates. Thus, Lynchval determined which published curve:

- Minimized the sum of deviations across all well represented ages, where the sum of deviations across ages “x” is:

$$\sum \text{Benefit Exposure}(x) * [(\text{Published } q(x) - \text{Experience } q(x))^2]$$

-
- The well represented ages for healthy male and female participants when determining the least squares fit was generally ages 45 through 105;
 - In determining the least squares fit for disabled male participants (for those meeting the Social Security definition and those who did not), the ages adequately represented were generally ages 45 through 90.
 - The results for male disabled lives were assumed to apply for female disabled lives, since the female disabled lives exposures were insufficient for fitting a mortality curve.

The baseline mortality curve which was found to provide the optimal fit for both healthy males and females was the RP-2000 Combined Healthy table. Exposures and expected deaths based on the RP-2000 Combined Healthy table were calculated for each age and year using mortality rates projected to that year. The results were then consolidated for the study period. For each age, an expected mortality rate was calculated by dividing the expected deaths by the total exposure. This, in essence, resulted in a single set of mortality rates (rather than eight projected rates for each year) that could be compared with the rates derived from the experience. The PBGC experience data was adjusted for the margin by dividing the rates by (1+10%).

For both healthy male and healthy female participants, applying a one-year set back to the projected RP-2000 rates provided the best least squares fit to the margin-adjusted PBGC experience.

Lynchval also analyzed the PBGC experience for disabled males, split between those disabled participants satisfying the Social Security definition of “disabled” and those disabled participants who did not satisfy the definition of Social Security “disabled”. Lynchval accepted the PBGC data classification of disabled participants as correct, designated in the data between those satisfying the Social Security definition versus those who do not. A “disabled” participant under Social Security’s definition is incapable of gainful employment. The exposures for disabled females were insufficient to study independently—they represented 0.5% of total exposures with 518 deaths over the eight year study period.

The GAM-94 Static table continued to provide an optimal fit for PBGC disabled mortality experience which was adjusted by the 10% margin. After concluding that the mortality experience for disabled males meeting the Social Security definition differed materially from the rates for disabled males not meeting the Social Security definition, Lynchval tried to fit various published curves to the two sets of margin-adjusted experience rates. After some experimentation with the RP-2000 table, Lynchval concluded that the GAM-94 Static table continued to best fit PBGC disabled experience – though with modification to the set forward period for each disabled participant category.

5 Additional Comments

The 2011 mortality study is the most comprehensive to date on PBGC mortality experience. The results of this study show that overall PBGC mortality has improved more than that projected in the 2004 study.

Recent significant changes in the underlying demographics of PBGC's trustee population have resulted in a reduction in the overall mortality rates. Perhaps due to the differences in the type of industry from which new annuitants are emerging, or the higher income these newer retirees may be enjoying relative to the PBGC annuitant census from eight years ago, it appears that the improvement in underlying mortality has outpaced the predictions from the prior experience study.

However, Lynchval believes the margins included in these recommended tables are sufficient to preclude material understatement of PBGC's liability from mortality fluctuations and from deviations due to continued future mortality improvement outpacing the predicted improvements under Scale AA. Nonetheless, significant changes in the participants covered by PBGC (possibly due to an acceleration of plan terminations from other industries) could cause significant changes in the mortality rate experience. It should be noted that any inadequacies in properly capturing future PBGC mortality experience is neutralized by PBGC's selection of interest rates to produce annuity factors that match prevailing annuity purchase factors.

PBGC's approach of selecting rates to match prevailing annuity purchase factors could be viewed as diminishing the importance of having accurate mortality rates, as any inaccuracy would be offset by the interest rate selection. Nevertheless, it is important for the mortality tables to reflect expected PBGC experience because the mortality tables are also employed by PBGC in projecting the evolving liabilities in future years (ASD develops multi-employer cash flows for future years and the Policy Research and Analysis Department (PRAD) analyzes future claims from both multi- and single employer plans). Also, under Actuarial Standard of Practice Number 35, Measuring Pension Obligations, actuaries are required to use valuation assumptions that are individually best-estimate.

**Appendix A: Recommended versus Current Mortality Rates
for Healthy Participants**

APPENDIX A: HEALTHY MALE AND FEMALE MORTALITY TABLES

Current Healthy Table vs. Recommended Healthy Table for FY11

CURRENT: GAM-94 Static Projected to 2021 under Scale AA and then set forward +1

RECOMMENDED: RP-2000 Combined Healthy Projected to 2021 under Scale AA and then set back 1 year for both males and females.

Age	MALES			FEMALES		
	Current 1000 qx	Recommended 1000 qx	Pct. Change	Current 1000 qx	Recommended 1000 qx	Pct. Change
1	0.232	0.417	79.6%	0.201	0.374	85.9%
2	0.192	0.417	117.1%	0.150	0.374	149.1%
3	0.150	0.281	87.6%	0.112	0.243	117.3%
4	0.137	0.234	70.5%	0.101	0.182	80.1%
5	0.132	0.182	37.8%	0.094	0.136	44.8%
6	0.126	0.167	32.4%	0.089	0.123	38.2%
7	0.116	0.160	37.6%	0.079	0.115	45.8%
8	0.112	0.153	36.7%	0.075	0.108	43.9%
9	0.114	0.141	24.0%	0.076	0.096	26.5%
10	0.121	0.137	13.0%	0.080	0.092	14.5%
11	0.131	0.139	5.9%	0.086	0.092	7.3%
12	0.148	0.143	-3.2%	0.095	0.094	-1.5%
13	0.177	0.149	-15.7%	0.116	0.097	-16.5%
14	0.206	0.157	-23.8%	0.140	0.101	-27.6%
15	0.233	0.170	-27.1%	0.161	0.111	-31.3%
16	0.256	0.180	-29.8%	0.179	0.121	-32.3%
17	0.274	0.190	-30.7%	0.187	0.129	-31.1%
18	0.288	0.201	-30.1%	0.186	0.137	-26.4%
19	0.302	0.211	-30.1%	0.184	0.140	-24.0%
20	0.325	0.221	-31.9%	0.180	0.138	-23.2%
21	0.350	0.231	-34.1%	0.182	0.136	-25.2%
22	0.392	0.244	-37.8%	0.189	0.134	-29.1%
23	0.438	0.255	-41.7%	0.193	0.135	-29.9%
24	0.504	0.272	-46.1%	0.199	0.140	-29.4%
25	0.592	0.286	-51.7%	0.212	0.146	-31.0%
26	0.635	0.304	-52.1%	0.218	0.154	-29.4%
27	0.659	0.333	-49.5%	0.227	0.166	-26.8%
28	0.680	0.344	-49.4%	0.239	0.173	-27.6%
29	0.700	0.354	-49.5%	0.268	0.182	-31.9%
30	0.717	0.371	-48.3%	0.300	0.192	-35.8%
31	0.733	0.400	-45.5%	0.320	0.214	-33.2%

APPENDIX A: HEALTHY MALE AND FEMALE MORTALITY TABLES

Current Healthy Table vs. Recommended Healthy Table for FY11

CURRENT: GAM-94 Static Projected to 2021 under Scale AA and then set forward +1

RECOMMENDED: RP-2000 Combined Healthy Projected to 2021 under Scale AA and then set back 1 year for both males and females.

Age	MALES			FEMALES		
	Current 1000 qx	Recommended 1000 qx	Pct. Change	Current 1000 qx	Recommended 1000 qx	Pct. Change
32	0.741	0.449	-39.4%	0.331	0.259	-21.6%
33	0.742	0.479	-35.5%	0.342	0.296	-13.5%
34	0.743	0.568	-23.6%	0.355	0.326	-8.2%
35	0.753	0.632	-16.1%	0.370	0.352	-4.8%
36	0.778	0.696	-10.6%	0.387	0.377	-2.7%
37	0.798	0.757	-5.1%	0.409	0.399	-2.5%
38	0.826	0.814	-1.5%	0.434	0.421	-3.0%
39	0.863	0.850	-1.6%	0.471	0.445	-5.6%
40	0.906	0.881	-2.8%	0.511	0.472	-7.7%
41	0.954	0.912	-4.5%	0.549	0.514	-6.4%
42	1.003	0.945	-5.8%	0.583	0.564	-3.3%
43	1.052	0.984	-6.5%	0.614	0.620	1.0%
44	1.108	1.030	-7.1%	0.629	0.682	8.5%
45	1.177	1.084	-7.9%	0.650	0.749	15.3%
46	1.263	1.146	-9.3%	0.681	0.801	17.6%
47	1.360	1.202	-11.6%	0.739	0.853	15.5%
48	1.464	1.262	-13.8%	0.802	0.905	12.9%
49	1.579	1.326	-16.0%	0.899	0.979	8.9%
50	1.711	1.392	-18.7%	1.014	1.058	4.4%
51	1.862	1.460	-21.6%	1.185	1.169	-1.3%
52	2.077	1.637	-21.2%	1.377	1.320	-4.1%
53	2.306	1.745	-24.3%	1.589	1.501	-5.5%
54	2.636	1.908	-27.6%	1.847	1.713	-7.3%
55	3.031	2.091	-31.0%	2.179	1.963	-9.9%
56	3.513	2.422	-31.0%	2.550	2.295	-10.0%
57	4.076	2.868	-29.6%	2.934	2.723	-7.2%
58	4.587	3.274	-28.6%	3.374	3.131	-7.2%
59	5.160	3.758	-27.2%	3.877	3.531	-8.9%
60	5.975	4.237	-29.1%	4.448	3.997	-10.1%
61	6.747	4.808	-28.7%	5.094	4.550	-10.7%
62	7.839	5.589	-28.7%	5.832	5.233	-10.3%

APPENDIX A: HEALTHY MALE AND FEMALE MORTALITY TABLES

Current Healthy Table vs. Recommended Healthy Table for FY11

CURRENT: GAM-94 Static Projected to 2021 under Scale AA and then set forward +1

RECOMMENDED: RP-2000 Combined Healthy Projected to 2021 under Scale AA and then set back 1 year for both males and females.

Age	MALES			FEMALES		
	Current 1000 qx	Recommended 1000 qx	Pct. Change	Current 1000 qx	Recommended 1000 qx	Pct. Change
63	8.843	6.376	-27.9%	6.656	5.992	-10.0%
64	9.933	7.446	-25.0%	7.543	6.884	-8.7%
65	11.406	8.389	-26.4%	8.467	7.758	-8.4%
66	12.666	9.473	-25.2%	9.401	8.736	-7.1%
67	13.572	10.947	-19.3%	10.274	9.860	-4.0%
68	14.850	12.213	-17.8%	11.100	10.948	-1.4%
69	15.779	13.291	-15.8%	11.992	12.102	0.9%
70	17.256	14.727	-14.7%	12.710	13.375	5.2%
71	18.938	16.167	-14.6%	14.031	15.069	7.4%
72	20.747	17.888	-13.8%	15.175	16.373	7.9%
73	22.642	19.862	-12.3%	16.860	18.212	8.0%
74	25.430	22.123	-13.0%	18.263	19.820	8.5%
75	27.922	24.681	-11.6%	20.388	21.966	7.7%
76	31.727	28.138	-11.3%	23.465	23.743	1.2%
77	36.245	31.362	-13.5%	26.246	26.160	-0.3%
78	41.439	35.636	-14.0%	29.253	29.427	0.6%
79	47.286	40.451	-14.5%	32.590	32.439	-0.5%
80	53.754	45.920	-14.6%	36.359	35.813	-1.5%
81	60.806	52.121	-14.3%	40.661	39.587	-2.6%
82	66.423	59.584	-10.3%	45.380	43.815	-3.4%
83	74.131	67.993	-8.3%	50.444	48.573	-3.7%
84	80.440	75.792	-5.8%	57.579	53.933	-6.3%
85	87.515	86.094	-1.6%	65.810	59.983	-8.9%
86	98.323	95.566	-2.8%	75.405	68.252	-9.5%
87	110.907	105.955	-4.5%	84.197	77.746	-7.7%
88	121.800	119.892	-1.6%	96.444	88.560	-8.2%
89	137.245	135.544	-1.2%	107.206	98.641	-8.0%
90	150.105	149.793	-0.2%	118.719	111.868	-5.8%
91	168.078	168.603	0.3%	130.911	123.630	-5.6%
92	182.934	183.643	0.4%	147.726	135.762	-8.1%
93	198.893	203.361	2.2%	161.696	147.980	-8.5%

APPENDIX A: HEALTHY MALE AND FEMALE MORTALITY TABLES

Current Healthy Table vs. Recommended Healthy Table for FY11

CURRENT: GAM-94 Static Projected to 2021 under Scale AA and then set forward +1

RECOMMENDED: RP-2000 Combined Healthy Projected to 2021 under Scale AA and then set back 1 year for both males and females.

Age	MALES			FEMALES		
	Current 1000 qx	Recommended 1000 qx	Pct. Change	Current 1000 qx	Recommended 1000 qx	Pct. Change
94	221.314	219.375	-0.9%	176.415	163.416	-7.4%
95	238.276	235.364	-1.2%	191.881	175.273	-8.7%
96	254.670	256.478	0.7%	213.801	186.501	-12.8%
97	277.674	272.216	-2.0%	231.377	196.923	-14.9%
98	293.268	287.507	-2.0%	249.870	210.765	-15.7%
99	308.783	308.741	0.0%	269.060	219.291	-18.5%
100	333.461	323.342	-3.0%	296.629	226.576	-23.6%
101	350.330	337.392	-3.7%	317.093	232.530	-26.7%
102	368.542	358.628	-2.7%	338.505	244.834	-27.7%
103	387.855	371.685	-4.2%	361.016	254.498	-29.5%
104	407.224	383.040	-5.9%	383.597	266.044	-30.6%
105	425.599	392.003	-7.9%	405.217	279.055	-31.1%
106	441.935	397.886	-10.0%	424.846	293.116	-31.0%
107	457.553	400.000	-12.6%	444.368	307.811	-30.7%
108	473.150	400.000	-15.5%	464.469	322.725	-30.5%
109	486.745	400.000	-17.8%	482.325	337.441	-30.0%
110	496.356	400.000	-19.4%	495.110	351.544	-29.0%
111	500.000	400.000	-20.0%	500.000	364.617	-27.1%
112	500.000	400.000	-20.0%	500.000	376.246	-24.8%
113	500.000	400.000	-20.0%	500.000	386.015	-22.8%
114	500.000	400.000	-20.0%	500.000	393.507	-21.3%
115	1000.000	400.000	-60.0%	1000.000	398.308	-60.2%
116	1000.000	400.000	-60.0%	1000.000	400.000	-60.0%
117	1000.000	400.000	-60.0%	1000.000	400.000	-60.0%
118	1000.000	400.000	-60.0%	1000.000	400.000	-60.0%
119	1000.000	400.000	-60.0%	1000.000	400.000	-60.0%
120	1000.000	1000.000	0.0%	1000.000	1000.000	0.0%

**Appendix B: Recommended versus Current Mortality Rates
for those Disabled Participants Meeting the Social Security
Definition**

APPENDIX B: Mortality Rates for those Disabled Meeting the Social Security Definition

Disableds under Social Security Definition: Current vs. Recommended Table for FY11

CURRENT: GAM-94 Static Projected to 2021 under Scale AA and Set Forward +7

RECOMMENDED: GAM-94 Static Projected to 2021 under Scale AA and then Set Forward +6

Age	MALES			FEMALES		
	Current 1000 qx	Recommended 1000 qx	Pct. Change	Current 1000 qx	Recommended 1000 qx	Pct. Change
1	0.116	0.126	8.6%	0.079	0.089	12.7%
2	0.112	0.116	3.6%	0.075	0.079	5.3%
3	0.114	0.112	-1.8%	0.076	0.075	-1.3%
4	0.121	0.114	-5.8%	0.080	0.076	-5.0%
5	0.131	0.121	-7.6%	0.086	0.080	-7.0%
6	0.148	0.131	-11.5%	0.095	0.086	-9.5%
7	0.177	0.148	-16.4%	0.116	0.095	-18.1%
8	0.206	0.177	-14.1%	0.140	0.116	-17.1%
9	0.233	0.206	-11.6%	0.161	0.140	-13.0%
10	0.256	0.233	-9.0%	0.179	0.161	-10.1%
11	0.274	0.256	-6.6%	0.187	0.179	-4.3%
12	0.288	0.274	-4.9%	0.186	0.187	0.5%
13	0.302	0.288	-4.6%	0.184	0.186	1.1%
14	0.325	0.302	-7.1%	0.180	0.184	2.2%
15	0.350	0.325	-7.1%	0.182	0.180	-1.1%
16	0.392	0.350	-10.7%	0.189	0.182	-3.7%
17	0.438	0.392	-10.5%	0.193	0.189	-2.1%
18	0.504	0.438	-13.1%	0.199	0.193	-3.0%
19	0.592	0.504	-14.9%	0.212	0.199	-6.1%
20	0.635	0.592	-6.8%	0.218	0.212	-2.8%
21	0.659	0.635	-3.6%	0.227	0.218	-4.0%
22	0.680	0.659	-3.1%	0.239	0.227	-5.0%
23	0.700	0.680	-2.9%	0.268	0.239	-10.8%
24	0.717	0.700	-2.4%	0.300	0.268	-10.7%
25	0.733	0.717	-2.2%	0.320	0.300	-6.3%
26	0.741	0.733	-1.1%	0.331	0.320	-3.3%
27	0.742	0.741	-0.1%	0.342	0.331	-3.2%
28	0.743	0.742	-0.1%	0.355	0.342	-3.7%
29	0.753	0.743	-1.3%	0.370	0.355	-4.1%

APPENDIX B: Mortality Rates for those Disabled Meeting the Social Security Definition

Disableds under Social Security Definition: Current vs. Recommended Table for FY11

CURRENT: GAM-94 Static Projected to 2021 under Scale AA and Set Forward +7

RECOMMENDED: GAM-94 Static Projected to 2021 under Scale AA and then Set Forward +6

Age	MALES			FEMALES		
	Current 1000 qx	Recommended 1000 qx	Pct. Change	Current 1000 qx	Recommended 1000 qx	Pct. Change
30	0.778	0.753	-3.2%	0.387	0.370	-4.4%
31	0.798	0.778	-2.5%	0.409	0.387	-5.4%
32	0.826	0.798	-3.4%	0.434	0.409	-5.8%
33	0.863	0.826	-4.3%	0.471	0.434	-7.9%
34	0.906	0.863	-4.7%	0.511	0.471	-7.8%
35	0.954	0.906	-5.0%	0.549	0.511	-6.9%
36	1.003	0.954	-4.9%	0.583	0.549	-5.8%
37	1.052	1.003	-4.7%	0.614	0.583	-5.0%
38	1.108	1.052	-5.1%	0.629	0.614	-2.4%
39	1.177	1.108	-5.9%	0.650	0.629	-3.2%
40	1.263	1.177	-6.8%	0.681	0.650	-4.6%
41	1.360	1.263	-7.1%	0.739	0.681	-7.8%
42	1.464	1.360	-7.1%	0.802	0.739	-7.9%
43	1.579	1.464	-7.3%	0.899	0.802	-10.8%
44	1.711	1.579	-7.7%	1.014	0.899	-11.3%
45	1.862	1.711	-8.1%	1.185	1.014	-14.4%
46	2.077	1.862	-10.4%	1.377	1.185	-13.9%
47	2.306	2.077	-9.9%	1.589	1.377	-13.3%
48	2.636	2.306	-12.5%	1.847	1.589	-14.0%
49	3.031	2.636	-13.0%	2.179	1.847	-15.2%
50	3.513	3.031	-13.7%	2.550	2.179	-14.5%
51	4.076	3.513	-13.8%	2.934	2.550	-13.1%
52	4.587	4.076	-11.1%	3.374	2.934	-13.0%
53	5.160	4.587	-11.1%	3.877	3.374	-13.0%
54	5.975	5.160	-13.6%	4.448	3.877	-12.8%
55	6.747	5.975	-11.4%	5.094	4.448	-12.7%
56	7.839	6.747	-13.9%	5.832	5.094	-12.7%
57	8.843	7.839	-11.4%	6.656	5.832	-12.4%
58	9.933	8.843	-11.0%	7.543	6.656	-11.8%
59	11.406	9.933	-12.9%	8.467	7.543	-10.9%
60	12.666	11.406	-9.9%	9.401	8.467	-9.9%

APPENDIX B: Mortality Rates for those Disabled Meeting the Social Security Definition

Disableds under Social Security Definition: Current vs. Recommended Table for FY11

CURRENT: GAM-94 Static Projected to 2021 under Scale AA and Set Forward +7

RECOMMENDED: GAM-94 Static Projected to 2021 under Scale AA and then Set Forward +6

Age	MALES			FEMALES		
	Current 1000 qx	Recommended 1000 qx	Pct. Change	Current 1000 qx	Recommended 1000 qx	Pct. Change
61	13.572	12.666	-6.7%	10.274	9.401	-8.5%
62	14.850	13.572	-8.6%	11.100	10.274	-7.4%
63	15.779	14.850	-5.9%	11.992	11.100	-7.4%
64	17.256	15.779	-8.6%	12.710	11.992	-5.6%
65	18.938	17.256	-8.9%	14.031	12.710	-9.4%
66	20.747	18.938	-8.7%	15.175	14.031	-7.5%
67	22.642	20.747	-8.4%	16.860	15.175	-10.0%
68	25.430	22.642	-11.0%	18.263	16.860	-7.7%
69	27.922	25.430	-8.9%	20.388	18.263	-10.4%
70	31.727	27.922	-12.0%	23.465	20.388	-13.1%
71	36.245	31.727	-12.5%	26.246	23.465	-10.6%
72	41.439	36.245	-12.5%	29.253	26.246	-10.3%
73	47.286	41.439	-12.4%	32.590	29.253	-10.2%
74	53.754	47.286	-12.0%	36.359	32.590	-10.4%
75	60.806	53.754	-11.6%	40.661	36.359	-10.6%
76	66.423	60.806	-8.5%	45.380	40.661	-10.4%
77	74.131	66.423	-10.4%	50.444	45.380	-10.0%
78	80.440	74.131	-7.8%	57.579	50.444	-12.4%
79	87.515	80.440	-8.1%	65.810	57.579	-12.5%
80	98.323	87.515	-11.0%	75.405	65.810	-12.7%
81	110.907	98.323	-11.3%	84.197	75.405	-10.4%
82	121.800	110.907	-8.9%	96.444	84.197	-12.7%
83	137.245	121.800	-11.3%	107.206	96.444	-10.0%
84	150.105	137.245	-8.6%	118.719	107.206	-9.7%
85	168.078	150.105	-10.7%	130.911	118.719	-9.3%
86	182.934	168.078	-8.1%	147.726	130.911	-11.4%
87	198.893	182.934	-8.0%	161.696	147.726	-8.6%
88	221.314	198.893	-10.1%	176.415	161.696	-8.3%
89	238.276	221.314	-7.1%	191.881	176.415	-8.1%
90	254.670	238.276	-6.4%	213.801	191.881	-10.3%
91	277.674	254.670	-8.3%	231.377	213.801	-7.6%

APPENDIX B: Mortality Rates for those Disabled Meeting the Social Security Definition

Disableds under Social Security Definition: Current vs. Recommended Table for FY11

CURRENT: GAM-94 Static Projected to 2021 under Scale AA and Set Forward +7

RECOMMENDED: GAM-94 Static Projected to 2021 under Scale AA and then Set Forward +6

Age	MALES			FEMALES		
	Current 1000 qx	Recommended 1000 qx	Pct. Change	Current 1000 qx	Recommended 1000 qx	Pct. Change
92	293.268	277.674	-5.3%	249.870	231.377	-7.4%
93	308.783	293.268	-5.0%	269.060	249.870	-7.1%
94	333.461	308.783	-7.4%	296.629	269.060	-9.3%
95	350.330	333.461	-4.8%	317.093	296.629	-6.5%
96	368.542	350.330	-4.9%	338.505	317.093	-6.3%
97	387.855	368.542	-5.0%	361.016	338.505	-6.2%
98	407.224	387.855	-4.8%	383.597	361.016	-5.9%
99	425.599	407.224	-4.3%	405.217	383.597	-5.3%
100	441.935	425.599	-3.7%	424.846	405.217	-4.6%
101	457.553	441.935	-3.4%	444.368	424.846	-4.4%
102	473.150	457.553	-3.3%	464.469	444.368	-4.3%
103	486.745	473.150	-2.8%	482.325	464.469	-3.7%
104	496.356	486.745	-1.9%	495.110	482.325	-2.6%
105	500.000	496.356	-0.7%	500.000	495.110	-1.0%
106	500.000	500.000	0.0%	500.000	500.000	0.0%
107	500.000	500.000	0.0%	500.000	500.000	0.0%
108	500.000	500.000	0.0%	500.000	500.000	0.0%
109	1000.000	500.000	-50.0%	1000.000	500.000	-50.0%
110	1000.000	1000.000	0.0%	1000.000	1000.000	0.0%
111	1000.000	1000.000	0.0%	1000.000	1000.000	0.0%
112	1000.000	1000.000	0.0%	1000.000	1000.000	0.0%
113	1000.000	1000.000	0.0%	1000.000	1000.000	0.0%
114	1000.000	1000.000	0.0%	1000.000	1000.000	0.0%
115	1000.000	1000.000	0.0%	1000.000	1000.000	0.0%
116	1000.000	1000.000	0.0%	1000.000	1000.000	0.0%
117	1000.000	1000.000	0.0%	1000.000	1000.000	0.0%
118	1000.000	1000.000	0.0%	1000.000	1000.000	0.0%
119	1000.000	1000.000	0.0%	1000.000	1000.000	0.0%
120	1000.000	1000.000	0.0%	1000.000	1000.000	0.0%

**Appendix C: Recommended versus Current Mortality Rates
for those Disabled Participants Not Meeting the Social
Security Definition**

APPENDIX C: Mortality Rates for DISABLED, NOT Meeting Social Security Definition

Disabled but NOT under Soc. Sec. Definition: Current vs. Recommended Table for FY11

CURRENT: GAM-94 Static Projected to 2021 under Scale AA and Set Forward +7

RECOMMENDED: GAM-94 Static Projected to 2021 under Scale AA and then Set Forward +3

Age	MALES			FEMALES		
	Current 1000 qx	Recommended 1000 qx	Pct. Change	Current 1000 qx	Recommended 1000 qx	Pct. Change
1	0.116	0.150	29.3%	0.079	0.112	41.8%
2	0.112	0.137	22.3%	0.075	0.101	34.7%
3	0.114	0.132	15.8%	0.076	0.094	23.7%
4	0.121	0.126	4.1%	0.080	0.089	11.3%
5	0.131	0.116	-11.5%	0.086	0.079	-8.1%
6	0.148	0.112	-24.3%	0.095	0.075	-21.1%
7	0.177	0.114	-35.6%	0.116	0.076	-34.5%
8	0.206	0.121	-41.3%	0.140	0.080	-42.9%
9	0.233	0.131	-43.8%	0.161	0.086	-46.6%
10	0.256	0.148	-42.2%	0.179	0.095	-46.9%
11	0.274	0.177	-35.4%	0.187	0.116	-38.0%
12	0.288	0.206	-28.5%	0.186	0.140	-24.7%
13	0.302	0.233	-22.8%	0.184	0.161	-12.5%
14	0.325	0.256	-21.2%	0.180	0.179	-0.6%
15	0.350	0.274	-21.7%	0.182	0.187	2.7%
16	0.392	0.288	-26.5%	0.189	0.186	-1.6%
17	0.438	0.302	-31.1%	0.193	0.184	-4.7%
18	0.504	0.325	-35.5%	0.199	0.180	-9.5%
19	0.592	0.350	-40.9%	0.212	0.182	-14.2%
20	0.635	0.392	-38.3%	0.218	0.189	-13.3%
21	0.659	0.438	-33.5%	0.227	0.193	-15.0%
22	0.680	0.504	-25.9%	0.239	0.199	-16.7%
23	0.700	0.592	-15.4%	0.268	0.212	-20.9%
24	0.717	0.635	-11.4%	0.300	0.218	-27.3%
25	0.733	0.659	-10.1%	0.320	0.227	-29.1%
26	0.741	0.680	-8.2%	0.331	0.239	-27.8%
27	0.742	0.700	-5.7%	0.342	0.268	-21.6%
28	0.743	0.717	-3.5%	0.355	0.300	-15.5%
29	0.753	0.733	-2.7%	0.370	0.320	-13.5%
30	0.778	0.741	-4.8%	0.387	0.331	-14.5%
31	0.798	0.742	-7.0%	0.409	0.342	-16.4%

APPENDIX C: Mortality Rates for DISABLED, NOT Meeting Social Security Definition

Disabled but NOT under Soc. Sec. Definition: Current vs. Recommended Table for FY11

CURRENT: GAM-94 Static Projected to 2021 under Scale AA and Set Forward +7

RECOMMENDED: GAM-94 Static Projected to 2021 under Scale AA and then Set Forward +3

Age	MALES			FEMALES		
	Current 1000 qx	Recommended 1000 qx	Pct. Change	Current 1000 qx	Recommended 1000 qx	Pct. Change
32	0.826	0.743	-10.0%	0.434	0.355	-18.2%
33	0.863	0.753	-12.7%	0.471	0.370	-21.4%
34	0.906	0.778	-14.1%	0.511	0.387	-24.3%
35	0.954	0.798	-16.4%	0.549	0.409	-25.5%
36	1.003	0.826	-17.6%	0.583	0.434	-25.6%
37	1.052	0.863	-18.0%	0.614	0.471	-23.3%
38	1.108	0.906	-18.2%	0.629	0.511	-18.8%
39	1.177	0.954	-18.9%	0.650	0.549	-15.5%
40	1.263	1.003	-20.6%	0.681	0.583	-14.4%
41	1.360	1.052	-22.6%	0.739	0.614	-16.9%
42	1.464	1.108	-24.3%	0.802	0.629	-21.6%
43	1.579	1.177	-25.5%	0.899	0.650	-27.7%
44	1.711	1.263	-26.2%	1.014	0.681	-32.8%
45	1.862	1.360	-27.0%	1.185	0.739	-37.6%
46	2.077	1.464	-29.5%	1.377	0.802	-41.8%
47	2.306	1.579	-31.5%	1.589	0.899	-43.4%
48	2.636	1.711	-35.1%	1.847	1.014	-45.1%
49	3.031	1.862	-38.6%	2.179	1.185	-45.6%
50	3.513	2.077	-40.9%	2.550	1.377	-46.0%
51	4.076	2.306	-43.4%	2.934	1.589	-45.8%
52	4.587	2.636	-42.5%	3.374	1.847	-45.3%
53	5.160	3.031	-41.3%	3.877	2.179	-43.8%
54	5.975	3.513	-41.2%	4.448	2.550	-42.7%
55	6.747	4.076	-39.6%	5.094	2.934	-42.4%
56	7.839	4.587	-41.5%	5.832	3.374	-42.1%
57	8.843	5.160	-41.6%	6.656	3.877	-41.8%
58	9.933	5.975	-39.8%	7.543	4.448	-41.0%
59	11.406	6.747	-40.8%	8.467	5.094	-39.8%
60	12.666	7.839	-38.1%	9.401	5.832	-38.0%
61	13.572	8.843	-34.8%	10.274	6.656	-35.2%
62	14.850	9.933	-33.1%	11.100	7.543	-32.0%

APPENDIX C: Mortality Rates for DISABLED, NOT Meeting Social Security Definition

Disabled but NOT under Soc. Sec. Definition: Current vs. Recommended Table for FY11

CURRENT: GAM-94 Static Projected to 2021 under Scale AA and Set Forward +7

RECOMMENDED: GAM-94 Static Projected to 2021 under Scale AA and then Set Forward +3

Age	MALES			FEMALES		
	Current 1000 qx	Recommended 1000 qx	Pct. Change	Current 1000 qx	Recommended 1000 qx	Pct. Change
63	15.779	11.406	-27.7%	11.992	8.467	-29.4%
64	17.256	12.666	-26.6%	12.710	9.401	-26.0%
65	18.938	13.572	-28.3%	14.031	10.274	-26.8%
66	20.747	14.850	-28.4%	15.175	11.100	-26.9%
67	22.642	15.779	-30.3%	16.860	11.992	-28.9%
68	25.430	17.256	-32.1%	18.263	12.710	-30.4%
69	27.922	18.938	-32.2%	20.388	14.031	-31.2%
70	31.727	20.747	-34.6%	23.465	15.175	-35.3%
71	36.245	22.642	-37.5%	26.246	16.860	-35.8%
72	41.439	25.430	-38.6%	29.253	18.263	-37.6%
73	47.286	27.922	-41.0%	32.590	20.388	-37.4%
74	53.754	31.727	-41.0%	36.359	23.465	-35.5%
75	60.806	36.245	-40.4%	40.661	26.246	-35.5%
76	66.423	41.439	-37.6%	45.380	29.253	-35.5%
77	74.131	47.286	-36.2%	50.444	32.590	-35.4%
78	80.440	53.754	-33.2%	57.579	36.359	-36.9%
79	87.515	60.806	-30.5%	65.810	40.661	-38.2%
80	98.323	66.423	-32.4%	75.405	45.380	-39.8%
81	110.907	74.131	-33.2%	84.197	50.444	-40.1%
82	121.800	80.440	-34.0%	96.444	57.579	-40.3%
83	137.245	87.515	-36.2%	107.206	65.810	-38.6%
84	150.105	98.323	-34.5%	118.719	75.405	-36.5%
85	168.078	110.907	-34.0%	130.911	84.197	-35.7%
86	182.934	121.800	-33.4%	147.726	96.444	-34.7%
87	198.893	137.245	-31.0%	161.696	107.206	-33.7%
88	221.314	150.105	-32.2%	176.415	118.719	-32.7%
89	238.276	168.078	-29.5%	191.881	130.911	-31.8%
90	254.670	182.934	-28.2%	213.801	147.726	-30.9%
91	277.674	198.893	-28.4%	231.377	161.696	-30.1%
92	293.268	221.314	-24.5%	249.870	176.415	-29.4%
93	308.783	238.276	-22.8%	269.060	191.881	-28.7%

APPENDIX C: Mortality Rates for DISABLED, NOT Meeting Social Security Definition

Disabled but NOT under Soc. Sec. Definition: Current vs. Recommended Table for FY11

CURRENT: GAM-94 Static Projected to 2021 under Scale AA and Set Forward +7

RECOMMENDED: GAM-94 Static Projected to 2021 under Scale AA and then Set Forward +3

Age	MALES			FEMALES		
	Current 1000 qx	Recommended 1000 qx	Pct. Change	Current 1000 qx	Recommended 1000 qx	Pct. Change
94	333.461	254.670	-23.6%	296.629	213.801	-27.9%
95	350.330	277.674	-20.7%	317.093	231.377	-27.0%
96	368.542	293.268	-20.4%	338.505	249.870	-26.2%
97	387.855	308.783	-20.4%	361.016	269.060	-25.5%
98	407.224	333.461	-18.1%	383.597	296.629	-22.7%
99	425.599	350.330	-17.7%	405.217	317.093	-21.7%
100	441.935	368.542	-16.6%	424.846	338.505	-20.3%
101	457.553	387.855	-15.2%	444.368	361.016	-18.8%
102	473.150	407.224	-13.9%	464.469	383.597	-17.4%
103	486.745	425.599	-12.6%	482.325	405.217	-16.0%
104	496.356	441.935	-11.0%	495.110	424.846	-14.2%
105	500.000	457.553	-8.5%	500.000	444.368	-11.1%
106	500.000	473.150	-5.4%	500.000	464.469	-7.1%
107	500.000	486.745	-2.7%	500.000	482.325	-3.5%
108	500.000	496.356	-0.7%	500.000	495.110	-1.0%
109	1000.000	500.000	-50.0%	1000.000	500.000	-50.0%
110	1000.000	500.000	-50.0%	1000.000	500.000	-50.0%
111	1000.000	500.000	-50.0%	1000.000	500.000	-50.0%
112	1000.000	500.000	-50.0%	1000.000	500.000	-50.0%
113	1000.000	1000.000	0.0%	1000.000	1000.000	0.0%
114	1000.000	1000.000	0.0%	1000.000	1000.000	0.0%
115	1000.000	1000.000	0.0%	1000.000	1000.000	0.0%
116	1000.000	1000.000	0.0%	1000.000	1000.000	0.0%
117	1000.000	1000.000	0.0%	1000.000	1000.000	0.0%
118	1000.000	1000.000	0.0%	1000.000	1000.000	0.0%
119	1000.000	1000.000	0.0%	1000.000	1000.000	0.0%
120	1000.000	1000.000	0.0%	1000.000	1000.000	0.0%

Appendix D: Static and Dynamic Tables Approximating Generational Mortality

Static mortality tables do not change and for any given age have a specific mortality rate, regardless of the year of valuation or the year being projected to.

One type of dynamic table is the generational type. Generational mortality rates are obtained by the projection of each mortality rate by a scale factor from the base year for the static table to the year in which it will be encountered. For example, if a 65 year old individual is being valued in 2010 using the RP-2000 Combined Healthy table with Scale AA, the rate at age 65 in 2010 is obtained by projecting the 2000 rate 10 years by the Scale AA age 65 factor. The rate for valuing the same individual at age 66 in 2011 would be obtained by projected the 2000 mortality rate for 11 years using the Scale AA age 66 factor. By continuing in this manner and projecting mortality rates for the individual at all future ages, this individual's generational mortality rates would be obtained. A generational mortality valuation would be obtained by performing these types of calculations for all individuals in the valuation.

The Society of Actuaries suggested that a generational mortality valuation can be approximated by projecting a static mortality table into the future. First, the static table would have to be projected from the date of the table to the valuation date. Then it would be projected the number of years into the future from the current valuation date corresponding to the duration of the liabilities. For this purpose Lynchval recommends using the duration of the liabilities, rounded to the nearest year, from the previous year-end closing.

To project the RP-2000 Combined Healthy table for use in the September 30, 2011 valuation, it would first be projected 11 years to 2011 plus another 10 years for the duration of the September 30, 2010 liabilities. This would then result in the RP-2000 Combined Healthy table being projected forward for 21 years from 2000.

In other words, the projection period was determined by summing the following:

- (i) The number of years from 2000 to 2011, which is 11 years.
- (ii) The effective duration of the September 30, 2010 liabilities.

The effective duration is calculated as the negative of the first derivative of the total IPVFB liability with respect to the change (Δi) in the valuation interest rate, divided by the liability. (This formula was recommended for this purpose by the Uninsured Pensioner Mortality Subcommittee in the article presenting the 1994 Uninsured Pensioner Mortality Table [TSA 1995 Vol. 47, p 832 – 833].)

$$\text{Effective Duration} = - \frac{(\text{PVB}(i + \Delta i) - \text{PVB}(i))}{\text{PVB}(i) \times \Delta i}$$

Based on the total IPVFB benefit liabilities for the September 30, 2010 closing, the duration calculation was performed by ASD as follows:

$i = 4.41\%$ for 20 years then 4.51% thereafter; the valuation interest rate

$\Delta i = .001$; a 10 basis point increase in the interest rates

PVB = Total present value of the benefits.

$PVB(i) = \$ 95,329,241,832$

$PVB(i + \Delta i) = \$ 94,342,739,332$

$Duration = \frac{-(94,342,739,332 - 95,329,241,832)}{95,329,241,832 \times 0.001} = 10.35 \text{ years} \approx 10 \text{ years}$

Projection Period = 11 years elapsed to valuation date + 10 years duration = 21 years



Pension Benefit Guaranty Corporation Actuarial Services Division

2011 Expected Retirement Date Study

Lynchval Systems Worldwide, Inc.
May 26, 2011



Lynchval Systems Worldwide Inc.

PC Solutions for Benefit Professionals

May 26, 2011

Ms. Joan Weiss
Chief Valuation Actuary
Pension Benefit Guaranty Corporation
1200 K Street, NW
Washington, DC 20005

Dear Ms. Weiss:

Lynchval Systems Worldwide, Inc. is pleased to present the 2011 Expected Retirement Date Study we performed for PBGC. The study presents our findings regarding the use of the Expected Retirement Date approach in the Integrated Present Value of Future Benefits (IPVFB) System during FY02 through FY10, inclusive.

The study was prepared in accordance with generally accepted actuarial methods. We have performed such tests and reviews as we believe necessary to ensure the accuracy of our results.

I, Jeffrey J. Lane, am the Chief Actuary for Lynchval Systems Worldwide. I am a member of the American Academy of Actuaries, the Society of Actuaries, and an Enrolled Actuary and I meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained in this report.

If you have any questions regarding this report, please feel free to contact me.

Respectfully Submitted,

Jeffrey J. Lane, FSA, EA, MAAA

cc: Bill House
Sara Tezera

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1 Executive Summary

The purpose of this study is to evaluate the accuracy and effectiveness of the current Expected Retirement Date methodology used by ASD in determining the present value of benefits for deferred vested participants valued individually in the annual and quarterly closings.

The current PBGC retirement assumption is determined by assessing each individual's earliest age at which he/she can retire ("ERA") and the earliest age at which he/she can retire with unreduced benefits ("EURA"). A single age between the ERA and EURA is assumed to be the expected retirement age ("XRA") for any deferred vested participant. This single retirement age assumption contrasts with the valuation assumption for many ongoing plans, where the actuary often assumes rates of retirement across a range of ages for any given active or deferred vested participant (e.g., 25% of the participant is assumed to elect retirement at the earliest retirement age of 55, 15% for ages 56-61, 40% at age 62, 20% for ages 63-64 and 100% at age 65).

Our findings are:

- 1) On average the XRA methodology appears to adequately capture PBGC retirement experience. Lynchval measured the adequacy of the XRA methodology by comparing the Actual Retirement Date (ARD) relative to the Expected Retirement Date (XRD) across the population of terminated vested participants as of the Date of Plan Termination (DoPT), who subsequently retired. The excess of the average ARD over the average XRD has increased slightly from 1.4 months in the 2002 study to 6.4 months in the current study.
- 2) The results of the Integrated Present Value of Future Benefits (IPVFB) System's current XRA approach appear to us to be comparable to those which would be obtained by the introduction of a multiple decrement approach for processing early retirement within the system. Moreover, it would be impractical to change the IPVFB system to use a multiple retirement decrement approach since the information required to support it is not readily available to that system. Such a change would also require IPVFB to reflect each plan's early retirement factor table(s). Lynchval does not think there would be much gained in computational accuracy by reflecting multiple retirement rates for each deferred vested participant. It may, however, be worth examining the XRA assumption for specific ERA/EURA combinations (discussed further in Section 4).
- 3) Since the prior study was conducted in 2002, the number of deferred vested participants who are beyond their Expected Retirement Date as of the study date has increased, but the proportion relative to the total number of deferred vested participants ("Deferreds") has decreased since the prior study. We see no reason why the averages reported in this study will be dramatically altered when the current deferred vested participants who are beyond their XRA eventually retire. In fact, the average delay beyond XRA for this group, measured at the data snapshot date of

October 1, 2010, is lower than the average delay from the 2002 study (3.62 years versus 4.05 years in the 2002 study).

The results of this current study are very similar to the results of the previous 2002 Expected Retirement Date Study, although the data in this current study are much more extensive.

2 Introduction

2.1 Approach and Issues

The purpose of this study is to evaluate the accuracy and effectiveness of the current Expected Retirement Date methodology used by ASD in determining the present value of benefits for deferred participants who are valued individually in the annual and quarterly closings.

A comparison of the data for this study versus the prior analysis performed in January 2002 is summarized below:

TABLE 1: Statistics on Data Analyzed

Data Category for Deferred Vested Participants	2002 Study: Experience from 10/1/96 – 9/30/01	2011 Study: Experience from 10/1/01 – 9/30/10
Participants retiring after DoPT (study participants)	18,310	143,543
Average Deviation of the ARD around the XRD for those retired after DoPT	+1.4 months	+6.4 months (count) +4.8 months (benefit)
Total Deferred Vested Participants (DVs) at end of period not yet retired	42,696	301,342
Total DVs who are not yet retired AND who are beyond their XRD	10,497	64,257
% of DVs who are not yet retired AND who are beyond their XRD	24.7%	21.3%
Average Years beyond XRD for those DVs not retired as of their XRD	4.05	3.62
% of DVs beyond their XRD relative to Study Participants	57.3%	44.7%

Average retirement ages were determined by weighting with both counts and benefit amounts. Elapsed times from the Actual Retirement Date (ARD) to the Expected Retirement Date (XRD) were also computed with both types of weighting. The differences between ARD and XRD were used to assess the validity of the current assumptions for determining the Expected Retirement Age (XRA). Due to the fact that the XRA assumption is based on integer ages, differences between the dates of less than 7 months would indicate that PBGC retirement experience is tracking with the assumed ages.

Based on the percentages of actual retirements between ages 55 and 65, retirement decrements were determined and a brief analysis made of the change in present values that would likely emerge if the IPVFB System's current single XRA assumption were to be replaced with a multiple decrement approach (see Section 4).

3 Results

3.1 Average Retirement Ages

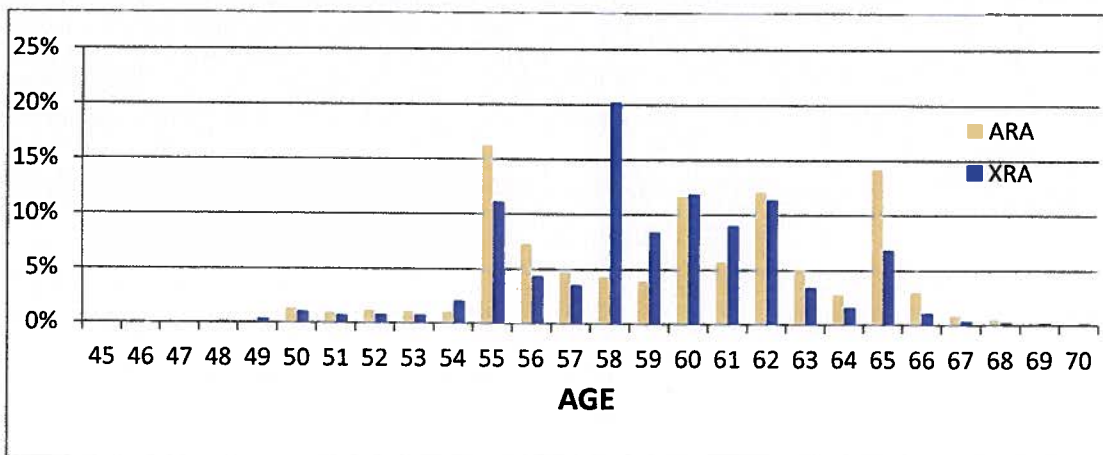
The average retirement ages for the 143,543 participants in pay status who have retired since 10/1/2001 are shown in the following table. All of the 143,543 retiree records had an expected retirement date (XRD) in addition to their actual retirement date (ARD). However, only a subset of the retiree records (approximately 86,000) possessed an earliest retirement date (ERD) and an earliest unreduced retirement date (EURD) (used in determining the average ERD and EURD).

TABLE 2: Average Ages at Actual Retirement, Expected Retirement, Earliest Retirement, and Earliest Unreduced Retirement

Average Ages at:	ARD	XRD	ERD	EURD
By Counts	59.7	59.2	58.2	63.9
By Benefit Weight	59.3	58.9	58.2	63.3

The average age at the Actual Retirement Date follows closely the average age at the Expected Retirement Date. The study’s findings that the average Actual Retirement Ages (ARAs) match closely the average Expected Retirement Ages (XRAs) would be a necessary, but not sufficient condition, for the Expected Retirement Assumption to be appropriate. It is possible that the ARA’s could deviate equally above and below the XRAs, and the exact matches would be very few. Thus, the averages would match but the balanced deviations of ARAs around the individual XRAs could show that the XRA assumption is not accurately capturing the experience— more critical if the early retirement reduction factors do not synchronize with the actuarial equivalencies when employing PBGC interest and mortality. Chart 1 shows the distribution of actual and expected retirements by age for the 99% of retirements that occurred between ages 45 and 70 inclusive (weighted by counts). It is apparent that the current Expected Retirement Age assumption is underestimating the percentage of retirements at ages 55 and 65 and overestimating the percentage of retirements at age 58.

CHART 1: Distribution of Retirements, by Count, Across Actual Retirement Ages (ARA) and Expected Retirement Ages (XRA)



3.2 Comparison of Actual and Expected Retirement Ages

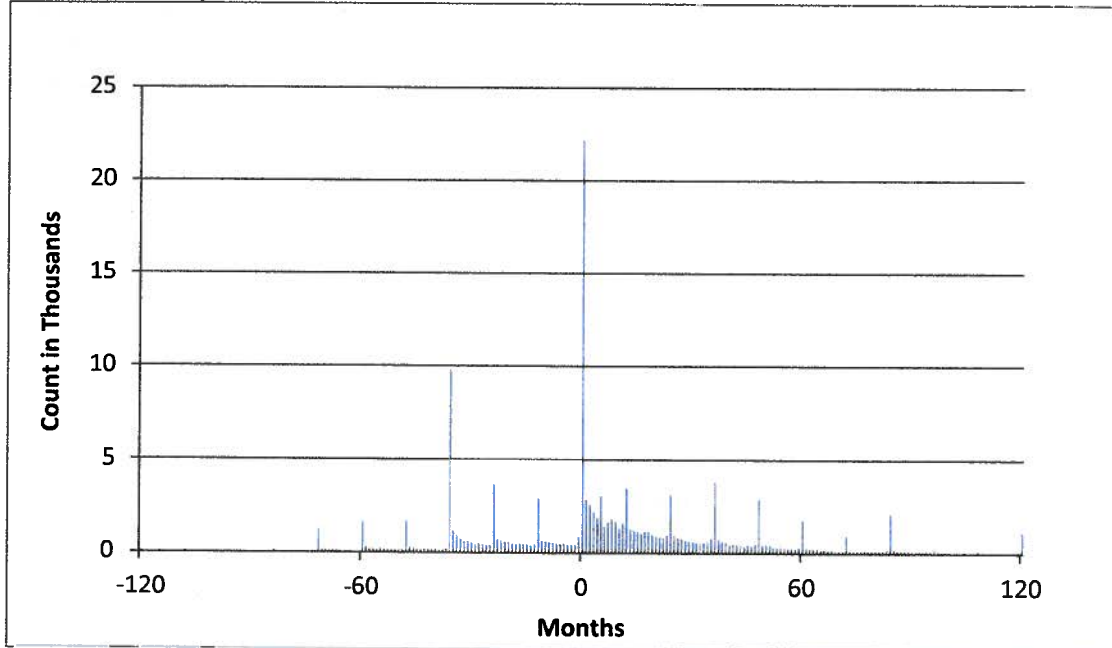
We also compared the individual differences between ARD and XRD for the 143,543 participants who retired between 10/1/01 and 9/30/10.

The average ARD for this group is 6.4 months later than the XRD when weighted by counts. The median ARD is 2 months later than the XRD when weighted by counts.

The average ARD for this group is 4.8 months later than the XRD when weighted by benefits. The median ARD is 4 months later than the XRD when weighted by benefits.

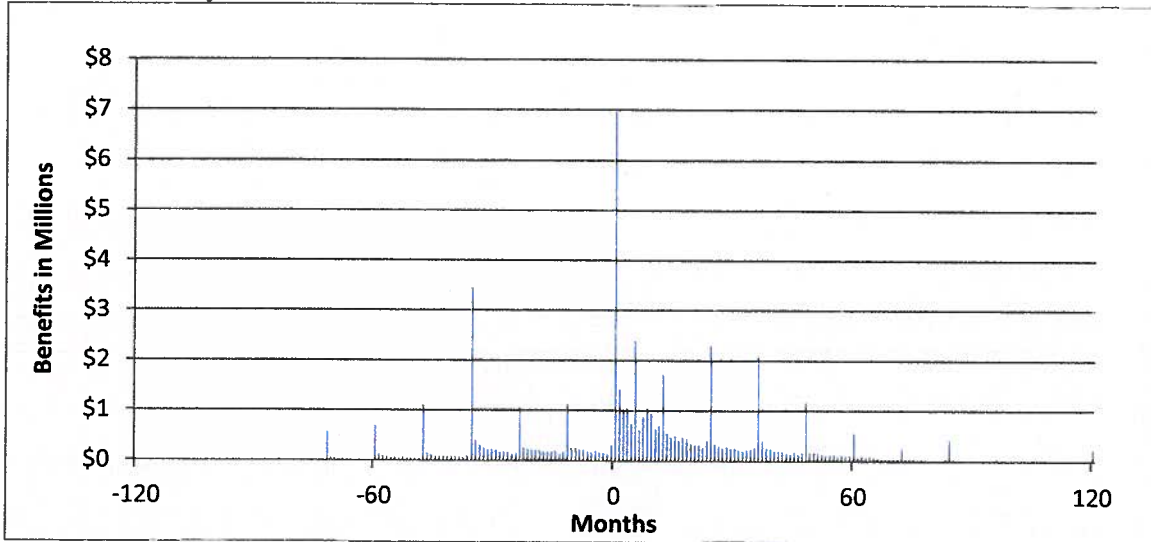
The following charts examine the deviation of the ARD around the XRD (defined as the quantity ARD less XRD) for the study participants retiring between 10/1/01 and 9/30/10. The deviation is measured in both months and years and summarized by headcount and benefits in-force. Interestingly, Charts 2 and 3 show peaks occurring at 12 month intervals before and after XRD, suggesting that many participants elect retirement dates that are on/following the first of the month following a birthday. The largest peak is at XRD and this modal point supports the validity of the current XRA assumption. The next largest frequency is at 36 months before XRD. This peak is primarily attributable to participants with an XRA of 58 and ARA of 55¹.

Chart 2: Measuring the Deviation of the ARD around the XRD in Months; Summarized by Headcount



¹ Table II-C of the valuation regulation is used to determine the XRA for many deferred-pay plan participants. In the common cases of unreduced retirement benefits at 62 or 65 coupled with earliest retirement eligibility at 55, the XRA is 58. When these participants actually retire at age 55 (first available), the chart shows a negative 36 months. This might be evidence toward using a “first available” assumption for these participants.

Chart 3: Measuring the Deviation of the ARD around the XRD in Months; Summarized by Benefits In-Force



A similar set of charts show the deviations from ARDs in yearly intervals, where the deviation is segmented in whole years. The “0” year deviation includes data in which the ARD was 6 months before to 5 months after XRD. The -1 year includes data in which the ARD was 18 to 7 months before XRD. The +2 year includes data in which the ARD was 18 to 29 months after XRD, etc.

Chart 4: Measuring the Deviation of the ARD around the XRD in Years; Summarized by Headcount

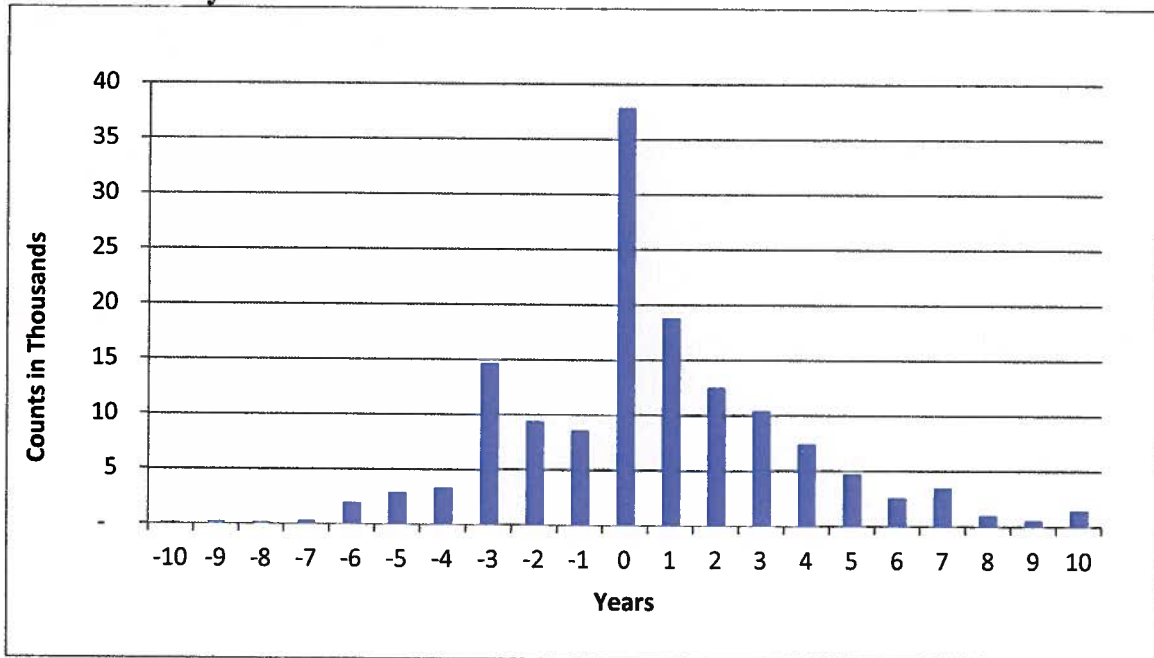
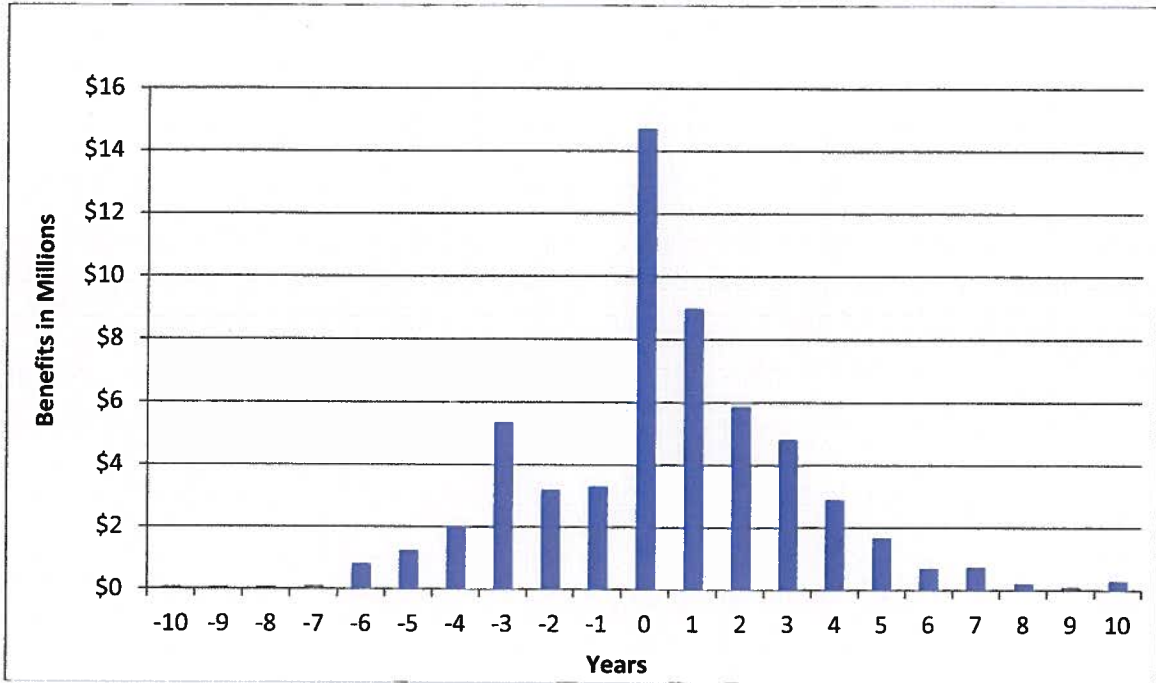


Chart 5: Measuring the Deviation of the ARD around the XRD in Years; Summarized by Benefits In-Force



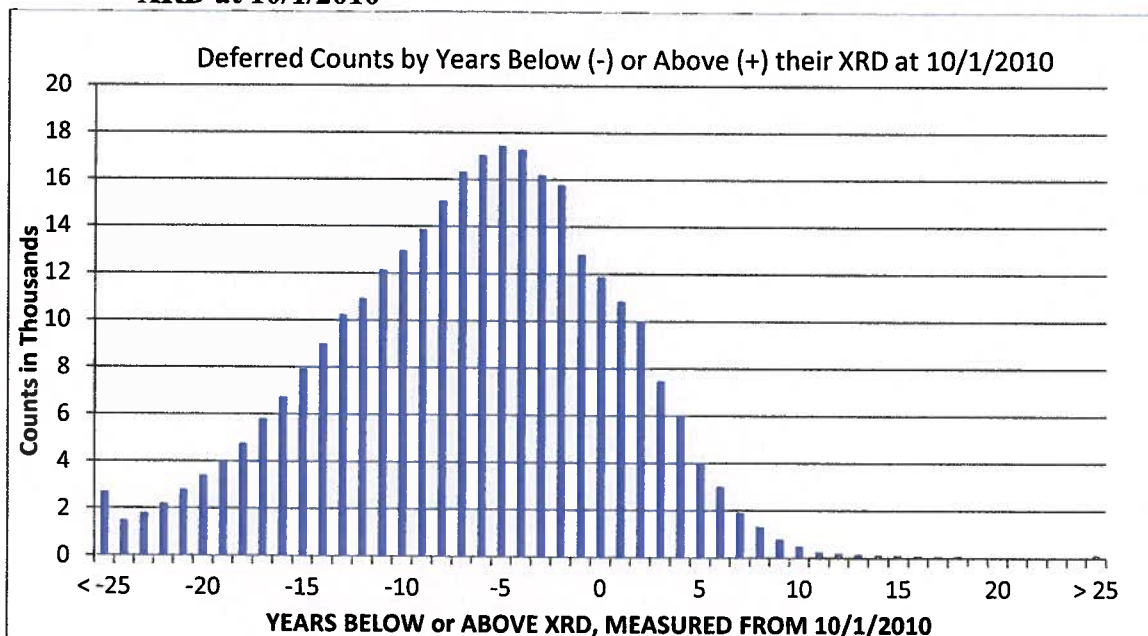
3.3 Analysis of Deferred Vested Participants

Chart 6 shows the distribution of current Deferred Vested Participants (participants who have not yet retired or “Deferreds”) around their XRDs. At any point in time when analyzing deferred vested participants, there will be participants below and above their XRAs. The chart below shows that there is not a disproportionate number of Deferreds who have delayed their actual retirement beyond their XRDs. It is possible that our XRA analysis could be invalidated if there were a relatively large proportion of Deferreds who were well past their XRDs, especially relative to historical study norms. Of the 301,342 Deferreds included in the scatter, 78.3% are at or below XRD, 89.7% are at or below XRD + 3 years, 94.7% are at or below XRD + 5 years and 99.2% are at or below XRD + 10 years. The average delay period for the “XRD-delayed” deferred vested participants is 3.6 years, compared to an average 4.05 year delay from the 2002 study.

The excess of the average ARD over the average XRD has increased slightly from 1.4 months in the 2002 study to 6.4 months in the current study. This increase should be monitored in subsequent studies.

One measure of the impact of the delayed Deferreds is to assume that **all** elect retirement 6 months (on average) after the 9/30/10 snapshot, while the remaining 237,085 Deferreds currently below their XRD all follow the current pattern of retiring on average 6.4 months beyond their XRD (the latter is a conservatively high estimate, since this average includes Deferreds who were well beyond their XRD in the 2002 study and eventually retired by 10/1/2010). Under this conservative assumption, the current average ARD over XRD deviation of 6.4 months would climb to 12.6 months on the combined group (i.e. even with somewhat adverse experience assumptions for this group, we’re still within 13 months of the assumed XRD overall).

Chart 6: Deferred Participants Not-Yet-Retired: Counts Split by Years below/above XRD at 10/1/2010



4 Additional Comments

Although the average ARAs presented in Section 3 correspond well to the average XRAs, the XRAs display a significant peak at age 58 that is not present in the ARAs. As noted previously, in the common case of unreduced retirement benefits at 62 or 65, coupled with earliest retirement eligibility at 55, Table II-C of the valuation regulation produces an XRA of 58 for both EURAs. If participants in these ERA/EURA tranches actually retire at age 55 (first available), this could account for the peak at minus 36 months. Minimally, it may be worth changing the XRA assumption from 58 to 55 for the ERA/EURA combination of 55/62 – as most participants would likely enjoy a subsidized early retirement benefit at their earliest retirement age and would likely opt for this subsidy as soon as possible.

This section also briefly assesses the valuation impact of assuming retirement decrement rates across a range of ages, versus the current methodology of assuming 100% retirement at a single age (based on the earliest and earliest unreduced retirement ages). The current retirement assumption is determined by assessing each individual's earliest and earliest unreduced retirement ages and choosing a single age between these two ages as the assumed retirement age. In performing the valuation for many ongoing plans, the plan's actuary often assumes probabilities or rates of decrement across a range of ages for any given active or deferred vested participant (e.g., 25% of the participant is assumed to elect retirement at the earliest retirement age of 55, 15% for ages 56-61, 40% at age 62, 20% for ages 63-64 and 100% at age 65). We reviewed the impact of IPVFB assuming each participant retires over a range of ages – based on the current observed percentages of actual retirements between 55 and 65.

It should be noted that the IPVFB system is provided with the XRA benefit for deferred vested participants from PBGC's termination valuation, and since the early retirement factors are not readily available, the system values the present value based on the XRA benefit – assumed to be payable at XRD. For those participants who are beyond their XRD at the valuation date, the system increases the present value calculated at XRA with interest, thus producing near actuarial equivalence. If multiple retirement ages were to be assumed for IPVFB, each plan's early retirement factors would need to be available to properly determine the present value of benefits.

Using the percentages of retirees at each age (from Section 3, by counts) between 55 and 65 inclusive, we developed rates of retirement at these ages. We then compared the present value of a benefit assumed to be paid at multiple retirement ages versus the present value when a single XRA is assumed. In order to perform this analysis we needed an assumption as to the earliest unreduced retirement age and the associated early retirement table(s). We analyzed two scenarios:

1. Scenario 1: Earliest unreduced retirement age is 65 with early retirement reduction factors of 5/9 of 1% per month for the first 60 months prior to 65, and 5/18 of 1% per month for the next 60 months, and

2. Scenario 2: Earliest unreduced retirement age is 62, with 5% per year early retirement reductions for each year prior to age 62.

The former reductions are widely accepted as nearly actuarially equivalent, and the latter are a common set of subsidized early retirement factors. Finally, the ratios of the present values using the multiple retirement decrement rates are shown relative to the present values under the current XRA approach. The fact that the ratios are close to 100% supports the adequacy of using a single age expected retirement age, versus capturing the present value with a more “refined” retirement rate assumption. It also should be noted that employing multiple retirement rates would entail possessing the early retirement factor table(s) by plan and having universal sets of retirement rates applied for combinations of earliest and earliest unreduced retirement ages.

Table 3: Impact of Using Multiple Retirement Rates versus a Single XRA when Earliest Unreduced Retirement Age is 65

SCENARIO 1: ERF = 6.67%/year first 5; 3.33% next 5 and EURA = 65						
ANB	Early Retirement Rates based on Experience	ERF Scenario 1: 5/9% and 5/18%	XRA when EURA = 65		PV for Males using multiple retirement rates relative to PV using XRA ¹	PV for Females using multiple retirement rates relative to PV using XRA ¹
55	18.40%	0.5000	58		102.3%	102.6%
56	10.10%	0.5333	59		103.7%	104.0%
57	7.40%	0.5667	60		105.4%	105.5%
58	7.30%	0.6000	60		105.0%	105.4%
59	7.20%	0.6333	61		102.3%	102.4%
60	22.60%	0.6667	62		100.6%	100.5%
61	14.40%	0.7333	62		101.3%	101.5%
62	35.50%	0.8000	62		101.0%	101.5%
63	23.10%	0.8667	63		100.4%	100.8%
64	16.30%	0.9333	64		100.0%	100.2%
65	100.00%	1.0000	65		100.0%	100.0%

¹ GAM-1994 projected to 2021 under Scale AA and 4.41% for 25 years; 4.51% thereafter

TABLE 4: Impact of Using Multiple Retirement Rates versus a Single XRA when Earliest Unreduced Retirement Age is 62

SCENARIO 2: ERF = 5%/year and EURA = 62

ANB	Early Retirement Rates based on Experience but forcing 100% Retirement at 62	ERF Scenario 2: 5%/year reduction from 62	XRA when EURA = 62	PV for Males using multiple retirement rates relative to PV using XRA ¹	PV for Females using multiple retirement rates relative to PV using XRA ¹
55	18.40%	0.6500	58	98.8%	98.9%
56	10.10%	0.7000	59	99.2%	99.3%
57	7.40%	0.7500	59	98.7%	99.0%
58	7.30%	0.8000	60	99.4%	99.5%
59	7.20%	0.8500	60	98.8%	99.0%
60	22.60%	0.9000	61	99.8%	99.8%
61	14.40%	0.9500	61	98.7%	98.9%
62	100.00%	1.0000	62	100.0%	100.0%

¹ GAM-1994 projected to 2021 under Scale AA and 4.41% for 25 years; 4.51% thereafter

Lynchval does not think that there is much computational accuracy to be gained from adopting a multi-age retirement decrement approach. Furthermore, this modification would require that each plan's Early Retirement Reduction Factor table be captured in the current software.

5 Conclusion

This study reflected far more extensive data than prior studies for analyzing actual PBGC retirement experience relative to PBGC's XRA assumption. The observed retirement experience from this study showed that, on average, the current PBGC retirement assumption is adequate in predicting retirements for deferred vested participants. It also does not appear that much computational accuracy is gained by adopting a multi-age retirement decrement approach. Rather, the PBGC's single retirement age assumption, derived from the participant's earliest and earliest unreduced retirement ages, performs adequately on average in capturing actual PBGC retirement experience.

MULTIEMPLOYER PENSION PLANS

*Report to Congress Required by
the Pension Protection Act of 2006*





JAN 22 2013

The Honorable Joseph Biden
President of the Senate
Washington, D.C. 20510

Dear Mr. President:

We are pleased to submit to the Congress the multiemployer pension plan report required by section 221 of the Pension Protection Act of 2006 (PPA). Section 221 directs the Secretary of Labor, the Secretary of the Treasury, and the Director of the Pension Benefit Guaranty Corporation (PBGC) to study the effects of the PPA's amendments to the Employee Retirement Income Security Act of 1974, as amended (ERISA), and the Internal Revenue Code of 1986, as amended, on the operation and funding status of multiemployer plans, and to report to the Congress the results of such study.

Sincerely,

Hilda L. Solis
Secretary of Labor

Timothy F. Geithner
Secretary of the Treasury

Joshua Gotbaum
Director, PBGC




JAN 22 2013

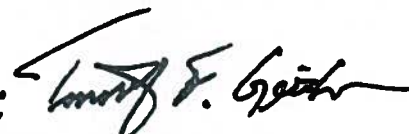
The Honorable John Boehner
Speaker of the House of Representatives
Washington, D.C. 20515

Dear Mr. Speaker:

We are pleased to submit to the Congress the multiemployer pension plan report required by section 221 of the Pension Protection Act of 2006 (PPA). Section 221 directs the Secretary of Labor, the Secretary of the Treasury, and the Director of the Pension Benefit Guaranty Corporation (PBGC) to study the effects of the PPA's amendments to the Employee Retirement Income Security Act of 1974, as amended (ERISA), and the Internal Revenue Code of 1986, as amended, on the operation and funding status of multiemployer plans, and to report to the Congress the results of such study.

Sincerely,


Hilda L. Solis
Secretary of Labor


Timothy F. Geithner
Secretary of the Treasury



Joshua Gotbaum
Director, PBGC

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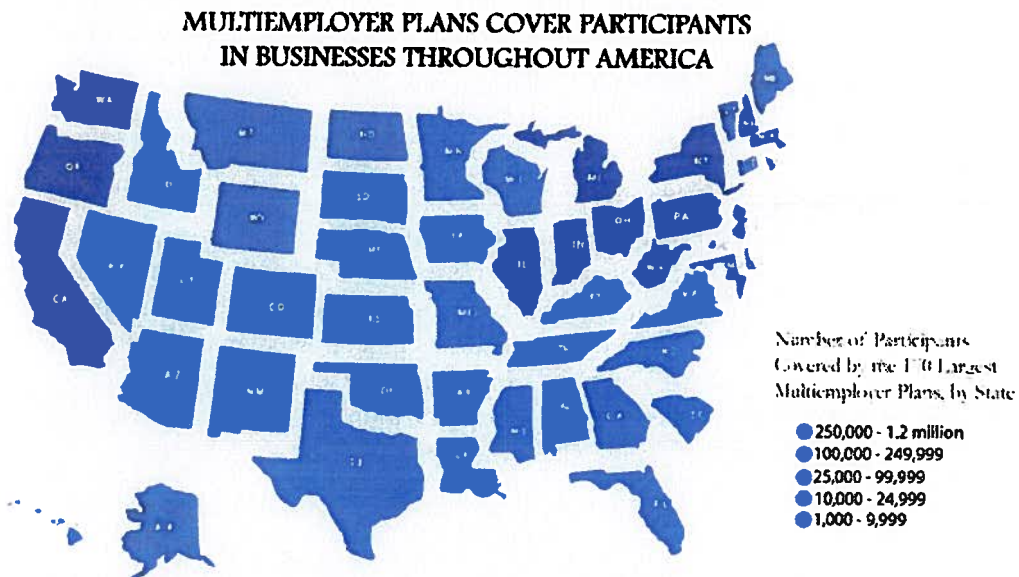
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Introduction and Summary

More than 10 million Americans working in a wide range of industries depend on about 1,500 private-sector multiemployer defined benefit plans to secure their retirement income.¹ Multiemployer plans provide portability for workers as they move to different employers or job sites within the same industry.

A multiemployer plan pools contributions, benefits, and risks for the contributing employers' unionized workers and other beneficiaries, rather than requiring that they be borne by the individual employer or individual employee. Multiemployer plans are maintained under collective bargaining agreements between labor unions and two or more employers, and are typically governed by joint boards of trustees appointed by sponsoring unions and employers.

Most of the participating employers in multiemployer plans are small businesses. Multiemployer plans offer small businesses a way to provide a traditional pension without the



burdens of having to set up a complex human resources organization. As with the private single-employer system, however, significant contributions are made by large employers and the majority of participants are in large plans to which hundreds or even thousands of employers contribute. In 2010, seventy multiemployer plans had assets of \$1 billion or more, and two plans had assets in excess of \$10 billion.

Employers fund multiemployer plans through contributions, which are generally based on hours worked by active employees. Contribution amounts are negotiated in labor contracts.

¹ This study focuses on multiemployer defined *benefit* pension plans. There were also nearly 1,300 multiemployer defined *contribution* pension plans that held about \$105 billion in assets in 2010 on behalf of approximately 4 million participants.

Typically, the trustees of each plan determine the level of benefits the plan will provide based on the level of contributions and the funding status of the particular plan. A plan can be amended to increase benefits both prospectively and retroactively for active employees, and for retired or separated vested employees, but generally cannot be amended to reduce benefits once they have been earned.

There are multiemployer plans and participants in every state. The map above estimates the approximate number of multiemployer plan participants, by state, for the 170 largest multiemployer plans in 2009, which collectively covered 7.9 million participants.²

Underfunding Following 2008 Market Crisis As of the first day of the plan year beginning in 2009, the value of vested benefits promised by all multiemployer plans was \$673 billion; to cover those liabilities, multiemployer plans had only \$327 billion in assets.³ This translates to an aggregate funding level of only 49 percent. Although asset values recovered to some extent during the 2009 and 2010 plan years, climbing from \$327 billion at the beginning of the 2009 plan year to nearly \$400 billion by the end of the 2010 plan year, aggregate underfunding remained significant.

This situation appears to be the result of several factors. Many plans had counted on unusually favorable investment earnings through the 1990s to finance expanded retirement benefits. Employers often were not called upon to increase their contribution rates to keep pace with benefit increases. In some cases, plans increased benefits to protect the tax deductibility of employer contributions already agreed to in multi-year collective bargaining agreements.

The 2000-2002 market downturn exposed weaknesses in the multiemployer plan funding rules, the effects of which were particularly noticeable for “mature” plans with a large proportion of retirees and significant unfunded liabilities. Benefit increases based on past service were subject to very slow funding under statutory rules that allowed amortization over 30 or 40 years and actuarial losses attributed to lower than expected asset returns were subject to a 15-year amortization. With asset losses and the materialization of significant underfunding in the early 2000s, plans were compelled to increase contributions.

Actives/Retirees and Other Demographic Factors The demographics of participant populations complicated the situation of many multiemployer plans. Many of these plans are seeing a declining percentage of active employees for whom contributions are being made: By 2010, only 39% of all participants in multiemployer plans were active employees, while 61% were retired or separated vested participants.

² These 170 plans, each of which had more than 10,000 participants in 2009, cover three-quarters of all multiemployer plan participants. The distribution of participants on this map is a rough approximation based on the state in which each plan is headquartered or administered. In addition, for some regional and national plans, a portion of the participants are assumed to be located in neighboring states or spread among all states, based on the Survey of Income and Program Participation, (SIPP), Wave 7, U.S. Census Bureau. Because participants' addresses are not reported to the ERISA agencies, in the case of regional and national plans, the map relies on incomplete data to approximate the geographic distribution of participants among the states.

³ The source of these asset and liability figures is the Form 5500 series annual report filings. Assets are based on market value as of the beginning of the plan year. Vested liabilities, also reported as of the beginning of the plan year, are adjusted to a standardized interest factor (see Footnote 44), unless otherwise noted.

Available Remedies Because benefits generally cannot be reduced after they are earned,⁴ underfunding can be made up only with prospective actions affecting active workers: contributions can be increased and/or accruals of future benefits for active employees can be reduced so that future contributions exceed the cost of future benefit accruals. The difference between future contributions and the cost of future benefit accruals is effectively an additional charge imposed on employees' earnings and/or employers' profits. The larger the needed charge, the more difficult it is to attract new employers and employees into the plan (which in turn increases the per participant charge) and the more likely employers are to withdraw.

Employers and active employees agree to implement such an additional charge with great reluctance, especially if the bulk of the benefit goes to retirees. The employers and employees are even less likely to support such a charge if many of these retirees are "orphan participants" (*i.e.*, they formerly worked for companies that no longer contribute to the plan).

The situation is made worse by withdrawing employers that often do not pay their full obligations. Although plans can and do assess withdrawal liability, the law limits the annual amounts that an employer must pay and caps the number of annual payments at 20 years; in cases of bankruptcy, the outstanding withdrawal liability is often unpaid. The more employers that withdraw without paying their share of underfunding, the larger the underfunding burden placed on employers and employees who remain.

For all these reasons, many plans' benefit obligations continued to grow even as asset values plummeted,⁵ and the level of underfunding in multiemployer plans – which had remained well below \$50 billion for the previous 30 years – jumped to just over \$100 billion in 2002 and exceeded \$200 billion for the first time in 2004. In 2003, the multiemployer insurance program at the Pension Benefit Guaranty Corporation (PBGC) went from a positive to a negative net position (*i.e.*, its liabilities now exceeded its assets), due to an increasing number of plans that were classified as likely to require financial assistance in the future. By 2004, PBGC's financial statements for its multiemployer insurance program included recognized liabilities of nearly \$1.3 billion but total assets of only \$1 billion.

Federal Actions to Date Congress acted repeatedly in the past decade to help multiemployer plans. The Pension Funding Equity Act of 2004 (PFEA) was enacted to address the increased funding requirements resulting from the 2000-2002 market downturn by providing for a deferral of the charges related to investment losses for certain multiemployer plans.

Many stakeholders in the multiemployer community worried that the short-term funding relief offered under PFEA would be inadequate. Some plans faced minimum funding requirements that far exceeded bargained-for contributions and employers faced excise taxes on funding deficiencies. Employer and union representatives, plan trustees, participants, and professional advisors developed proposals that they hoped would alleviate the strains

⁴ Under the Pension Protection Act of 2006 (PPA), plans in critical status must limit lump sums and may reduce certain benefits earned to date for active and separated vested participants (but not retired participants whose benefit commencement date is before the plan provides notice of critical status).

⁵ Total assets in all multiemployer plans increased at an average rate of 11% per year during the last half of the 1990s – increasing from \$210 billion in 1995 to \$357 billion in 2000. By 2003, however, plan assets fell to approximately \$309 billion, before recovering to \$347 billion in 2004. Benefit liabilities, on the other hand, increased from \$218 billion in 1995, to \$340 billion in 2000, to \$487 billion in 2003, and to \$556 billion in 2004.

experienced by plans and strengthen plan funding in the long term. The Pension Protection Act of 2006 (PPA) enacted significant changes to the funding rules for multiemployer plans.

PPA aimed to impose greater financial discipline on multiemployer plans, while also providing funding relief for plans with moderate and severe funding problems. New requirements include annual plan status certifications based on standardized funding and liquidity measures for determining the financial health of plans. These standardized measures are used to identify multiemployer plans in acute financial distress, known as “critical” (“red”) status plans, those plans experiencing financial difficulty, known as “endangered” (“yellow”) or “seriously endangered” (“orange”) status plans, and those plans in “green,” non-distressed status.

The plan’s status in turn would facilitate trustee recognition of the plan’s funding problems and lead to the development of long-term economic plans to improve funding, including quantifiable benchmarks for measuring funding progress. PPA provides more tools for plans to bring assets and liabilities into balance, but generally leaves decisions on how to solve a plan’s funding problems to the plan’s trustees and collective bargaining parties. The PPA changes also bolstered disclosure rules to enable participants and beneficiaries to better understand the funding status of their plans, expand employer accessibility to withdrawal liability estimates and other information, and allow the bargaining parties and the Department of Labor (DOL), the Internal Revenue Service (IRS), and the PBGC to monitor the response of plans to the new funding requirements.

After the market decline in 2008, Congress enacted other pension relief legislation, the Worker, Retiree, and Employer Recovery Act of 2008, P.L. 110-458 (WRERA) and the Preservation of Access to Care for Medicare Beneficiaries and Pension Relief Act of 2010, P.L. 111-192 (PRA 2010). WRERA permitted multiemployer plans to elect a temporary forbearance from certain of the requirements of PPA. The vast majority of these plans certified to be in critical, seriously endangered, and endangered status in 2009 elected to defer actions otherwise required by their status certifications and/or to extend the time for demonstrating progress under their funding improvement or rehabilitation plans. As permitted under PRA 2010, more than 700 multiemployer plans chose to amortize investment losses incurred in the 2008 market crisis over a 29-year period (nearly twice as long as otherwise required under PPA) and/or to lessen the impact of investment losses on the actuarial value of plan assets used to determine their future funding requirements and funding status.⁶

Funding Status The condition of multiemployer plans varies widely. Some large and small plans have been able to ameliorate the steep contribution rate increases and benefit cuts that typically are required for plans in endangered and critical status. These tend to be plans that regularly adjusted accrual rates to reflect plan contributions and funding levels, limited past service benefit increases, restrained investment return assumptions, and mandated increases in

⁶ In the Deficit Reduction Act of 2005, P.L. 109-171 (DRA), Congress increased the annual premium plans pay for PBGC insurance from \$2.60 per participant to \$8 per participant, effective for plan years beginning in 2006 (indexed to the National Average Wage Index). The Moving Ahead for Progress in the 21st Century Act, P.L. 112-141 (MAP-21) increased the premium to \$12 per participant in 2013 (indexed thereafter). The current guarantee limit, which was last set by Congress in 2001 (Consolidated Appropriations Act, 2001, P.L. 106-554), provides a maximum guarantee for a participant with 30 years of service of \$1,072.50 per month (not indexed).

contributions even during periods of elevated investment returns. These plans responded promptly to investment losses by capping their plans' liabilities.

Other plans have not fared so well, showing precariously weak funding levels. Many of these plans (some already terminated by the mass withdrawal of all employers from the plan) are in declining industries that have high rates of employer bankruptcies, such as textiles, typographical and graphic arts, furniture, and fishing. Some plans are concentrated in a single industry that is facing challenges from other factors, such as: deregulation, non-union competition, or severe business cycles, which can cause large numbers of contributing employers (or a significant employer) to exit the plan, leaving the remaining employers responsible for the plan's underfunding.

Pre-PPA funding rules enabled many multiemployer plans to delay addressing their funding problems. Many plans in distress today provided frequent benefit increases for past and future service: vested benefit liabilities collectively more than doubled during the 1990s, and then nearly doubled again between 1999 and 2009. Among some plans contribution holidays were common, sparked by low ceilings on deductible contributions and favorable returns from a bullish stock market; plans regularly relied on excess investment returns to support benefits. At the same time, rising health care costs under tandem multiemployer welfare benefit plans, which historically captured a larger share of the employer's contributions, crowded out the longer-term need to cover pension costs. By the 2000s decade, plans were forced to confront the need for increased contributions. Local and regional plans had a particularly hard time avoiding market volatility and achieving efficiencies.

By 2009, the growth and magnitude of benefit liabilities and underfunding in multiemployer pension plans had reached staggering levels. Underfunding, which had hovered in the \$200 billion range between 2004 and 2008, ballooned to \$346 billion in 2009.⁷

When plans first certified their funding status to the IRS for the beginning of their 2008 plan year, 77% of all plans were in "green," non-distressed, status. For the 2009 plan year, "green" status certifications plummeted to 32% of plans. The percentage of plans certifying that they were in critical status or seriously endangered status grew from 12% to 44% between 2008 and 2009.

The 2009 Form 5500 Annual Report, filed by employee benefit pension plans with DOL, IRS, and PBGC, revealed that multiemployer plans sustained investment losses that averaged 21.3% of their portfolios during the plan year beginning in 2008 – which for most plans includes the 2008 market crisis.⁸ For many of these plans, the losses totaled hundreds of millions of dollars; some plans lost billions of dollars. As a result of these investment losses, plans suffered precipitous drops in their funded percentages for 2009 and plan actuaries projected funding

⁷ Plan assets, which had swelled to \$440 billion in 2008, plummeted to \$327 billion in 2009. Liabilities grew to \$673 billion in 2009, nearly doubling from a decade earlier, in 1999. (While a decline in interest rates beginning in 2003 had the effect of inflating the value of liabilities generally, rates in 1999 and 2009 were comparable.)

⁸ The 2008 weighted average return on investment, based on market value of assets for all plans as reported on the 2009 Schedule MB, Form 5500, is -21.3% (an investment loss). Plans with valuation dates of January 1, 2009 (return measured on December 31, 2008) lost somewhat more (24.9%), while non-calendar year plans lost less (15.6%). These averages are weighted by plan assets. (The unweighted average return on investment as reported on the 2009 Schedule MB for all plans is -18.2%.)

deficiencies over the next few years. Minimum required contributions skyrocketed, and there were fears that hourly contribution rates would have to triple or quadruple in order to avoid a funding deficiency.

Table 1 shows the number and percentage of plans and participants in the various zone statuses for the 2009 plan year.

Table 1. Multiemployer Plan Zone Status Certifications (2009)⁹

Funding Status	Plans		Participants	
	Number	Percent	Number	Percent
Critical	472	34.5	3,930,296	38
Seriously Endangered	125	9.1	1,469,284	14
Other Endangered	337	24.6	1,823,407	18
Neither Critical Nor Endangered	435	31.8	3,105,700	30
Total	1,369	100	10,328,687	100

Post-2008 Market Crisis The funded status of plans under PPA-required certifications has improved since 2009. The number of plans certified to be in critical or seriously endangered status declined from 44% in 2009, to 32% in 2010 and just below 26% in 2011. See Table 15 below. Better market performance accounts for some of this improvement: the 2009 weighted average return on investment, based on market value of assets for all plans as reported on the 2010 Form 5500, is 16.56%.¹⁰ The market value of plan assets in the aggregate increased by 12% during the 2009 plan year (from \$327 billion to \$366 billion from beginning to end of plan year), and then by 9% to nearly \$400 billion by the end of the 2010 plan year. However, for plans with plan years beginning January 1, 2011, the value of assets decreased by 2.74% during the 2011 plan year.¹¹

Despite the substantial improvement in plan assets since the market crisis of 2008, however, certifications of plans' funded status for the 2011 plan year – showing 60% of all plans to be in “green” status – likely overstate the extent of plans' financial health. This is due to the significant effect of PRA 2010 funding relief, which increased plans' funded percentages (*e.g.*, by allowing plans to spread the recognition of asset losses over ten years) and delayed projected funding deficiencies (*e.g.*, by extending certain amortization periods and reducing minimum required contributions).

⁹ The number of plans is based on annual certifications filed with the IRS pursuant to section 432(b)(3) of the Internal Revenue Code. The number of participants in each funding status is based on plans that reported their certified status on the 2009 Form 5500 annual return filings, generally for the beginning of the 2009 plan year.

¹⁰ The average is weighted by plan assets. The unweighted average return is 15.86%.

¹¹ Slightly over half of all plans are calendar year plans. The ERISA agencies do not yet have complete data on plans with plan years beginning later in 2011.

In fact, as of the beginning of the 2010 plan year, the average funding level for all plans remained relatively depressed. Liabilities measured \$757 billion and underfunding stood at \$391 billion. Both historically and in real terms the extent of underfunding in multiemployer plans now is unprecedented.¹² Data available through November 2012 indicate that 52% of participants are in moderately or severely distressed plans (plans in endangered, seriously endangered, or critical status under PPA);¹³ this percentage has declined from over 70% two years ago, due in part to improvements in some plans but also due to the effects of funding relief calculations which made it easier for plans to avoid endangered, seriously endangered or critical status. Although many plans are slowly recovering, the long-term financial condition of multiemployer plans does not appear to have improved as substantially as the change in plans' certified statuses might suggest.

Encouraging Signs for Most Plans Plans began in 2009 to take advantage of several PPA provisions that have the potential to substantively improve plans' funded status in the aggregate over time. As a result of entering endangered or critical status, many plans were required to adopt funding improvement or rehabilitation plans that will put them on a disciplined path toward better funding. In 2009, nearly 200 plans reported that they reduced future benefits (e.g., future accrual rates), and 115 critical status plans reported that they reduced adjustable past benefits. In 2010, future benefit reductions were made by 172 plans and adjustable benefit reductions were made by 149 plans, or nearly 40% of critical status plans in 2010. At the same time, plans frequently require substantial increases in contributions through funding improvement and rehabilitation plans, especially where only minor reductions in benefits are made.

Plans also benefitted from other PPA provisions: in 2010, 178 plans operated under a 5-year automatic amortization extension to reduce minimum required contributions, and 90 plans reported accumulated funding deficiencies¹⁴ totaling \$1.9 billion but were generally exempt from the otherwise applicable excise tax. In addition, PPA provisions restrict plans in distressed statuses from undertaking certain actions, which would decrease the plan's funded status, such as amendments increasing benefits or paying lump sum benefits.

Because funding improvement and rehabilitation plans will take time to be implemented – contribution and benefit schedules are generally adopted through collective bargaining – many more plans are expected in the near future to take advantage of PPA tools and provisions that will strengthen plans financially. PBGC projections suggest that PPA provisions will help improve some plans' funded percentages over time, relative to pre-PPA law. However, it is not possible to estimate with confidence either how many plans will take advantage of the provisions or the effect of their actions on their financial condition.

¹²The increase in underfunding for the 2010 plan year is largely attributable to a decrease in the standardized interest factor from 5.38% in 2009 to 4.52% in 2010. Using the 2009 factor, liabilities would have measured \$699 billion in 2010, resulting in aggregate underfunding closer to the 2009 level.

¹³ The figure does not reflect the most recent zone status certifications provided to IRS. Rather, status certifications (and the number of participants) are drawn from each plan's most recent Form 5500 filing, supplemented by more recent endangered or critical status notices or annual funding notices, if any.

¹⁴ This was more than four times the annual average of plans showing a minimum funding deficiency prior to the effective date of PPA.

Nevertheless, some severely distressed plans may not be able to recover using PPA tools and authorities. In some cases, these plans have reported that they are not making the scheduled progress required by law in meeting the requirements of their rehabilitation plans. A number of plans indicate that they have exhausted all “reasonable measures” for contribution increases and reductions in adjustable benefits and do not reasonably expect to emerge from critical status within a 10-year period or at a later time, and are taking measures to forestall possible insolvency.

About This Report PPA amended the Employee Retirement Income Security Act of 1974 (ERISA) and the Internal Revenue Code (the Code) to substantially revise the funding rules and disclosure requirements applicable to multiemployer plans and to make other related changes.

Some of these provisions will sunset after 2014. To assist Congress in determining what actions should be taken, section 221(a) of PPA directs the Secretary of Labor, the Secretary of the Treasury, and the Director of the Pension Benefit Guaranty Corporation to conduct a study of the effect of the funding amendments and related changes on the operation and funding status of multiemployer plans and to report to the Congress the results of such study, including any recommendations for legislation. The study must include an evaluation of the funding difficulties faced by small businesses participating in multiemployer plans and the impact of PPA changes on small employers.

This document provides the information required under section 221(a) of PPA.¹⁵ It offers information on multiemployer plans that may be useful as Congress considers the effect of the multiemployer funding provisions under PPA and contemplates possible future action. The Chapters in this report focus on data reported by plans in their 2009 and 2010 Form 5500 series annual report filings, as supplemented by limited information from other recent notices to the federal government.

This report contains no recommendations. The many changes that have occurred since 2006, including major changes in economic conditions, financial markets, regulations, and funding requirements, make it difficult to assess with any specificity either the use by plans of the tools and authorities provided in PPA or the need for further changes. This is exacerbated by the fact that, until October 2012, the most recent plan year for which the Government had complete information was the 2009 plan year, with only limited information on plan actions since then. Nonetheless, the information provided can inform and assist a dialogue about multiemployer funding issues.

The following is a brief description of the Chapters in this report.

Chapter II, About Multiemployer Plans, describes the structure of multiemployer plans and the benefits they provide, the current demographic characteristics of plans, including numbers of orphan participants (whose employers no longer contribute to the plan) and

¹⁵ Every five years, PBGC is required to analyze and report on the adequacy of its multiemployer premiums (ERISA section 4022(A)). That report is being submitted separately. That report recommends PBGC premiums be evaluated in the context of and during the broader multiemployer legislative review prior to the 2014 sunset of some of the PPA provisions.

withdrawn employers derived from new reporting requirements under PPA, and the underfunding levels of multiemployer plans over time and in various industries.

Chapter III, Funding Rules, contains a description of the funding rules for multiemployer plans (including the special rules enacted under PPA) and comprehensive tabular data and analysis that describe the effects of the funding rule changes under that law. The data show the significant deterioration in plan funding health since the market downturn in the fall of 2008. For example, they show the depletion of credit balances under plans' funding standard accounts, the downgrading of many plans to endangered or critical status in 2009, the widespread use of benefit reductions under funding improvement and rehabilitation plans, the adoption of other self-help measures available under PPA – such as automatic amortization extensions – to adjust minimum required contributions, and the effects of the elimination of excise taxes for the many plans that suffered funding deficiencies after 2008. The data also demonstrate the heavy reliance of plans on funding relief provided under WRETA and PRA 2010.

Chapter IV, Reporting and Disclosure Requirements, describes additional reporting and disclosure requirements to which multiemployer plans are subject under PPA. These generally concern the provision of financial information and actuarial data to contributing employers, participating unions, plan participants, and ERISA agencies.

Chapter V, Small Business Participation in Multiemployer Plans, describes the benefits to small employers of participation in multiemployer plans, offers the results from surveys of trade representatives and industry representatives on small employer participation in construction industry multiemployer plans, and provides background data on the incidence of various types of retirement and savings plans among private industry employers of different sizes and the employer costs for plans of different-size employers.

Chapter VI, Further Steps to Strengthen Plans and Protect Pensioners, describes the importance of multiemployer plans as a source of retirement security for millions of workers, and the danger to some distressed plans, contributing employers, and participants and beneficiaries unless steps are taken to provide additional tools for trustees to stabilize the financial conditions of their plans. It urges a serious collaborative effort by all of the stakeholders, the Administration and Congress to discuss the current and potential future problems faced by multiemployer plans and to work toward consensus around the best ways to solve them.

* * *

As we noted above, this report makes no recommendations. There is now a wide range of circumstances under which multiemployer plans operate. Some will handle the challenges of the past years with the tools they already have. Others will require additional tools, but there is no consensus as to what those are. We hope this report contributes to a necessary dialogue over the next few years with all parties and to the development of a consensus like those of the past that enables the Congress to legislate with confidence and enhance the retirement security of the many workers who depend on these plans, while minimizing the burden on businesses that employ them.

About Multiemployer Plans

Determining Plan Benefits

Under a multiemployer plan, the plan's trustees are generally empowered to establish benefit levels, types of benefits, and eligibility rules for benefits. Design flexibility in defined benefit plans has allowed plans to offer a broad array of benefits. All plans provide life annuities at normal retirement age for participants with at least 5 years of service, and many plans offer retirement-type subsidies that reward long years of service (*e.g.*, unreduced benefits at age 55 after 30 years of service) and early retirement benefits that are reduced for early commencement. Surviving spouse annuities are required by law, unless the spouse consents to a form of payment that does not include a spousal survivor annuity or otherwise waives the survivor annuity. Common formulas for determining benefits include a benefit based on a monthly dollar unit per year of service (*e.g.*, a monthly benefit of \$30 per each year of service) or a percentage of the employer's contributions (*e.g.*, the accrual for a year is 1.5% of the contributions made on the participant's behalf for that year). In 2010, the average monthly benefit received by retirees in all multiemployer plans was \$922.¹⁶

Plans may offer disability benefits at an earlier age or at a higher level than retirement benefits available under the plan, as well as incidental death benefits to cover, for example, funeral expenses. Social Security supplements may be payable prior to a participant's eligibility for Social Security, and plans may provide automatic or ad hoc post-retirement cost-of-living adjustments. In addition, benefits are payable in a variety of forms, usually with an actuarial adjustment in the participant's benefit. These forms include life annuities with 60- or 120-month guarantees, a variety of joint and survivor benefits with a spouse or other beneficiary, "pop-up" benefits after a spouse's death, full or partial lump-sum options, and an option that provides a level income to a participant before and after Social Security retirement age (taking into account Social Security payments).

The contributions that are needed to support these benefits are determined by the plan's actuary and are made by contributing employers. The employer's contribution rate (*e.g.*, dollars per hour, day, or week of covered work or unit of production) is typically specified in a collective bargaining agreement, usually negotiated by the bargaining parties from a schedule of varying contribution rates and corresponding benefit levels offered by the plan's trustees (smaller plans often have a single contribution rate and benefit schedule). The contribution rate is commonly part of a total compensation package that includes the worker's wage, and a contribution to the pension plan, the health and welfare plan, and possibly other benefit plans on behalf of the worker.

In a multiemployer plan, all contributions and assets are available to pay the benefits of all participants (workers and former workers) and beneficiaries (spouses and dependents of participants) under the plan. Assets are pooled for investment purposes, and all administrative

¹⁶ This is determined by dividing benefits paid under all plans by the number of retired participants under all plans. The average is somewhat inflated because benefits paid during the year include lump sum payments (mostly de minimis lump sums of \$5,000 or less). The average monthly benefit received in 2010 is higher in transportation industry plans (\$1,324), where an annual benefit can reach \$30,000 or more for a participant with 30 years of service, and in construction industry plans (\$1,279); it is lower in retail trade and service industry plans (\$620).

costs are paid from plan assets. If an employer withdraws from a multiemployer plan, the participants attributable to that employer continue to participate in the plan as retired or terminated vested participants, or as active participants of another contributing employer.

To protect contributing employers from shouldering the liabilities of employers that withdraw from the plan, the Multiemployer Pension Plan Amendments Act of 1980 (MPPAA) required plans (under certain circumstances) to assess withdrawal liability on employers that cease to have an obligation to contribute to the plan. Withdrawal liability, which represents an employer's allocable share of the plan's unfunded vested benefits, is payable as a lump sum or over a period of up to 20 years in an amount comparable to the employer's contribution level under the plan. If some of the withdrawal liability is determined to be uncollectible for reasons arising, for example, out of an employer's bankruptcy, the burden of that unfunded liability falls upon the employers remaining in the plan.¹⁷

Industries in which Plans Operate

Traditionally, employers in a multiemployer plan were mainly in a common industry with a high degree of union representation. Among industries with multiemployer plans, the construction and transportation industries have the highest rates of employees represented by unions.¹⁸ Construction industry plans – including workers in building and heavy construction, plumbing and pipefitting, heating, air conditioning, and electrical work – account for 55% of all plans and 37.5% of all participants. Plans in the construction industry generally rely on a large number of small contributing employers. About 15% of all multiemployer plan participants are in transportation industry plans, and 11% are in manufacturing (*e.g.*, aerospace construction). See Table 2 below. In addition to many small contributing employers, these industries also include bigger employers whose financial health can significantly influence the plan. Other industries in which multiemployer plans operate include retail food, health care, information and entertainment, public utilities, hotel and restaurant, mining, manufacturing, and retail trade. Many plans have become diversified over time, bringing in employers from other industries or merging with plans that were originally established in different industries.

¹⁷ Withdrawn employers and withdrawal liability are discussed below.

¹⁸ In 2011, unions represented 21.4% of employees in the transportation and warehousing industry, and 14.9% of employees in the construction industry. Union Members — 2011, Bureau of Labor Statistics, Table 3. Union affiliation of employed wage and salary workers by occupation and industry.

**Table 2. Numbers of Participants and Plans
in Selected Industries (2010)¹⁹**

Industry	Participants	Percent of All Participants	Plans	Percent of All Plans
Construction	3,902,447	37.5%	817	55.4%
Services	1,866,207	17.9%	172	11.7%
Transportation	1,591,243	15.3%	145	9.8%
Retail Trade	1,446,911	13.9%	87	5.9%
Manufacturing	1,181,214	11.3%	172	11.7%
Other	425,189	4.1%	82	5.6%
All Industries	10,413,211	100%	1,475	100%

Plan Size and Employer Concentration

There were 1,475 multiemployer defined benefit pension plans in 2010.²⁰ Some of these plans are very large: 2010 Form 5500 filings indicate that 76% of the 10.4 million participants and beneficiaries in all multiemployer plans are concentrated in 168 plans, each with 10,000 or more participants. Virtually all multiemployer plan participants are covered by one of the 865 plans with 1,000 or more participants.²¹ The smallest 610 plans (*i.e.*, those with fewer than 1,000 participants) cover less than 3% of all participants.²²

The 2010 Form 5500 filings indicate there are 232,567 employers contributing to multiemployer plans, although this overstates the number of employers because of substantial overlap where an employer contributes to more than one plan.²³ Of this total, 131,993 employers had obligations to contribute to one or more of the large plans with 10,000 or more participants (this also overstates the number of employers because of substantial overlap where an employer

¹⁹ Data based on 2010 Form 5500 annual return filings. See also PBGC's 2010 pension insurance data tables, Table M-8, at <http://www.pbgc.gov/res/data-books.html>.

²⁰ We have attempted to reconcile the number of total plans from Form 5500 filings with PBGC premium filings, but those numbers can still vary slightly due to discrepancies in employer identification numbers and other factors. The number of plans has declined incrementally over time as a result of mergers and close-outs.

²¹ The median number of participants in a multiemployer plan is 1,374. The mean is 7,060, which is considerably higher than the mean of 3,935 in 1987, generally reflecting mergers among multiemployer plans since that time.

²² Among the 1,475 plans were 41 insolvent (mostly terminated) plans receiving PBGC's financial assistance in 2010, as well as 51 terminated plans and 29 ongoing plans expected to require financial assistance in the future. These numbers are reflected in PBGC's financial statement for the fiscal year ending September 30, 2010. As of September 30, 2012, PBGC reported 41 plans receiving financial assistance payments (an additional eight plans received financial assistance to close out), and 61 terminated plans and 46 ongoing plans expected to require financial assistance in the future.

²³ This is down from the 277,597 employers reported to be contributing to multiemployer plans in 1987, which was the last year for which this information was required to be reported to the ERISA agencies prior to 2008.

contributes to more than one plan). The 168 largest plans average 786 contributing employers; 47 of these plans receive contributions from over 1,000 employers each, and one plan receives contributions from over 10,000 employers. The 610 smallest plans average 31 contributing employers.

Table 3. Numbers of Plans, Participants and Employers (2010)²⁴

Number of Plan Participants	Plans	Participants	Average Participants/Plan	Employers	Average Employers/Plan ²⁵
10,000 or more	168	7,920,624	47,147	131,993	786
1,000 to 9,999	697	2,207,883	3,168	83,474	120
Fewer than 1,000	610	284,704	467	17,100	31
Total	1,475	10,413,211	7,060	232,567	171

Many plans, large and small, depend on a few employers for a large percentage of total contributions. This raises risks due to the concentration of responsibility for funding. Beginning in 2008, PPA required plans to include in the Form 5500 annual report a list of employers that contributed more than 5% of total plan contributions. In 2009, 1,193 plans reported one or more individual employers contributing more than 5% of total plan contributions (“significant employers”). These significant employers contributed more than 50% of all plan contributions to over one-half of all critical status plans (381 out of 471 critical status plans). In addition, the Form 5500 filings show that several large employers contribute to multiple plans, including plans in different industries. This inter-connectedness may create significant risk to plans: if a plan fails in one industry, creating withdrawal liability for its contributing employers, that liability may impact the ability of these employers to continue contributing to plans in other industries.

Active Employees Now a Minority

The private-sector union membership rate in the U.S. economy has declined in recent decades, from 16.8% in 1983²⁶ to 6.9% in 2011.²⁷ As a result, many multiemployer plans today are “mature” plans with a large number of older participants who have earned substantial benefits under the plan and are now retired or close to retirement, and a much smaller number of younger participants.

With over 3.4 million participants drawing benefits from multiemployer plans in 2010, plan assets are being depleted – leaving plan portfolios with less available funds to generate

²⁴ Data based on 2010 Form 5500 annual return filings. See also PBGC’s 2010 pension insurance data tables, Tables M-5, M-6, at <http://www.pbpc.gov/res/data-books.html>.

²⁵ Average does not include terminated plans with no contributing employers or plans that did not report employers.

²⁶ Monthly Labor Review, October 2008, Bureau of Labor Statistics, Visual Essay: Union Membership, Table 2.

²⁷ Union Members — 2011, Bureau of Labor Statistics.

investment earnings. By 2008, many mature plans experienced increased benefit payouts just as the market downturn created unprecedented asset losses. This has put extreme pressure on employers to increase contributions just to cover plan disbursements.²⁸ Table 4 below reflects that in the four-year period between 2006 and 2010 benefit payments have increased 18.5% while contributions grew by 10.2%. As a result, during this period, the ratio of contributions to benefit payments decreased from 63.8% to 59.1% – and for critical status plans, the ratio is even lower, at 44.7% in 2010.²⁹

Table 4. Contributions and Benefit Payments (2006 and 2010)³⁰

Plan Years	Contributions	Benefit Payments	Contributions as % of Benefit Payments
2006	\$18.6 billion	\$29.2 billion	63.8%
2010	\$20.5 billion	\$34.6 billion	59.1%

Even for a plan that does not have a large outflow of current benefit payments, if the plan has more inactive participants (either retired or not currently employed, but with deferred vested benefits) than active participants, the plan is particularly vulnerable to asset losses. For example, if a plan with 10,000 inactive employees and \$1 billion of assets experiences an investment return of negative 10% instead of earning an expected 7%, the dollar amount of the loss (\$170 million in this example) must be borne by contributions for active employees. A 15-year amortization of this loss would be approximately \$17 million per year. If there were only 5,000 active employees in the plan, the annual contributions would have to increase by over \$3,000 per active employee in order to amortize that actuarial loss.

In 1980, there were 8 million total participants in multiemployer plans: 6.07 million were in active status and 1.93 million were in inactive (retired or separated vested) status. Three decades later, this three-to-one ratio of active to inactive participants had been replaced by a ratio of less than one-to-one: Of the 10.4 million total participants in multiemployer plans in 2010, 4.09 million were active participants and 6.33 million were inactive participants. In addition, the percentage of participants who are retired and receiving benefits under a plan has steadily increased from 17.7 percent in 1980 to 33 percent in 2010 – one-third of all participants.

²⁸ In 1987, employer contributions to multiemployer plans totaled \$7.8 billion; in 2010, employer contributions totaled \$20.47 billion.

²⁹ For some plans, benefits payments are expected to decline with demographic changes in future years.

³⁰ Data based on Form 5500 annual return filings.

**Table 5. Active, Retired, and Separated Vested Participants
(Percentages, 1980-2010)³¹**

Status	1980	1985	1990	1995	2000	2005	2008	2009	2010
Active	75.9%	66.1%	58.6%	52.4%	51.1%	45.7%	43.8%	41.3%	39.3%
Retired	17.7%	22.6%	25.2%	28.9%	30.1%	30.8%	32.0%	32.1%	33.0%
Separated Vested	6.5%	11.4%	16.2%	18.7%	18.7%	23.5%	24.2%	26.7%	27.7%

The proportion of inactive participants and their liabilities may be an indicator of a plan's financial health. In 2010, plans in critical and seriously endangered status had a higher percentage of retired participants and separated vested participants (35% retired and 31% separated vested) than plans in green status (33% retired and 25% separated vested).³² Among critical status plans, more than half (51%) reported liabilities for inactive participants that exceeded 70% of the plan's total liabilities.

Orphan Participants

When an employer withdraws from a plan, its employees are sometimes referred to as "orphan participants," and the remaining contributing employers become responsible for the benefits of these orphan participants who were never their employees. Orphan participants are a subset of inactive participants: they are generally participants who no longer participate actively in the plan because their employers or former employers no longer contribute to the plan.³³ If the plan becomes significantly underfunded – *i.e.*, the plan suffers a substantial asset loss or incurs unexpected adverse actuarial experience – the plan could have an orphan liability problem. There may be an insufficient number of contributing employers to make up for the shortfall with respect to the orphan participants, especially if there are no new employers to replace the withdrawn employers.³⁴

Although a withdrawing employer is required to pay withdrawal liability to account for the underfunding with respect to the employer, the withdrawal liability statutory regime, as

³¹ See PBGC's 2010 pension insurance data tables, Table M-7, at <http://www.pbgc.gov/res/data-books.html>. Data for 2010 is based on 2010 Form 5500 annual return filings.

³² Averages are weighted by number of participants.

³³ If a participant worked for more than one employer and one such employer continues to participate in the plan, the plan may identify liability for the participant's service with respect to the employer that terminated participation in the plan as orphan liability (while the participant's service with respect to the employer that continued participation in the plan would not be identified as orphan liability).

³⁴ The "orphan" liability problem may be less significant in the construction industry because participants whose employers leave the plan are often re-hired by replacement employers who take over the work of the exiting employer and contribute to the plan. However, orphan liabilities may still arise during periods of recession, or if non-union competition enters the jurisdiction of the plan, which can lead to participants who no longer have employers contributing to the plan. And there have been a number of construction plans that have incurred mass withdrawals with subsequent insolvencies that currently receive financial assistance; these plans have generally had orphan liabilities.

discussed below, has significant limitations. For instance, for many years until the 2000s decade, withdrawing employers in a large number of plans did not have withdrawal liability because the plans had no unfunded vested benefits (as determined under the plan's assumptions) as of the end of the plan year preceding the one in which the employer withdrew. In cases where plans did assess withdrawal liability, collections could be minimal if the plan operated in an industry suffering from high employer bankruptcy rates. Whether or not an orphan-heavy plan collected withdrawal liability, however, the plan could be well-funded in one year and subsequently become underfunded due to later events; such plans would also have an orphan liability problem not caused by non-payment of withdrawal liability.

Historically, reporting information did not differentiate between orphan participants and inactive participants, generally, making it difficult to identify plans with significant numbers of orphan participants. PPA requires multiemployer plans to include in the annual report filed with the ERISA agencies information regarding orphan participants. On the 2010 Form 5500, Schedule R, more than 400 plans reported having over 1.3 million orphan participants out of 6.7 million total participants.³⁵ About 43% of these orphan participants were in 153 critical status plans. Twenty-five plans reported over 10,000 orphan participants each, one "green" status plan reported just over 100,000 orphan participants (plan was in endangered status for 2009), and one critical status plan had nearly 200,000 orphan participants. Table 6 below describes the size of the orphan participant population in plans by plan status for the 2010 plan year.

³⁵ To reduce recordkeeping burdens, PBGC guidance permits plans to report as orphan participants only those participants whose most recent contributing employer had withdrawn from the plan, even if an employer with whom the participant earned earlier service credit continues to participate in the plan. (Alternatively, under the reporting rules, a plan may report as orphan participants those who have no former employers with a continuing obligation to contribute to the plan.) In addition, for the 2009 plan year, plans were permitted to give a reasonable approximation of the number of orphan participants either by conducting a random sampling of participants or by reporting the number of employers that withdrew since 1998 and the number of their participants.

Table 6. Orphan Participants by Plan Status (2010)³⁶

Plan Status	Number of Orphan Participants in Plans	Plans Reporting Orphan Participants (by Number of Orphan Participants)			
		Total	5,000+	10,000+	100,000+
Critical	570,331	153	21	13	1
Seriously Endangered	35,363	17	2	1	--
Endangered	84,880	51	5	2	
Neither Critical Nor Endangered	632,963	197	15	9	1
Total	1,323,537	418	43	25	2

Table 7 below focuses on 34 orphan-heavy plans – plans that reported at least 5,000 orphan participants – in 2009. Of a total of 3.4 million participants in these 34 plans, 1.3 million – or 27% – were orphan participants in 2009. Orphan participants averaged 31% of total participants in critical status plans and 41% of total participants in endangered and seriously endangered status plans. In contrast, among this group of orphan-heavy plans, orphan participants averaged 16% of total participants in “green” status plans (neither critical nor endangered status). The table shows the average number of orphan participants in these orphan-heavy plans by plan status in 2009 and the average percentage of participants in plans of each status who are orphan participants.

³⁶ Data based on 2010 Form 5500 annual return filings. In Tables throughout this report, unless otherwise indicated, the number of plans in each funding status is based on plans’ reported zone status on the Form 5500 annual return. These numbers may differ slightly from the number of plans that certified their funding status to the IRS for the plan year.

Table 7. Plans with 5,000 or More Orphan Participants (2009)³⁷

Plan Status	Plans Reporting 5,000+ Orphan Participants	Average # of Orphan Participants/Plan	Average # of Total Participants/Plan	Orphan Participants as % of Total
Critical	17	24,634	80,183	31%
Seriously Endangered	5	28,036	62,075	45%
Endangered	5	27,815	75,033	37%
Neither Critical Nor Endangered	7	31,576	198,415	16%
Total	34	27,031	101,104	27%

PPA also requires plans to report, for a plan year, in addition to the number of orphan participants for that plan year, the number of orphan participants for each of the two preceding plan years. For the 34 plans with 5,000 or more orphan participants, the percentage increase in orphan participants between 2007 and 2009 was 14%. (Orphan participants increased from 806,841 to 919,058.) Critical status plans experienced a significantly greater increase in orphan participants during these years than plans in other certified statuses: while the percentage increase was 20% for critical status plans, it ranged from 9% to 12% for plans in all other statuses. Among the greatest increases in orphan participants reported between 2007 and 2009 was a 40% increase in one large critical status plan with over 100,000 participants, a 289% increase in an endangered status plan with 10,000 or more participants, and a 51.2% increase in a plan that is neither in critical nor endangered status with over 100,000 participants.

Current law allows plans to apply to PBGC for an order of partition under which the nonforfeitable benefits of participants (including retirees) are transferred to the partitioned portion of the plan and such participants and beneficiaries receive only their PBGC-guaranteed benefit as the partitioned portion is a terminated and insolvent plan. The statute imposes strict requirements that must be satisfied for PBGC to exercise its discretion to order the partition. The statute requires that the PBGC make a finding that the plan is likely to become insolvent; has incurred a substantial reduction in contributions due to employer bankruptcies; is in or will likely be in reorganization requiring significant increases in contributions; and the likelihood of insolvency will be significantly reduced by partition. The immediate and detrimental impact on the partitioned participants is the reason the statutory requirements are so strict. Indeed, since the passage of MPPAA, PBGC has only partitioned two plans. Since PBGC's second order of partition, which happened in 2010 when PBGC partitioned a trucking plan, multiemployer plans

³⁷ Data based on 2009 Form 5500 annual return filings.

have expressed an increased interest in seeking partitions. To date, however, no other plans have satisfied the strict requirements necessary for an order of partition.

Withdrawn Employers and Withdrawal Liability

An employer withdrawal from a multiemployer plan occurs when an employer permanently ceases to have an obligation to contribute under the plan or permanently ceases all covered operations under the plan.³⁸ Such a cessation may occur as a result of a company going out of business, an employer's liquidation in bankruptcy or the rejection of a collective bargaining agreement in bankruptcy, the sale of assets to another employer (if the purchaser does not assume the collective bargaining agreement and comply with other statutory requirements), or the bargaining parties declining to renew a collective bargaining agreement requiring contributions to the plan.³⁹

An employer that withdraws from the plan is assessed withdrawal liability, which represents the employer's share of unfunded vested benefits (UVBs) as determined under the withdrawal liability method adopted by the plan.⁴⁰ The recent increase in plan underfunding has caused withdrawal liability assessments to soar. Also, because an employer's annual withdrawal liability payments are based on the employer's highest contribution rate in the last ten years, recent contribution rate increases have generally added to the amount an employer would be obligated to pay in annual withdrawal liability payments. Contributing employers to a plan may weigh the cost of contribution increases against potential withdrawal liability in deciding whether to withdraw, taking into account that the employer's withdrawal liability may be higher if the withdrawal occurs after a period of significantly higher contributions.

³⁸ There are separate rules for partial withdrawals, which may occur if an employer's contribution base shrinks by at least 70% or under similar circumstances. Special withdrawal liability rules apply for some industries, such as construction, where a cessation of contributions is not by itself considered a withdrawal. Generally, under these special rules, withdrawal liability is incurred if the employer's obligation to contribute ceases but the employer continues (or within five years resumes) the same type of work in the same area as was covered by the collective bargaining agreement and does not contribute on that work. A special provision under MPPAA permits a plan meeting certain requirements to allow a new employer to come into the plan for five years with no withdrawal liability. In addition, to encourage employers to join multiemployer plans, new PBGC regulations permit plans to designate a plan year with respect to which the plan's unfunded vested benefits would not be allocable to new employers joining thereafter.

³⁹ Special limitations apply in circumstances such as business reorganizations and insolvency liquidations.

⁴⁰ The MPPAA prescribes four methods that a plan may use to determine the amount of UVBs allocable to a withdrawing employer, as well as optional modifications to those methods. Under two statutory methods, the modified presumptive and rolling-5 methods, employers are generally responsible for one UVB pool determined as of the end of the plan year preceding the employer's withdrawal. Under the presumptive method, a withdrawing employer is liable for a share of the change in each year's UVBs during which the employer had an obligation to contribute. (Construction industry plans are limited to the presumptive method.) Under these methods, an employer's proportional share of the UVBs is based on a fraction equal to the sum of the employer's contributions over total contributions made by all employers for the five plan years preceding the plan year in which the UVBs arose. Under a fourth method, the direct attribution method, an employer's withdrawal liability is based generally on the benefits and assets attributable to participants' service with the employer, as well as a proportional share of the UVBs which are not attributable to service with the employer or other employers who are obligated to contribute in the plan year preceding the plan year the employer withdraws.

Under PPA, multiemployer plans are required to include in the annual report filed with the ERISA agencies the number of employers that withdrew from the plan during the preceding plan year. On the 2009 Form 5500, Schedule R, 248 plans reported that 4,255 employers withdrew in the prior plan year. See Table 8 below. Nearly one-half of all the plans reporting withdrawals in the 2008 plan year were in critical status in the 2009 plan year, and one-half of all withdrawing employers withdrew from plans that were in critical status in the 2009 plan year. Over one-third of withdrawing employers in 2008 withdrew from ongoing plans that were in neither critical nor endangered status for the 2009 plan year. Five plans reported withdrawals related to mass withdrawal terminations and one plan was merged into another plan. Most plans experienced fewer than ten employer withdrawals in 2008; of course, a small number of withdrawals from a small plan, or even a significant withdrawal from a bigger plan, can cause funding difficulties. (Less than 10% of all plans reporting withdrawals had fewer than 500 participants, and all but one of these plans reported fewer than 10 withdrawals.) Based on 2010 Form 5500 filings, the number of employers reported to have withdrawn from plans in 2009 was comparable to the number in 2008.

Under PPA, a plan must also report the aggregate amounts of withdrawal liability assessed (or estimated to be assessed) against employers that withdrew from the plan during the preceding plan year.⁴¹ This amounted to over \$1 billion for employers that withdrew in the 2008 plan year. See Table 8 below. Although 50% of all withdrawing employers were in plans that were in critical status in 2009, they were assessed about 80% of the total withdrawal liability resulting from withdrawals in the prior plan year (87% if mass withdrawals are excluded). In contrast, the 35% of all withdrawing employers that withdrew in 2008 from plans that were neither critical nor endangered in 2009 were assessed 3% of the total withdrawal liability that was assessed for withdrawals occurring in the prior plan year. About 7.5% of total withdrawal liability assessed in 2009 related to mass withdrawal terminations of plans in 2008 and 2009.

In 2010 Form 5500 filings, 248 plans reported that 4,126 employers withdrew in the previous year. Plans reported withdrawal liability assessments of nearly \$1.35 billion.

⁴¹ Withdrawal liability is determined based on the plan's UVBs ending at the plan year preceding the plan year in which the employer withdrew (or, under the presumptive method, the end of each plan during the employer's participation through the plan year preceding the withdrawal). Accordingly, assessments for employers withdrawing in 2008 are based on unfunded vested benefits as of the end of the 2007 plan year (or earlier).

Table 8. Employer Withdrawals in 2008 and Withdrawal Liability Assessments⁴²

2009 Plan Status	No. of Plans with Withdrawals in 2008	No. of Withdrawing Employers in 2008	Withdrawal Liability Assessed or Estimated (in millions)
Critical	115	2,205	\$893.1
Endangered	73	466	\$104.2
Neither Critical Nor Endangered	54	1,503	\$33.4
Not reported – Mass Withdrawal or Merger	6	81	\$82.6
Total	248	4,255	\$1,113.4 ⁴³

As indicated above, the withdrawal liability rules have statutory limitations. An employer’s annual payments are limited to the contribution amounts the employer recently paid to the plan, and payments (absent a mass withdrawal) are not required after 20 years. When a majority of plans began to have UVBs in the past decade, requiring the assessment of withdrawal liability, in many cases the amounts assessed were exceptionally large due to the substantial underfunding that plans incurred. Because of the cap on the amount of the annual payment, and the 20-year limitation on annual payments, employers assessed withdrawal liability today will often not pay even the interest owed on the employer’s allocable unfunded vested benefits. Some smaller employers will pay no withdrawal liability because of the “de minimis” reduction rule if an employer’s withdrawal liability is under \$100,000 (up to \$150,000 in some cases). Also, some employers will pay reduced withdrawal liability because of limits on the amount of UVBs allocable to an insolvent employer undergoing liquidation or dissolution.

A mass withdrawal occurs when all or substantially all of a plan’s contributing employers have withdrawn from the plan. When this occurs, the plan’s trustees have the obligation to assess (i) initial withdrawal liability against all employers that have not yet been assessed, (ii) redetermination liability of all withdrawn employers for de minimis amounts and 20-year-limitation amounts, and (iii) reallocation liability; *i.e.*, the employer’s share of the plan’s unfunded vested benefits, determined using PBGC’s assumptions, in excess of amounts the plan reasonably expects to collect. In the case of the complete withdrawal of all contributing employers, employers liable for reallocation liability are those employers that withdraw in the plan year in which the last employer withdraws, or in the two previous plan years. In the case of the withdrawal of substantially all employers, employers liable for reallocation liability are those

⁴² Data based on 2009 Form 5500 annual return filings.

⁴³ Two critical status plans and two plans that were neither critical nor endangered reported employer withdrawals but did not report withdrawal liability assessments.

who withdraw from the plan as part of a plan or arrangement (presumed to be all employers who withdraw in a three consecutive plan year period in which substantially all employers withdraw). When the plan faces serious financial difficulties, the withdrawal of a few employers or the bankruptcy of a major employer, and the discharge of that employer's liability, can trigger a mass withdrawal. However, only those employers that withdraw are liable; employers that continue contributing to the plan have no withdrawal liability unless they withdraw.

Underfunding Status and Concentration

Following the initial market downturn of the 2000s decade, total underfunding of all multiemployer plans changed very little between 2004 and 2008, when it stood at \$210 billion (there were \$648 billion in vested liabilities and \$440 billion in market value of assets). By 2009 and 2010, however, total underfunding had increased to \$346 billion and \$391 billion, respectively. Table 9 below shows the growth of assets, liabilities, and underfunding in multiemployer plans over the past 30 years.⁴⁴

Table 9. Funding of Multiemployer Plans During Selected Years (\$ in millions)⁴⁵

Beginning of Year	Assets	Liabilities	Funding Ratio	Underfunding	Overfunding	PBGC Rate
1980	\$40,363	\$52,123	77%	(\$17,887)	\$6,126	8.50%
1992	184,670	187,829	98	(17,835)	14,676	6.25
1995	209,947	218,458	96	(22,726)	14,216	7.15
1997	268,471	287,569	93	(32,549)	13,452	5.80
1999	320,704	351,021	91	(44,379)	14,063	5.30
2000	356,659	339,741	105	(21,135)	38,054	7.00
2001	351,108	385,272	91	(48,412)	14,249	6.40
2002	330,104	429,329	77	(102,469)	3,245	5.70
2003	308,678	486,845	63	(178,915)	748	5.00
2004	347,471	556,018	62	(209,181)	634	4.00
2007	430,091	621,289	69	(192,849)	1,651	4.99
2008	440,132	648,069	68	(210,167)	2,230	5.37
2009	326,940	672,518	49	(345,793)	215	5.38
2010	366,333	756,999	48	(391,027)	360 ⁴⁶	4.52

⁴⁴ This data is based on plan data reported as of the beginning of the plan year on Form 5500 filings. The data reflect the market value of assets as reported, and adjusts the reported vested liabilities using a standardized interest factor that along with an assumed mortality table reflects the cost to purchase an annuity at the beginning of the year ("PBGC rate" or "PBGC factor"). See part 4044 of PBGC's regulations.

⁴⁵ See PBGC's 2010 pension insurance data tables, Table M-9, at <http://www.pbgc.gov/res/data-books.html>. This report includes adjustments for late and amended filings that will be reflected in the data tables when they are updated. Data for 2010 is based on 2010 Form 5500 annual return filings.

⁴⁶ For the 2010 plan year, 39 multiemployer plans had overfunding totaling \$360 million and an average funding ratio of 128%. These plans represented 2.4% of all plans and covered less than 1% of all multiemployer participants. For the 2008 plan year, prior to the market turbulence, 81 plans were overfunded by \$2 billion.

Underfunding is highly concentrated within a small proportion of plans. Ten plans accounted for more than a quarter (\$106 billion) of the 2010 underfunding. Each of those 10 plans was underfunded by at least \$5.1 billion, and those ten plans covered 2.47 million participants and beneficiaries. Fifty plans (including the above-mentioned ten) covering 5.28 million participants and beneficiaries were responsible for more than half (\$209 billion) of the underfunding in 2010.

In 2008, the average funding ratio⁴⁷ for all plans was 68%, and more than half of all multiemployer plan participants (60%) were in plans that had a funding ratio of less than 70%. The average funding ratio for all plans fell to 49% in 2009 and 48% in 2010. In 2010, nearly 90% of all plans – which cover 96% of all plan participants – had a funding ratio of less than 70%.⁴⁸

For 2010, construction industry plans, which cover 37.5% of total participants, represented 49.4% of the total underfunding at \$193 billion. Transportation industry plans, which cover 15.3% of all participants, represented 22.7% of the total underfunding at \$89 billion. Plans in retail trade and services, which cover 31.8% of all participants, represented 17.2% of the total underfunding at \$67 billion. Plans in manufacturing industries cover 11.3% of all participants and represent 6.3% of the total underfunding at \$25 billion. Table 10 below summarizes data on underfunding concentration.

⁴⁷ The terms “funding ratio” and “funded percentage” are distinct. Funding ratio is based on the plans’ market value of assets and reported vested liabilities, adjusted to reflect PBGC’s interest factor. “Funded percentage” is used in PPA as a basis for determining whether a plan is subject to additional funding requirements. Funded percentage is based on liabilities as measured by plans for funding purposes using varying interest rate assumptions and smoothed asset values.

⁴⁸ The PBGC interest rate used to determine funding ratios was 5.37% for the 2008 plan year, 5.38% for the 2009 plan year, and 4.52% for the 2010 plan year. The weighted average valuation liability interest rate reported by plans on line 6d of Schedule MB, Form 5500, was 7.52% for both the 2009 and the 2010 plan years (average weighted by plan liabilities). Liabilities using a rate of 7.52% total \$575 billion for 2010, resulting in a funding ratio of 63.7%.

Table 10. Concentration of Underfunding by Plan and Industry (2010)⁴⁹

Plans	Underfunding (in millions)	Percent of Total Underfunding	Percent of Total Participants	Average Funding Ratio
All Plans (1,475)	(\$391,027)	100%	100%	48%
<u>10 plans with greatest underfunding</u>	(\$106,143)	27.1	23.7	46
<u>50 plans with greatest underfunding</u>	(\$208,738)	53.3	50.7	46
Construction industry Plans	(\$193,303)	49.4	37.5	48
Transportation industry plans	(\$88,768)	22.7	15.3	46
Retail Trade and Services plans	(67,132)	17.2	31.8	51
Manufacturing plans	(\$24,788)	6.3	11.3	52

During the 2010 plan year, underfunding declined by \$1.0 billion for the 10 most underfunded plans, going from \$106 billion at the beginning of the 2010 plan year to \$105 billion at the beginning of the 2011 plan year.⁵⁰ Their market value of assets increased \$7.4 billion, to reach \$99.4 billion by the end of the period. Their aggregate liabilities increased \$6.4 billion, to reach \$204.5 billion as of January 1, 2011.

During the 2011 plan year, the asset values for seven of these 10 plans for which 2011 Form 5500 filings are available remained fairly level (going from \$87.6 billion at beginning of the 2011 plan year to \$85.3 billion at the end of the 2011 plan year).

⁴⁹ Data based on 2010 Form 5500 annual return filings. See also PBGC's 2010 pension insurance data tables, Tables M-8, M-12, M-14, at <http://www.pbgc.gov/res/data-books.html>.

⁵⁰ The change in liabilities and underfunding from the beginning of the 2009 plan year to the beginning of the 2010 plan year were measured using the 4.52% PBGC factor in effect for the 2010 plan year. Values are based on 2011 Form 5500 data for seven of the 10 plans and 2010 Form 5500 data (liabilities projected to the end of the year) for three of the plans.

Funding Rules

Overview

Multiemployer and single-employer defined benefit plans are subject to minimum funding requirements under the Code,⁵¹ with parallel requirements under ERISA. In the past, the funding rules for multiemployer and single-employer plans had similar structures, but over time they have diverged, particularly since PPA.

The funding rules have historically provided multiemployer plans with considerable flexibility in determining minimum funding requirements each plan year. There is broad discretion for the selection of funding methods and assumptions used to measure the plan's liabilities and assets. A number of actuarial funding methods can be used, as well as "smoothed assets" – an actuarial value of assets that is used to determine funding costs and funded status – recognizing gains or losses in the market value of assets each year over a period of up to 5 years (and in some cases longer), but generally not more than 20% above or below market value. There are relatively long amortization periods for unfunded liabilities. PPA preserved much of this flexibility for multiemployer plans, and even expanded it, as discussed further below, by providing automatic approval of certain amortization period extensions and of adoption of an alternative funding method, the "shortfall" method.

By contrast, single-employer plans have considerably less funding discretion and flexibility, particularly after PPA. The funding rules mandate most of the assumptions for single-employer plans – including the interest rate (based on an investment-grade corporate bond yield curve) and mortality assumptions – used in determining liabilities and funding requirements. Single-employer plans are required to use asset values more closely aligned with the market value of assets (limited to a 10-percent corridor around market value), and the maximum smoothing period allowed is 25 months. Also, single-employer plans are generally required under PPA to amortize unfunded liabilities over seven years.⁵²

Single-employer plans and multiemployer plans have been held to different standards because of the perceived difference in their exposure to risk. For single-employer plans, ongoing fiscal discipline is critical because the plan is dependent on a sole sponsor whose deteriorating health may not allow it to fully fund the plan before the plan terminates.

The funding of multiemployer plans is quite different from the funding of single-employer plans. Contribution rates are fixed by collective bargaining agreements and generally stay in effect for the duration of the contract period. The funding rules therefore permit multiemployer plans to be funded over longer periods. It was assumed that the risks of a longer time horizon are mitigated by the pooling of employer contributions, plan assets, and liabilities,

⁵¹ In this section, "the Code" refers to the Internal Revenue Code unless otherwise stated.

⁵² The funding rules for single-employer plans were tightened many times through the 1980s and 1990s. The funding rules for multiemployer plans remained steady during that period. For example, under special rules referred to as the "deficit reduction contribution rules," from 1989 through 2007, single-employer plans were required to make additional contributions if the plan's funded current liability percentage (based on mandated interest rate and mortality table assumptions) was less than 90 percent; in that case, a four-to-seven-year amortization period applied.

which spreads the risk of fully funding plan benefits among numerous employers. The multiemployer plan rules are designed to allow some employers to exit the plan (possibly with withdrawal liability) and others to enter on the expectation that the long-term funding prospects for the plan would not be affected.

It is now apparent, however, these expectations for multiemployer plans are unlikely to hold true in the foreseeable future. A shrinking pool of active participants over the past 20 years caused the contribution base of many plans to decline, reducing funds available to pay for previously earned but unfunded benefits,⁵³ while ongoing benefit accruals continued at previous levels. As a result, these plans struggled to pay down liabilities for retirees and separated vested participants. During the strong performance of plan assets in the 1990s, many plans raised benefits for all participants and some increased their stock market exposure. These plans became significantly underfunded when asset values plummeted in the early 2000s, causing minimum contribution requirements to spiral well above amounts specified in collective bargaining agreements and raising the specter of funding deficiencies. This happened at a time when the industries in which multiemployer plans were predominant were experiencing downturns leading to fewer hours worked and, accordingly, lower contributions, to these plans. Ultimately, success in funding these plans will depend on economic improvement in these industries which leads to increased contributions, as well as positive investment returns.

PPA addressed funding problems in multiemployer plans by introducing a new statutory framework for strengthening their financial health and increasing disclosure of information about multiemployer plans. Multiemployer plan trustees are required to identify and confront potential funding problems early, before those problems become too severe. Under PPA, plans are sorted into categories that reflect their funding difficulties – plans in critical status, endangered status, and neither critical nor endangered status.⁵⁴ Trustees of a plan in endangered or critical status are required to develop a package of measures, including increased contributions and reduced benefits as needed, to enable the plan to achieve certain statutory targets for improved funding over a period of years. PPA also provided plans with additional tools and flexibility to avoid undue stress on contributions and benefits.

PPA made a number of changes to the excise tax rules for plans in endangered and critical status. For plans in critical status with funding deficiencies, PPA suspended the excise taxes that would otherwise apply to contributing employers. (For plans in endangered or critical status, PPA created a new 100% excise tax for failure to make a contribution in accordance with the funding improvement or rehabilitation plan, as applicable.)

Basic Funding Rules

Defined benefit plans use actuarial funding to estimate the costs of promised benefits under the plan. The costs are dependent on many factors regarding the future – such as the

⁵³These plans have a history of increasing plan benefits, including past service benefits for active and inactive participants—at times in response to healthy investment returns and sometimes to comply with the limits on deductibility of employer contributions—and the increased liabilities are funded over future years.

⁵⁴ Some special rules apply to certain endangered plans, referred to as “seriously endangered.” The actuary for a multiemployer plan is required to report its status on Form 5500, which lists seriously endangered as a separate category.

number of employees, the number of hours worked, life expectancy, retirement and disability rates, and the rate of investment return. The actuary is responsible for providing reasonable assumptions to develop the estimated costs. Actuaries also use a number of actuarial funding methods and methods for valuing assets and investment income that affect the timing of contributions and the level of required contributions. Actuaries conduct plan valuations on an annual basis to determine the extent to which the plan's experience was consistent with the assumptions and may modify the assumptions to the extent necessary to properly fund the plan.

Funding Standard Account

Under the basic funding rules, the minimum required contribution to a multiemployer plan is determined each year based on an actuarial valuation of the benefits promised by the plan. For purposes of determining the minimum required contribution, a "funding standard account" must be maintained for the plan. Specified charges and credits are made to the funding standard account every year.⁵⁵

Charges include the plan's normal cost for the year (the annual cost associated with service for the current year for active employees under the funding method used by the plan), plus the cost of amortizing the plan's unfunded liability (*e.g.*, changes in liability due to amendments increasing past service benefits) with interest, in equal installments over a period of years. Charges also reflect the amount needed to amortize losses attributable to plan experience (*e.g.*, investment losses) or to changes in funding methods or actuarial assumptions.

Credits include employer contributions made to the plan every year. Credits also include the amount needed to amortize experience gains, gains from changes in actuarial assumptions, and reductions in plan liabilities resulting from amendments reducing benefits over a period of years. If, as described below, there is a credit balance, then assumed interest on the credit balance is added to the funding standard account.

Credit Balances and Funding Deficiencies

If the total credits to the funding standard account exceed the total charges, a "credit balance" results, and no further contributions are required under the statutory minimum funding rules until future charges eliminate the credit balance.⁵⁶ If the total charges to the funding standard account exceed the total credits, a funding "deficiency" results, and additional contributions must be made – generally above the amounts employers are obligated to pay in their collective bargaining agreements – so that the plan can meet its minimum funding requirements. If additional contributions are not made by the time required, contributing

⁵⁵ As a means for enforcing the funding requirements, information about the funding standard account is reported by the plan's actuary on Schedule MB of Form 5500.

⁵⁶ However, this does not relieve employers of their obligations to make the contributions provided for under collective bargaining agreements.

employers are required to pay an excise tax to the IRS of five percent of the deficiency, increasing to 100 percent if the deficiency goes uncorrected.⁵⁷

Many plans built up credit balances in years during which contributions required under collective bargaining agreements exceeded required minimum contribution levels. Credit balances also expanded with the run up of asset values in the late 1990s (as a result of the amortization credits with respect to the actuarial gains resulting from better than expected asset returns during that period). Because credit balances are often used in lieu of cash contributions, the existence of these credit balances has masked a declining contribution base. In the aftermath of massive asset losses during the 2000s, credit balances were rapidly depleted – in just two years, between 2007 and 2009, aggregate credit balances fell by \$10 billion, from \$63 billion to \$53 billion.⁵⁸

Many plans are projecting imminent funding deficiencies in the absence of a significant increase in contribution rates. For the 2009 plan year, 80 plans reported funding deficiencies.⁵⁹ This was more than four times the annual average over the previous decade. Funding deficiencies for all 80 plans totaled \$1.0 billion. For the 2010 plan year, 90 plans reported funding deficiencies totaling \$1.9 billion. As shown in Table 11 below, 57 of these plans had an accumulated funding deficiency in excess of \$1 million, 19 plans reported deficiencies in excess of \$10 million, and three plans had deficiencies in excess of \$100 million. Many of these plans with funding deficiencies are large: 10 plans have 10,000 or more participants, and an additional 7 plans have at least 5,000 participants each.

⁵⁷ If certain conditions are met, the Secretary of the Treasury may grant a funding waiver of all or a portion of the contributions required for the year. No plans reported obtaining a funding waiver for the 2009 or 2010 plan years. As discussed below, a common tool used by multiemployer plans to avoid funding deficiencies is an extension of the amortization period for certain plan liabilities.

⁵⁸ Credit balances increased to \$56.3 billion for the 2010 plan year. However, up to \$2 billion of this improvement may be related to trustee elections of PRA 2010 relief. On the Form 5500 annual return filings for the 2010 plan year, more than 650 plans showed revised “prior year” credit balances for the 2009 plan year and most plans attributed the increase in credit balance to lowered amortization charges due to the application of PRA 2010 relief. See Chapter III, section entitled “Subsequent Funding Relief Legislation.”

⁵⁹ Seven plans that were not in critical status reported a funding deficiency for the year (five reported being in endangered status and two reported being in neither endangered nor critical status). Perhaps these plans certified their status incorrectly on the basis of their WRERA elections rather than certifying their status irrespective of the WRERA election.

Table 11. Plans with Accumulated Funding Deficiencies (2010)⁶⁰

Plan Size by Participants	# of Plans with Funding Deficiency	Funding Deficiency < \$1 Million	Funding Deficiency \$1 Million to \$10 Million	Funding Deficiency >\$10 Million to \$35 Million	Funding Deficiency >\$35 Million to \$99 Million	Funding Deficiency > \$100 Million
	90					
< 1,000 Participants		28	11	1		
1,000 to 4,999 Participants		5	22	4	2	
5,000 to 9,999 Participants			2	4		1
10,000+ Participants			3	2	3	2

Amortization Periods

Historically, liabilities under multiemployer plans were permitted to be amortized over long periods. Specifically, when a plan increased benefits in years immediately prior to PPA, the resulting past service liability was amortized over 30 or 40 years (depending on when the liability arose); gains and losses from changes in actuarial assumptions were amortized over 30 years; and experience gains and losses were amortized over 15 years.

PPA shortened the amortization periods for all types of unfunded liabilities to 15 years.⁶¹ The change from 30 years to 15 years for amortizing plan benefit amendments and changes in actuarial assumptions are significant because they recognize the need for plans to fund new liabilities more quickly.⁶² Adequate pre-funding reduces the risk that a market downturn in the future will deplete the plan's assets and weaken the plan so significantly that it cannot reasonably make up the losses through future contributions and earnings. It also compels the plan's trustees to carefully deliberate about whether the plan and its contributing employers can afford a benefit increase or a change in assumptions that produces an actuarial loss.

Under PPA, the shortened 15-year amortization period does not apply to plan liabilities that arose before 2008. Many plans with large existing liabilities for older participants continue to be governed by the old rules for those liabilities, which allow the liabilities to be paid off at a very slow pace (over 30 or 40 years). For those plans, higher underfunding will continue for longer, exposing plan participants to a greater risk of insolvency in the event the fixed amortization charges become unaffordable as a result of a decline in the number of active participants (and a resulting decline in the contribution base) before benefits are fully funded. In addition, slower funding deprives the plan of a cushion, which is important in the event that the plan's portfolio loses value.

⁶⁰ Data based on 2010 Form 5500 annual return filings.

⁶¹ If a benefit increase will be paid out over a period shorter than 15 years, the applicable amortization period is the shorter period.

⁶² PPA also shortened from 30 to 15 years the period for amortizing a decrease in liability resulting from benefit reductions, including adjustable benefit reductions by plans in critical status, as discussed below. This speeds up the plan's recognition of reduced liabilities for purposes of the minimum funding requirements.

Amortization Extensions

Before PPA, the amortization periods applicable in determining charges to the funding standard account could be extended up to ten additional years, with IRS approval. The extension of an amortization period is a type of funding relief that reduces charges to the funding standard account and thus can have the effect of avoiding contribution increases or benefit reductions that would otherwise be required. Applications for such relief increased noticeably after the 2000 to 2002 market downturn. To obtain an extension, the plan was required to show that failure to permit an extension would: (i) result in a substantial risk to the voluntary continuation of the plan or a substantial curtailment of pension benefit levels or employee compensation, and (ii) be adverse to the interests of plan participants in the aggregate. Multiemployer plans were subject to a lower rate of interest on an extension than the assumed rate of return that would usually apply, which had the effect of reducing required contributions far more than the reductions produced by the extension itself. Finally, during the time an extension was in effect, benefit increases of more than a de minimis amount were not permitted.

PPA provided for automatic approval for a 5-year extension of amortization periods. The eligibility requirements for a 5-year extension are much easier to satisfy than previous requirements — in an application filed with the IRS, the plan's actuary must certify that, (i) absent the extension, the plan would have an accumulated funding deficiency in the next nine years; (ii) the plan sponsor has adopted a plan to improve the plan's funding status; (iii) the plan is projected to have sufficient assets to cover expenses over the extended amortization period; and (iv) notice has been provided to affected parties. While PPA reduced amortization periods to 15 years for nearly all charge bases under a plan's funding standard account, the effect of the shorter period is offset to some extent by the availability of an automatic 5-year extension in cases where an extension under prior law would not have been granted. Plans may also request an additional 5-year extension from the IRS under criteria similar to those under pre-PPA law. In addition, the IRS is now required to act within 180 days of the plan's application. For both types of extensions, PPA eliminated the special interest rate for applications filed with IRS on or after July 1, 2005. Instead, the valuation interest rate is used (which is generally higher than the interest rate that applied in the case of extensions requested previously).

Six multiemployer plans were operating under amortization extensions for the 2005 plan year.⁶³ This number surged after PPA: in 2008, 53 plans were operating under an automatic extension of the amortization periods and 11 plans were operating under IRS-approved extensions; in 2009 — following the market downturn — upwards of 125 plans were operating under an automatic 5-year extension,⁶⁴ and 9 plans were operating under extensions approved by the IRS. By 2010, there were 190 plans operating under amortization extensions: 178 plans used the automatic 5-year extension and 12 plans used an approved extension. Plans seized on this relief after investment losses added millions in amortization charges each year to their funding standard accounts. In particular, PPA's automatic 5-year amortization extension was

⁶³ More plans likely would have needed such extensions to counteract steep increases in contributions that were occurring in the 2000s decade: contributions barely topped \$8 billion in 2000, but increased to \$16 billion by 2005. (The 2000 plan year may have some underreporting due to processing difficulties.)

⁶⁴ All extensions were taken for the full five years. The number of plans adopting automatic extensions could be slightly more because some plans that received IRS-approved extensions did not indicate whether or not they also adopted automatic extensions.

heavily utilized: in 2010, nearly all plans (94%) operating under any extension used the automatic extension.

Table 12. Amortization Extensions 2008 to 2010

Plans Using Amortization Extensions	2008	2009	2010
Automatic Extension	53	125	178
Approved Extension	11	9	12
Total Extensions	64	134	190

For the 2010 plan year, the following percentages of plans by zone status were operating under an amortization extension: 23% of all critical status plans, 24% of all seriously endangered plans, 17% of all other endangered plans, and 8% of all “green” plans. There was a significant increase in the percentage of plans using amortization extensions between 2009 and 2010 in all zone statuses. As indicated in Table 13 below, nearly half of all plans using amortization extensions in 2010 were in critical status.

Table 13. Use of Automatic Extensions / Approved Extensions (2010)⁶⁵

Plan Status	Number of Plans	Plans Using Automatic Extension	Plans Using Approved Extension
Critical	378	79	9
Seriously Endangered	46	10	1
Other Endangered	222	38	1
Neither Endangered nor Critical	683	51	1
Total	1,329	178	12

Plans reported a reduction in the minimum funding requirements for the 2010 plan year of \$1.8 billion as a result of the two types of extensions.⁶⁶ Eighty-two plans reported a reduction of more than \$1 million for the year, 19 plans reported a reduction of more than \$10 million for the year, and five plans reported a reduction of more than \$100 million for the year. The average plan reduction in the minimum required contribution for all 137 plans reporting reductions was about \$13.2 million.

Actuarial Assumptions

Before PPA, actuarial assumptions selected by a multiemployer plan actuary in determining normal cost and actuarial liability needed only to be reasonable “in the aggregate” (*i.e.*, resulting in a contribution equivalent to the contribution that would be obtained if each assumption and method were reasonable). This facilitated the selection of investment return (interest rate) assumptions at the higher end of the range of reasonableness, offset by more conservative assumptions, such as the employee termination rate, disability retirement rate, and retirement ages. PPA changed this rule, requiring each actuarial assumption and method to be individually reasonable (taking into account the experience of the plan and reasonable expectations).

Assumptions about interest rates, which generally represent the average expected rate of investment return on plan assets over time, can have a large impact on the measurement of plan costs. A one-quarter percentage point variation in the interest assumption, for example, can produce a 2% to 3% variation in the measurement of plan liabilities, which, in turn, will produce a higher difference (such as 5% to 7%) in the level of required annual contributions. Higher

⁶⁵ Data based on 2010 Form 5500 annual return filings.

⁶⁶ Some plans adopting the extension did not report the resulting difference in contributions.

interest rates also implicitly assume that a greater proportion of the plan's benefit costs will be paid from investment earnings rather than contributions. This implicit assumption becomes riskier as a plan matures and disbursements increase, leaving fewer assets to generate earnings.

Historically, multiemployer plan actuaries have often selected relatively high valuation liability interest rates of 7.5% or higher, which had the effect of reducing minimum required contributions.⁶⁷ Between 1995 and 2007, plans with more than \$1 billion in liabilities used an average valuation liability interest rate (weighted by plan liabilities) of 7.57%.⁶⁸ The 2010 Form 5500 filings indicate that the valuation liability interest rates used by plans ranged from 5% to 8.5%. Out of 141 plans with liabilities in excess of \$1 billion, 121 plans used rates between 7.5% and 8.5%, and the remaining 20 plans used rates ranging from 6.75% to 7.25%.⁶⁹ The average valuation liability interest rate for all plans, weighted by plan liabilities, was 7.52% for the 2010 plan year.⁷⁰ The extent to which the new PPA standard for assumptions will affect the selection of valuation liability interest rates remains unclear.

Shortfall Funding Method

Among the funding methods available to multiemployer plans is the shortfall method. Although, under some funding methods, normal cost charges can be adjusted automatically for fluctuations in base units (*e.g.*, hours of service or units of production), charges to amortize losses and benefit increases are normally fixed. Under the shortfall method, rather than fixed charges to the funding standard account, charges increase or decrease as base units, on which contributions are based, vary from assumed levels. This allows short-term fluctuations in employment levels to be reflected in charges to the plan's funding standard account. For example, if the base units under the plan are substantially less than the estimated base units, charges and credits are adjusted to reflect the actual hours worked. Any difference in charges and credits (resulting from differences between actual and expected base units) is amortized over a period generally beginning with the expiration of the current collective bargaining agreement and ending 20 years after the difference occurred. The shortfall method can substantially reduce a plan's minimum required contributions for a plan year, particularly in slow economic periods when hours of service or units of production are lower than assumed. However, the plan's funded status would be worsened in such a case. While the shortfall funding method protects employers against funding deficiencies in the short term, it does not provide relief when a plan's workforce has permanently declined.

⁶⁷ Many plans adopted high earnings assumptions during the period of high returns in the 1990s.

⁶⁸ The comparable average rate for large single-employer plans over this period was 8.34%. However, under pre-PPA law, single-employer plans were also subject to deficit reduction contribution rules if they met certain thresholds, such as a current funded liability percentage of less than 90% using the RPA '94 interest rate; RPA '94 rates averaged 6.43% between 1995 and 2007. In 2005 through 2007, years when these thresholds were most often met, about 10% of large single-employer plans were subject to the rules.

⁶⁹ Using the plans' valuation liability interest rates to measure liabilities, there are 102 plans with over \$1 billion in liabilities; 85 of these plans used valuation liability interest rates of between 7.5% and 8.5%.

⁷⁰ The unweighted average liability interest rate reported on the 2010 Schedule MB for all plans is 7.35%. The RPA '94 interest rate, used to report a plan's current liabilities on line 1d of Schedule MB, Form 5500, was 4.62% for the 2010 plan year (average rate, based on plan year commencement date, is weighted by plan liabilities).

Prior to PPA, IRS approval was required before a plan that was not using the shortfall funding method could adopt that method (or before a plan that was using the shortfall funding method could cease using the method). In Form 5500 filings between 2002 and 2007, 130 plans reported using the shortfall method.

PPA allows plans to adopt the shortfall funding method (or to stop using the shortfall funding method) once every five years, without IRS approval. As a condition of this automatic approval, plans must not have operated under other relief measures within the past five years and may not increase their liabilities by amendment during any period they are on the shortfall method. For 2009, Form 5500 filings indicate that only 39 plans were using the shortfall funding method. The average annual reduction in minimum required contributions for the 2009 plan year was \$2.7 million; eleven plans had reductions of over \$1 million, and one plan had a reduction of \$42.7 million for the year. Of the 39 plans, 11 were in critical status, 4 were in seriously endangered status, 9 were in other endangered status, and 14 were in “green” status, and the status of one plan was unclear. Forty-one plans reported using the shortfall method in 2010, and 14 plans reported total reductions of \$63.6 million in their minimum funding requirements.

Increase in Maximum Deductible Contribution Amounts

The Code has for many years provided limits on employer deductions for contributions to qualified defined benefit plans. If plan assets were less than accrued liabilities determined under the plan’s funding method, contributions were deductible to the extent they did not exceed the amount necessary to amortize the shortfall over a specified period, generally 10 years. If plan assets exceeded accrued liabilities, the plan was considered “fully funded” and no deductible contributions were permitted. The Omnibus Budget Reconciliation Act of 1987 limited the deduction by providing that the plan was also considered fully funded if the assets exceeded 150% of “current liability,” even if that was less than the accrued liability under the plan’s funding method. The Taxpayer Relief Act of 1997 provided for a phase-in of an increase of this alternative determination of when the plan was considered fully funded to 170% of current liability. Nonetheless, many plans still were considered fully funded at the end of the 1990s. Such a plan would be compelled to increase benefits and/or decrease contributions.⁷¹ In practice, plans increased benefits, which diminished the cushion of overfunding available to withstand a decline in investment returns.⁷² Another means of avoiding the maximum deductible limit on contributions was to forego scheduled increases in contributions to the plan under collective bargaining agreements.

The Economic Growth and Tax Relief Reconciliation Act of 2001 (EGTRRA) eliminated the alternative determination of when the plan was considered fully funded. EGTRRA also provided that contributing employers to a multiemployer plan can make deductible contributions at a faster rate than 10-year amortization (potentially in an amount above accrued liability under a plan’s funding method) provided that assets are less than 100 percent of current liability. PPA raised this limit by allowing employers to make deductible contributions provided that assets are

⁷¹ If a plan did neither of these, contributions would be nondeductible and a 10 percent excise tax would apply.

⁷² In some cases, plans tried to avoid the maximum deductible limit by adopting amendments making the benefit formula more generous. In other cases, plans tried to avoid this limit without creating ongoing liability, for example, providing a one-time check to retirees (sometimes known as a 13th check).

less than 140 percent of current liability. This allows employers to continue to make deductible contributions during periods when the plan is well funded (but not significantly overfunded), which will create a funding cushion for less favorable economic cycles.

Reorganization and Insolvency

Even before PPA, the basic funding rules for multiemployer plans were augmented by special rules for certain plans experiencing financial difficulty. Such plans are referred to as being in “reorganization” status. If a plan is in reorganization, the plan’s minimum contribution requirement is generally statutorily increased (in certain circumstances, an overburden credit prevents undue impact on contributing employers). Also, despite the general “anti-cutback” prohibition under the Code and ERISA that protects previously accrued benefits, plans in reorganization may reduce or eliminate benefits or benefit increases in effect under the plan for less than 60 months and must cease paying lump sum benefits in excess of \$1,750. However, the reorganization index that makes plans subject to the special funding rules is rarely triggered, even by plans with serious financial difficulties.⁷³ Four plans in 2009 and seven plans in 2010 reported that they were in reorganization status for the plan year.⁷⁴

Special rules also apply if a multiemployer plan becomes insolvent, that is, all of a plan’s available resources – including its assets, cash, contributions, earnings, and withdrawal liability payments, less reasonable administrative expenses – are insufficient to cover benefit payments when due for the plan year. In that case, the plan must reduce nonforfeitable benefits and suspend other benefits to the level that can be covered by plan assets, but not below the benefit level guaranteed by PBGC. The plan is eligible for financial assistance from the PBGC if needed to pay benefits and expenses after benefits have been reduced to the guaranteed level.

A few plans become insolvent while they are still ongoing, *i.e.*, providing accrual or vesting service credit to participants and receiving contributions from employers. The vast majority of insolvent plans, however, are plans that terminated (generally by the mass withdrawal of all employers from the plan long before becoming insolvent). Such plans operate as wasting trusts, paying benefits and expenses as they come due and collecting withdrawal liability payments.⁷⁵ In contrast to an underfunded single-employer plan that is trusted by PBGC when it terminates, an insolvent multiemployer plan – whether it is ongoing or terminated – is not taken over by PBGC, but receives financial assistance when it is unable to pay the guaranteed level of benefits.

⁷³ The reorganization index is triggered if the net charge under the plan’s funding standard account is insufficient to amortize retired participants’ benefits over ten years and all other participants’ vested benefits over 25 years. This calculation arises in extreme situations.

⁷⁴ Multiemployer practitioners have questioned the applicability of the reorganization rules if a plan is otherwise subject to the PPA rules.

⁷⁵ Terminated plans operate as wasting trusts for an average period of ten to eleven years before they exhaust assets to pay guaranteed benefits. At that point, the plans continue to pay benefits at the guarantee level using the financial assistance they receive from PBGC.

Additional Rules for Plans in Endangered or Critical Status

Under pre-PPA law, multiemployer plans were not required to take actions to improve their funded status unless they triggered the “reorganization” requirements of ERISA. PPA establishes earlier thresholds for addressing funding problems and timeframes for trustee actions. It imposes benchmarks for funding improvements (although plans generally have discretion to design their own action plans for achieving those benchmarks) and provides certain enforcement mechanisms. The new regime includes additional flexibility for plans facing financial problems.

Annual Accelerated Certification of Funded Status

In the case of a multiemployer plan in effect on July 16, 2006, PPA requires the plan’s actuary to certify the plan’s status within the zones established under PPA, to the plan’s trustees and the Secretary of the Treasury within 90 days after the beginning of each plan year. The certification states whether or not the plan has triggered any of the tests to be in critical status or endangered status and, for a plan already in critical or endangered status, whether the plan is progressing as scheduled toward the applicable statutory target for improved funding. A failure by the plan actuary to timely certify the plan’s status is treated as a failure by the plan administrator to file the Form 5500 and can result in a civil penalty under ERISA of up to \$1,100 per day.⁷⁶

The applicable statuses are “endangered” and “critical.” Within the category of endangered, there is a subcategory of “seriously endangered.” The zone statuses and triggers for those statuses are described in Table 14 below:

⁷⁶ DOL, in conjunction with the IRS, is pursuing a PPA related enforcement initiative to identify plans that have failed to file with IRS an actuarial certification of their funding status. DOL is sending the IRS and PBGC summaries of its findings with respect to missing certification cases. As of the beginning of November 2012, DOL has observed substantial compliance with the PPA’s certification requirement.

Table 14. Triggers for Critical and Endangered Zone Status⁷⁷

Status for Plan Year	Funded Percentage (FP)	Funding Deficiency (FD)	Funded Percentage and Funding Deficiency	Insolvency ⁷⁸	Funded Percentage and Insolvency	Annual Cost and Present Value of Benefits (PVB) and Funding Deficiency
Endangered Status ("Yellow Zone")	FP < 80%	FD within 7 years (including amortization period extensions)				
Seriously Endangered Status ("Orange Zone")			FP < 80% and FD within 7 years (including amortization period extensions)			
Critical Status ("Red Zone")		FD within 4 years (excluding amortization period extensions) or Plan was in critical status in the previous year and FD within 10 years (including amortization period extensions)	FP ≤ 65% and FD within 5 years (excluding amortization period extensions)	Insolvent within 5 years	FP < 65% and Insolvent within 7 years	Normal cost and interest on unfunded liabilities > Current year contributions and PVB for inactive participants > PVB for active participants and FD within 5 years (excluding amortization period extensions)

⁷⁷ Unless indicated otherwise, each trigger applies separately to assign a plan to an applicable status, except that if a plan is in critical status, then endangered or seriously endangered status (and the related triggers) do not apply.

⁷⁸ Insolvency for purposes of the critical status triggers is measured by comparing the fair market value of plan assets plus the present value of expected contributions over a future period with the present value of benefits and expenses expected to be paid over the same period.

A plan's "funded percentage" – one of the triggers for purposes of determining whether the plan is subject to the additional funding rules – is defined as the actuarial value of the plan's assets divided by the plan's accrued liability. The calculation of the plan's accrued liability uses a single statutorily prescribed funding method, the unit credit funding method (whether or not that method is used to determine the plan's minimum required contribution). A plan's funded percentage is based on the asset valuation method selected by the plan for its actuarial valuation and for determining its costs. The actuarial assumptions used for the computation of funded percentage are also used in determining minimum funding requirements.

The methods used in determining the actuarial value of assets commonly involve five-year (or even longer) smoothing in recognizing investment gains and losses, which can result in asset valuations significantly above market in the aftermath of losses. In addition, plan actuaries have wide discretion in selecting interest rates for measuring plan liabilities, which, as discussed above, can have a significant effect on what the plan reports for its liabilities. In particular, the higher the rate, the lower the plan's measured liabilities. The use of a plan's methods and assumptions for determining funded percentage – rather than, for example, a market value of assets or a standardized interest rate for measuring plan liabilities – does not necessarily reflect the actual funded status of a plan.⁷⁹ Two plans with the same market value of assets and the same future benefit payments can appear to have different funded percentages.

Nor does the use of a plan's methods and assumptions for determining funded percentage facilitate an accurate comparison with other plans' certified funded statuses. In the case of a plan close to the line between statuses (*e.g.*, green and endangered or endangered and critical), the selection of the plan's asset valuation method and interest rate may affect which side of the line the plan falls.

Determining a plan's status also involves projections (used for determining whether the funding deficiency or insolvency tests have been triggered) as to future plan contributions and participation, which in turn involve projections of future employment in the industry or industries in which plan participants work. Projections of industry activity, including future covered employment and contribution levels, are based on information provided to the plan actuary by the plan trustees, acting reasonably and in good faith. Even under the reasonable,

⁷⁹ The difference between a plan's funded percentage and current liability percentage is often significant. In contrast to the actuary's selection of assumptions used to determine the plan's actuarial accrued liability and funded percentage, plans must report current liability on the Schedule MB using the RPA '94 interest rate (based on 30-year Treasury securities) and a specified mortality table; the average RPA '94 interest rate for the 2009 plan year was 4.74%. For critical status plans in 2009, the average current liability percentage was 41.5%, and the average funded percentage was 71.9%. Three hundred critical status plans reported a difference of greater than 20 percentage points between their current liability percentage and funded percentage; nearly 200 critical status plans reported a difference of greater than 30 percentage points between these two funding measurements. (These averages are based on 375 critical status plans that reported a funded percentage on the 2009 Schedule MB, and 357 critical status plans that reported a current liability percentage on the 2009 Schedule MB (only plans with a current liability percentage of less than 70% are required to report the current liability percentage).) For 2009, plans other than critical status plans reported an average funded percentage of 91.0% (914 plans) and an average current liability percentage of 48.2% (859 plans).

good faith standard, in the case of a plan close to the line between statuses, variations in the information provided may similarly affect which side of the line the plan falls.⁸⁰

Table 15 below summarizes the number of multiemployer plans in critical and endangered status for plan years 2008 through 2011, based on actuarial certifications received by IRS.⁸¹ It shows the substantial distress experienced by plans during the 2008 plan year, as first reflected in the 2009 certifications: The proportion of plans in critical status increased from 10.2% to 34.5% between 2008 and 2009, and two-thirds of all plans were in critical or endangered status in 2009. The 2010 plan year showed a marked decrease over 2009 in the number of distressed plans: critical status plans fell from 34.5% to 28.8% of all plans, and fewer than 50% of all plans were in critical or endangered status in 2010. (This translates to an 18% decline in critical status plans, a 41% decline in endangered and seriously endangered status plans, and a 57% increase in “green” status plans.) Improved market performance in 2009 may have contributed to the improvement in plans’ certified 2010 zone statuses.⁸²

Certifications for the 2011 plan year show a continued increase in the number of “green” status plans, which represented 60% of all plans. This may give the wrong impression, however, about the extent of the actual improvement in plans’ funding condition. As explained in the section “Subsequent Funding Relief Legislation” below, PRA 2010 funding relief can have the effect of increasing a plan’s funded percentage or delaying a projected funding deficiency, which can improve a plan’s certified zone status without any real change in the plan’s funding levels. The ERISA agencies do not have data yet to separate out the effects of PRA 2010 relief from the financial health indicated in zone status certifications in both 2010 and 2011.

⁸⁰ The desired outcome can also be influenced by the actions taken. In some cases, plans immediately recognized all 2008 investment losses in order to enter critical status and use the tools therein to allocate benefit reductions over more plan participants, with less stress on future accruals. Other plans in similar financial condition elected to avoid critical status by cutting future accruals and increasing contributions.

⁸¹ The total number of plan certifications is lower than the total number of plans due largely to terminated multiemployer plans that continue to pay benefits from the trust but do not file zone status certifications. As discussed above, these plans operate as wasting trusts after they terminate. While they are required to submit an annual Form 5500, they are not subject to the minimum funding requirements and do not file a Schedule MB.

⁸² These certifications may also, in some cases, reflect funding relief under PRA 2010 (discussed below), although many plans did not apply the relief to determine their certified zone status until 2011.

Table 15. Multiemployer Plan Zone Status Certifications (2008-2011)

Funding Status	2008		2009 ⁸³		2010		2011	
	Number	%	Number	%	Number	%	Number	%
Critical	139	10.2	472	34.5	386	28.8	319	24.3
Seriously Endangered	28	2.1	125	9.1	44	3.3	17	1.3
Other Endangered	155	11.3	337	24.6	229	17.0	196	14.9
Neither Critical Nor Endangered	1,047	76.5	435	31.8	682	50.9	780	59.5
Total	1,369	100	1,369	100	1,341	100	1,312	100

Effects of Endangered or Critical Status / Funding Improvement or Rehabilitation Plan

Within 30 days after the actuary certifies that a plan is in endangered or critical status, the plan sponsor must provide written notice of the status to the plan participants and beneficiaries, the bargaining parties, PBGC, and DOL. In addition, PPA requires critical status plans to impose employer surcharges (equal to 5% of the contribution otherwise required under the employer’s collective bargaining agreement, increased to 10% after the first year) until the effective date of a collective bargaining agreement that includes terms consistent with the rehabilitation plan, and therefore encourages bargaining parties to quickly negotiate an agreement with these terms. Surcharges are paid to the plan, and therefore directly improve the funding of the plan.⁸⁴ Surcharges do not generate additional benefit accruals under the plan.

Within 11 months of the beginning of the initial plan year for which a plan is certified to be in endangered status or in critical status, the trustees of the plan must adopt a funding improvement plan (FIP) or a rehabilitation plan (RP), respectively. If the trustees of a multiemployer plan that is in endangered or critical status fail to adopt a FIP or RP, DOL may assess a civil penalty under ERISA of up to \$1,100 per day.⁸⁵ If the trustees of a plan in critical status fail to adopt a rehabilitation plan, an excise tax under the Code of \$1,100 per day or, if

⁸³ As discussed under the subheading “Subsequent Funding Relief Legislation,” WRELA permitted plans for one year (generally the 2009 plan year) to temporarily treat their statuses the same as their status for the immediately preceding plan year. However, plans were required to report their actual certified zone status as determined for purposes of section 432 of the Code.

⁸⁴ In contrast, excise taxes have the function of creating an incentive for employers to fund the plan, which only indirectly improves the funding of the plan.

⁸⁵ DOL is reviewing plans that, based on analyses of the certification details obtained from the IRS and the Form 5500, should have adopted and implemented funding improvement/rehabilitation plans. DOL continues to observe substantial compliance with the PPA’s FIP and RP adoption rules.

greater, five percent of the accumulated funding deficiency, also applies. Furthermore, PPA created a cause of action where a plan sponsor of a plan certified to be in endangered or critical status (1) has not adopted a FIP or RP within 240 days after the deadline for certification of endangered or critical status, or (2) fails to update or comply with the terms of the funding improvement or rehabilitation plan. In such case, a civil action may be brought under ERISA by a contributing employer or an employee organization that represents active participants, for an order compelling the plan sponsor to adopt a funding improvement or rehabilitation plan or to update or comply with the terms of the funding improvement or rehabilitation plan. To date, there is no indication that any civil actions have been brought under this provision.

A FIP or RP consists of actions that will enable the plan to achieve certain targets in improved funding, generally over a ten-year period, referred to as a funding improvement period for an endangered plan and a rehabilitation period for a critical plan.⁸⁶ These long-term economic plans include various actions devised by the plan's trustees. The trustees must provide the bargaining parties with one or more schedules that increase contribution rates and/or decrease future benefit accruals or other benefits to the extent necessary to achieve the required improvement in the plan's funding. These schedules are generally adopted as part of the collective bargaining process.⁸⁷ While the statute does not specify particular actions to be included in a FIP or RP, it specifies actions that should be considered. These include: applications for extensions of amortization periods, use of the shortfall funding method in making funding standard account computations, amendments to the plan's benefit structure, reductions in plan expenditures (including plan mergers and consolidations), reductions in future benefit accruals, and increases in contributions. The trustees may also consider changes in the plan's investment policy, the withdrawal liability policy, the plan's administrative expenses, and other funding methods and assumptions.

Standards for FIPs and RPs

Under PPA, the FIPs and RPs of plans in endangered, seriously endangered, and critical status must provide for the attainment of certain minimum requirements. FIPs of endangered status plans (and certain seriously endangered plans) must be designed to achieve a one-third increase in the plans' funded percentage and no funding deficiency (taking into account amortization extensions) over a 10-year funding improvement period. For certain seriously endangered plans, a lower target and longer period apply. RPs of critical status plans must provide for the plans to emerge from critical status over a 10-year rehabilitation period or, if the plan sponsors determine that, based on reasonable actuarial assumptions and upon exhaustion of all reasonable measures, the plans cannot reasonably be expected to emerge from critical status by that date, to emerge at a later time or forestall possible insolvency.⁸⁸

⁸⁶ A longer period may apply for plans electing WRERA relief and certain seriously endangered plans. In addition, special rules apply for critical plans that cannot exit from critical status by the end of the rehabilitation period.

⁸⁷ If the parties do not adopt one of the schedules within a certain period following the expiration of the collective bargaining agreement that was in effect when the plan entered endangered or critical status, a default schedule is imposed automatically.

⁸⁸ Under WRERA, plans certified to be in endangered, seriously endangered, or critical status for a plan year beginning in 2008 or 2009 could elect a three-year extension of their funding improvement or rehabilitation periods.

To accommodate the collective bargaining process, the beginning date of a plan's funding improvement or rehabilitation period is deferred until the first plan year following the second anniversary of the adoption of the FIP or RP or, if earlier, the expiration of the collective bargaining agreements that are in effect on the due date for the initial certification of endangered or critical status and that cover 75 percent of participants as of that date.

A FIP or RP must set forth a projected path that a plan will take in meeting the standards for a FIP or RP. For example, in the case of a FIP, this would include a projection of the funded percentage and credit balance or deficiency for each year in the funding improvement period. A FIP or RP must also be updated each year.

Table 16 below summarizes the standards for plans in different zone statuses.

Table 16. Standards for Funding Improvement

	Endangered (and some Seriously Endangered)	Seriously Endangered⁸⁹	Critical
Funding Improvement Period/ Rehabilitation Period	10-year period (13 with WRERA election)	15-year period (18 with WRERA election)	10-year period (13 with WRERA election)
Beginning of Period	Plan year beginning after the 2 nd anniversary of adoption of FIP (if earlier, expiration of CBAs covering 75% of actives as of due date for the initial endangered certification)	Same as endangered status	Same as endangered status based on the adoption date of the RP
Targets for Improvement in Funding	Reduce underfunding percentage by 33% by the end of the funding improvement period <u>and</u> Avoid funding deficiency during funding improvement period (<i>including extensions</i>)	Reduce underfunding percentage by 20% by the end of the funding improvement period <u>and</u> Avoid funding deficiency during funding improvement period (<i>including extensions</i>)	Emerge from critical status by end of rehabilitation period <u>or</u> If above standard cannot be met using all reasonable measures, use reasonable measures to emerge at a later time or to forestall possible insolvency

⁸⁹ In the case of a seriously endangered plan with a funded percentage in excess of 70% as of the beginning of the initial endangered year, this special standard applies (and continues to apply for later years) only if the plan's actuary certifies that the plan is not projected to meet the regular standard for endangered plans.

Each year during the plan's funding improvement or rehabilitation period, the plan's actuary must certify the plan's status and whether the plan is making the scheduled progress in meeting the requirements of its FIP or RP. For the 2011 plan year, the IRS received 319 critical status certifications: 26 plans reported they were not making the scheduled progress in meeting the requirements of their rehabilitation plans and 85 plans reported they were making the scheduled progress. There were 213 endangered and seriously endangered plans in 2011: three reported they were not making the scheduled progress in meeting the requirements of their funding improvement plans and 64 reported they were making the scheduled progress. Three hundred fifty-four (354) plans (208 critical status plans and 146 endangered and seriously endangered status plans) provided little or no information on their scheduled progress; in some cases, this may indicate that their rehabilitation periods or funding improvement periods had not yet commenced.

For many plans, it is too early to draw conclusions from the data reported to the ERISA agencies, and continued tracking of plans' scheduled progress will be needed. PPA zone status certifications are the most recent sources of information on whether a plan is making the scheduled progress under a funding improvement or rehabilitation plan, but certifications are filed on a plan-by-plan basis only with the IRS. Other useful information for monitoring purposes would be whether a plan has exhausted all reasonable measures to emerge from critical status by the end of the rehabilitation plan period. While some of this information must be described in a plan's rehabilitation plan, it is not required to be reported to the ERISA agencies.

Restrictions on Endangered or Critical Status Plans

Plans in endangered and critical status are restricted with respect to the types of actions they may take, the types of amendments they may adopt, and the collective bargaining agreements they may accept. Certain restrictions apply during the period beginning on the date of certification for the initial determination year and ending on the day before the first day of the funding improvement period (known as the "funding plan adoption period") or the rehabilitation period (known as the "rehabilitation plan adoption period"). Other restrictions apply after the adoption date of the plan's FIP or RP. See Table 17 below.

Table 17. Restrictions During Plan Adoption Period and After Adoption of a Funding Improvement or Rehabilitation Plan

	Endangered	Seriously Endangered	Critical
Restrictions During Funding Plan Adoption Period or Rehabilitation Plan Adoption Period	<p>No amendment increasing plan liabilities by reason of an increase in benefits, a change in the accrual of benefits, or a change in the rate at which benefits become non-forfeitable (unless required by law)</p> <p align="center"><u>and</u></p> <p>No CBA or participation agreement may be accepted that provides for: a reduction in the level of contributions for any participants, a suspension of contributions with respect to any period of service, or any new direct or indirect exclusion of younger or newly hired employees from plan participation</p>	<p>Same as endangered status</p> <p align="center"><u>and</u></p> <p>Plan must take all reasonable actions to increase funded percentage and postpone funding deficiency for at least 1 year</p>	<p>Same as endangered status</p> <p align="center"><u>and</u></p> <p>No lump sum payments (other than small amounts) or other accelerated payments</p>
Restrictions After Adoption of Funding Improvement Plan (FIP)/ Rehabilitation Plan (RP)	<p>(i) No amendments increasing benefits, including future benefit accruals, unless the plan actuary certifies that the increase is consistent with the FIP and is paid for out of contributions not required by the FIP to meet the applicable funding targets in accordance with the schedule in the FIP and consistent with FIP,</p> <p align="center"><u>and</u></p> <p>(ii) No amendments that are inconsistent with the FIP</p> <p align="center"><u>and</u></p> <p>(iii) No CBA or participation agreement may be accepted that provides for: a reduction in the level of contributions for any participants, a suspension of contributions with respect to any period of service, or any new direct or indirect exclusion of younger or newly hired employees from plan participation</p>	<p>Same as endangered status</p>	<p>(i) No amendments increasing benefits, including future benefit accruals, unless the plan actuary certifies that the increase is paid for out of additional contributions not contemplated by the RP, and, after the increase, the plan still is reasonably expected to emerge from critical status by the end of the rehabilitation period on the schedule contemplated in the RP,</p> <p align="center"><u>and</u></p> <p>(ii) No amendments that are inconsistent with the RP</p> <p align="center"><u>and</u></p> <p>(iii) No lump sum payments (other than small amounts) or other accelerated payments</p>

A failure by an endangered status plan (which is not in seriously endangered status) to meet the applicable standards by the end of the funding improvement period can result in a civil penalty under ERISA of up to \$1,100 per day. A plan in seriously endangered status that fails to meet the standards by the end of the funding improvement period is subject to an excise tax based on the greater of the amount of the contributions necessary to meet such standards, or the plan's accumulated funding deficiency. An excise tax applies on this same basis in the case of a plan in critical status that fails to meet the requirements of section 432(e) of the Code by the end of the rehabilitation period or fails to make scheduled progress in meeting its requirements under the RP for three consecutive years. The IRS may waive these excise taxes based on a finding that the failure was due to reasonable cause and not to willful neglect.

Contribution Increases, Benefit Reductions, and Other Elements of FIPs and RPs

Possible actions or measures for inclusion in a funding improvement or rehabilitation plan are contribution increases and reductions in plan benefits and expenses. Extensions of amortization periods and adoption of the shortfall method may also be used to affect minimum required contributions and, thus, the plan's zone status.

The trustees of a plan in endangered status are required to provide the bargaining parties with (i) a schedule that reflects reductions in future benefit accruals to the extent necessary to meet the targets for improvement in the plan's funding, assuming no contribution increases (except as necessary to meet the targets once future benefit accruals have been reduced to the maximum extent permitted by law), and (ii) a schedule that increases contributions to the extent necessary to meet the targets, assuming no reductions in future benefit accruals.⁹⁰ The schedule in (i) is also a "default" schedule that must be imposed by the plan's trustees if the bargaining parties fail to adopt a schedule consistent with the plan's FIP within 180 days after expiration of the collective bargaining agreement in effect when the plan entered endangered status. Other schedules of contributions and benefits may also be provided as options under the FIP.

Similar requirements apply with respect to schedules relating to a RP, except that only a schedule similar to (i) above is required to be provided to the bargaining parties, and such schedule may not reduce the rate of future accruals below a monthly benefit equal to 1% of contributions made with respect to a participant or, if lower, the rate in effect as of the first day of the initial critical year (this is the default schedule). However, additional schedules may reduce the rate of future accruals to zero. A RP may also include legally permissible reductions to previously earned benefits (see below).

To curtail plan costs, plans in endangered or critical status may reduce future benefits (*i.e.*, benefits that have not yet been earned), as well as previously earned benefits that are not protected under the anti-cutback rules⁹¹ (such as certain disability or death benefits). Plans may, for example, reduce the future benefit accrual rate from 2 percent to 1 percent of contributions, or – with respect to future benefit accruals – eliminate an ongoing cost-of-living adjustment, an

⁹⁰ Schedules of benefits and associated contributions must be updated annually to reflect the experience of the plan, but the schedules in effect when the bargaining parties negotiate a collective bargaining agreement remain in effect for the duration of that collective bargaining agreement.

⁹¹ The Code and ERISA generally prohibit a reduction in accrued benefits or the accrued right to early retirement benefits, retirement-type subsidies, and optional forms of benefit.

early retirement subsidy, or a lump sum payment option. In addition, critical status plans are required to reduce certain previously earned rights. As soon as notice of a plan's critical status is sent to participants and other parties, the plan must cease paying benefits in the form of lump sums and other accelerated payments (except lump sums up to \$5,000 or payment of benefits owed for past periods).⁹²

Critical status plans also have the ability to reduce certain *previously earned* benefits that would otherwise have anti-cutback protection. In particular, plans in critical status may reduce the "adjustable benefits" of certain participants. Reductions in adjustable benefits, which may not affect a participant's accrued benefit at normal retirement age, include the reduction or elimination of early retirement benefits, retirement-type subsidies, optional forms of payment (other than an option that provides required benefits for a surviving spouse), and benefits not eligible for PBGC's guarantee because they were recently adopted (*i.e.*, increases adopted within 60 months of the plan's critical status certification). Plans in funding statuses other than critical status may not reduce adjustable benefits.

Adjustable benefit reductions are generally limited to active participants and inactive participants with vested benefits (separated vested participants) who have not started receiving benefits as of the time of the plan's critical status certification. (An exception applies in the case of benefits not eligible for PBGC's guarantee as of that date because they were recently adopted, which may be reduced with respect to retirees in pay status.) Adjustable benefits may be reduced only if at least 30 days' prior notice of the reduction is provided to participants and beneficiaries, contributing employers, and unions.

While plan trustees may unilaterally reduce the adjustable benefits of separated vested participants (subject to the notice requirement), adjustable benefit cutbacks for active participants are reduced based on the outcome of collective bargaining over the schedules provided by the plan trustees. The trustees generally provide multiple schedules with varying degrees of benefit reduction, each of which corresponds to a different contribution rate. Collective bargaining parties then negotiate which of these packages to adopt.

The Form 5500, Schedule R, instructs plans to indicate whether an amendment was adopted during the plan year that decreased the value of future benefits in any way, including a decrease in future accruals, a freeze in accruals for some or all participants, or closure of the plan to new employees. On the 2009 Form 5500, 194 plans reported that they reduced future benefits. About one-half of those plans were in critical status. For the 2010 plan year, nearly the same number of plans – 172 – reported that they reduced future benefits, and over one-half of these plans were in critical status.

On the Schedule MB, critical status plans must report whether any adjustable benefit reductions were made and the reduction in liabilities resulting from the reduction in adjustable benefits measured as of the valuation date. For the 2009 plan year, 115 plans reported making adjustable benefit reductions. Of the 86 plans that reported a reduction in liabilities, the total reduction was \$765 million in liabilities, for an average plan reduction of \$8.9 million (or 1.6% of the total unfunded vested liabilities in these 86 plans). For the 2010 plan year, 149 plans reported making adjustable benefit reductions. Of the 108 plans that reported a reduction in

⁹² Once this occurs, the plan must be amended to reflect the cessation.

liabilities, the total reduction was \$2.15 billion in liabilities, for an average reduction per plan of about \$20 million (or 3.3% of the total unfunded vested liabilities in these 108 plans).⁹³

Table 18 below shows the number of plans in 2010 that adopted amendments decreasing the value of benefits by funding zone status. For critical status plans, it also shows the number of plans that reported reducing adjustable past benefits. In total, 268 plans reduced either future benefits, adjustable past benefits, or both: 172 plans reduced future benefits and 149 plans reduced adjustable past benefits. There were 328,000 active participants in plans that made both types of reductions in 2010 – three times as many as in 2009. The percentage of critical status plans that made adjustable benefit reductions increased from 24% in 2009 to nearly 40% in 2010 (the number of plans in critical status fell by about 18%). Reductions in adjustable benefits will generally occur gradually over time as new collective bargaining agreements are negotiated. The cumulative effect of these reductions on a plan’s liability – and whether this is a useful tool that will be used to reduce plan liability – will become clear over time.

Table 18. Reductions in Future Benefits/Adjustable Past Benefits (2010)⁹⁴

2010 Plan Status	No. of Plans Certified	Only Reduced Future Benefits	Only Reduced Adjustable Past Benefits	Reduced Both Future Benefits and Adjustable Past Benefits
Critical	378	42	96	53
Seriously Endangered	46	6		
Other Endangered	222	20		
Neither Critical Nor Endangered	684	48		
Not reported	3	3		
Total	1,333	119 ⁹⁵	96	53

⁹³ It is unclear whether the reported reductions in plan liability apply for benefit reductions made in the previous year or in the year to which the Form 5500 return applies. For example, in some cases, reductions reported in 2009 appear to have occurred in the 2008 plan year and were valued with respect to their effect on the plan’s liability for the 2009 plan year. Alternatively, some of the benefit reductions reported on the 2009 Schedule MB may be reductions that occurred in the 2009 plan year, but which are valued with respect to their effect on plan liability in the 2010 plan year. For the 2008 plan year, 31 plans reported that they reduced adjustable benefits (data limited to 1,210 plans); although some of the 31 plans reported a reduction in plan liability, totaling just over \$1 million, other plans reported a zero reduction in liability. The 2012 instructions to the Schedule MB clarify this question.

⁹⁴ Data is based on 2010 Form 5500 annual return filings. This Table treats two plans that reported reducing adjustable benefits but were in endangered status as critical status plans.

⁹⁵ In both 2009 and 2010, a small percentage of these plans – about 9% to 15% – also adopted amendments that increased the value of some benefits.

Critical status plans often adopt RPs that call for significant increases in contribution rates, particularly under schedules that preserve the current benefit formula and all or most benefits under existing plan terms (known as “alternate” or “preferred” or “primary” schedules). Summaries of RPs in Form 5500 filings indicate that the schedules adopted by many bargaining parties require contribution rate increases of 7% or more each year for an extended period.

Employer contributions to multiemployer plans totaled about \$20.0 billion for the 2009 plan year and \$20.5 billion for the 2010 plan year. Average contributions per active participant climbed from \$4,300 in 2008, to \$4,500 in 2009, to \$5,000 in 2010; the data show that contributions increased for plans in all zone statuses. Table 19 below shows average contributions per active participant by plans according to plan funding status for the 2010 plan year.

Table 19. Average Contributions by Plan Status (2010)⁹⁶

Plan Status	Contributions Per Active Participant	Did Not Reduce Benefits	Only Reduced Future Benefits	Only Reduced Adjustable Past Benefits	Reduced Both Future and Adjustable Past Benefits
Critical	\$4,000	\$4,550	\$5,800	\$4,000	3,400 ⁹⁷
Seriously Endangered	\$7,500				
Other Endangered	\$7,600				
Neither Critical Nor Endangered	\$5,000				

Critical status plans averaged lower contributions per active participant in 2010 than plans in other funded statuses – about \$4,000 per active participant as compared with about \$5,500 per active participant. Critical status plans that did not reduce benefits in 2010 had average contributions per active participant of \$4,550. In the case of critical status plans that reduced only future benefits, average contributions rose from \$3,400 in 2008 to \$5,800 in 2010. For critical status plans that reduced both future and past adjustable benefits in 2010, average contributions per active participant increased from \$5,000 in 2008 to \$5,400 in 2009, but then dropped to \$2,100 in 2010 (see footnote 97).

According to representatives from the multiemployer plan community, many plans have taken significant actions to increase contributions and reduce benefits in response to the funding challenges of recent years. In some cases efforts to improve funding status have involved

⁹⁶ Data based on 2010 Form 5500 annual return filings. Numbers are rounded.

⁹⁷ Generally, a different set of plans reduced both types of benefits in 2010 than the set in 2009. The 2010 average in this Table does not include two plans with unusually low contribution rates that covered 45% of all participants in 2010; by including those plans, the average contribution goes down to \$2,100.

mergers of smaller plans into larger plans, which are expected to result in greater stability in future costs and benefits.⁹⁸

Some plans in critical status have indicated, in summaries of RPs or informally, that there are natural constraints on the extent to which the bargaining parties will accept contribution rate increases and benefit reductions. In some cases, these plans contend that it would not be reasonable to require further contribution increases or benefit reductions, as that would induce employers and unions to cease bargaining for continued contributions to the plan.⁹⁹ Under PPA, if the plan sponsor has determined that, based on reasonable actuarial assumptions and upon exhaustion of all reasonable measures, the plan cannot reasonably be expected to emerge from critical status by the end of the rehabilitation period (in some cases, there is a determination that the plan cannot reasonably be expected to emerge from critical status at any time), the plan sponsor is allowed to adopt a RP that will not lead to emergence from critical status by the end of the rehabilitation period. The ERISA agencies cannot easily determine whether the plan sponsor's determination that the plan cannot reasonably be expected to emerge from critical status by the end of the rehabilitation period is appropriate and therefore are hard-pressed to determine whether a plan that adopts such a RP could have instead adopted a RP that is reasonably expected to lead to emergence by the end of the rehabilitation period.

A multiemployer plan that is in endangered or critical status is required to attach a summary of the plan's FIP or RP, and any update, to the plan's annual report, and to summarize the plan's FIP or RP in the plan's annual funding notice to participants and beneficiaries, and other parties. The ERISA agencies reviewed a sample of FIP and RP summaries submitted by plans with the 2009 Form 5500. The sample included plans of various sizes, with a slight bias towards larger plans. The sample included 14 FIP summaries and 15 RP summaries. FIP and RP summaries in the annual funding notices were examined as well, although they often provide fewer details.

In reviewing the sample, we documented what tools have been adopted by the plan's trustees, as well as what tools are being proposed on at least one schedule being offered to the collective bargaining parties. Given that many plans are still waiting for the collective bargaining process to select a schedule, our review provides more of an indication of the tools being considered in the process rather than information on actions being adopted and implemented.

⁹⁸ Some mergers involve a dominant employer participating in several plans that has an interest in consolidating the plans and improving the funding of the remaining plan. Mergers may also help reduce administrative expenses, which can be substantially greater (on a per participant basis) in smaller plans. For 2009, in plans with fewer than 500 participants, administrative expenses per participant were 70% higher than in plans with 1,000 to 9,999 participants, and were three times as high as such expenses in plans with 10,000 or more participants. Many plans with fewer than 500 participants had average per participant administrative expenses that were four, five, and six times greater than those for large plans.

⁹⁹ For example, we have heard that early retirement subsidies may be more important than the future accrual rate under the plan to active employees deciding whether to support the plan. Also, the fear of adjustable benefit reductions could push active employees to retire earlier than they otherwise would. These concerns may be more likely in plans with a large proportion of older participants, whereas plans with a greater proportion of younger participants may emphasize future accruals.

Approximately one-third of the FIPs project that the plan will recover on schedule, and no action was required. Of the remaining plans, virtually all are considering or have already implemented both an increase in the contribution rate and a reduction in benefits. None of the FIP summaries reviewed mention use of the amortization extension or the shortfall method.

Among the RPs reviewed, the vast majority propose for consideration, or have already implemented, an increase in the contribution rate and reductions in future benefits. Approximately a quarter of the plans mention an amortization extension, and none mention the shortfall method. The following adjustable benefits are proposed for reduction, or have already been reduced, by the vast majority of RPs reviewed: early retirement benefits, disability benefits, death benefits, as well as optional forms of payment, such as period certain guarantees and lump sums. Reductions in early retirement subsidies are proposed by about half of the RPs. A reduction in post-retirement benefit increases was not mentioned in any of the RPs reviewed.¹⁰⁰

Administrative Issues Presented by PPA

Since PPA, the ERISA agencies and members in the multiemployer plan community, such as the American Academy of Actuaries Multiemployer Pension Plans Subcommittee, have identified a number of technical issues surrounding the operation of the PPA funding rules.

Uncertainty regarding application of sunset

Section 221(c) of PPA provides that the special funding rules under section 432 of the Code and section 305 of ERISA generally do not apply to plan years beginning after December 31, 2014. However, under section 221(c)(2) of PPA, if a multiemployer plan is operating under a FIP or RP for its last plan year beginning before January 1, 2015 it must continue to operate under that FIP or RP while the FIP or RP remains in effect and all the provisions of ERISA and the Code relating to the operation of the FIP or RP continue in effect.

The sunset raises a number of ambiguities that will need to be resolved, including the following:

- What does it mean for a multiemployer plan to be “operating under” a FIP or RP?
 - If a plan enters endangered or critical status in the 2014 plan year, is the plan sponsor subject to the requirement to adopt a FIP or RP before the sunset, and is the plan then considered to be “operating under” the FIP or RP for purposes of section 221(c)(2) of PPA?
 - If the answer to the question above is no, what actions cause a plan to be “operating under” a FIP or RP? For example, if a plan enters endangered or critical status in the 2013 plan year, is the plan “operating under” a FIP or RP even if no collective bargaining agreements have been adopted pursuant to the FIP or RP for the last plan year beginning before January 1, 2015?

¹⁰⁰ PPA permits reductions in post-retirement adjustments only if the adjustment took effect less than 60 months before the plan’s critical status. Plans adopted post-retirement adjustments more often before 2000, than after 2000.

- Which excise tax provisions “relate to the operation” of the FIP or RP and therefore remain in effect after the sunset with respect to plans operating under a FIP or RP for purposes of section 221(c)(2) of PPA?

Uncertainty regarding application of sanctions for “reasonable measures” plans

Under section 432(e) of the Code, a rehabilitation plan must generally consist of actions that would enable a multiemployer plan to emerge from critical status by the end of the rehabilitation period (generally, a 10-year period). If a plan sponsor determines that, based on reasonable actuarial assumptions and upon exhaustion of all reasonable measures, the plan cannot reasonably be expected to emerge from critical status by the end of the rehabilitation period (but can reasonably be expected to emerge after that time), the rehabilitation plan must consist of reasonable measures to enable the plan to emerge from critical status at a later time; if the plan cannot reasonably be expected to emerge from critical status at any time, the rehabilitation plan must consist of reasonable measures to forestall possible insolvency. However, while the statute recognizes that it would be unreasonable to expect these two types of plans (sometimes referred to as “reasonable measures plans”) to emerge from critical status by the end of the rehabilitation period, the statutory excise tax provisions do not provide special treatment for reasonable measures plans.

Section 4971(g)(3)(B)(ii) of the Code imposes an excise tax on a plan in critical status that “has received a certification under section 432(b)(3)(A)(ii) for three consecutive years that the plan is not making the scheduled progress in meeting the requirements of its rehabilitation plan.” Under section 432(b)(3)(A)(ii) of the Code, the requirement to certify that a multiemployer plan is making scheduled progress under its rehabilitation plan applies only in the case of a plan “which is in a . . . rehabilitation period.” Because section 432(b)(3)(A)(ii) requires a plan to certify its scheduled progress under a rehabilitation plan only for plan years during the rehabilitation period, a reasonable measures plan is not required to certify its progress after that period, even though its rehabilitation plan continues to be in effect.

Similarly, under section 4971(g)(3)(B)(i) of the Code, it is clear that a sanction applies if a plan fails to meet the requirements of section 432(e) of the Code by the end of the rehabilitation period, but it is not clear how it applies to reasonable measures plans that fail to emerge by that date.¹⁰¹

¹⁰¹ One possible interpretation would be to apply the section 4971(g)(3)(B)(i) to all plans (including reasonable measures plans) that fail to emerge from critical status by the end of the rehabilitation period. The reference in that section to meeting the requirements of section 432(e) by the end of the rehabilitation period suggests that the relevant requirement for all plans is emergence from critical status, the only purpose under section 432(e) for which the end of the rehabilitation period is relevant. However, because section 432(e) does not require reasonable measures plans to emerge from critical status by the end of the rehabilitation period, such an interpretation would apply a sanction in the case of reasonable measures plans for failing to comply with a statutory requirement that the statute recognizes is unreasonable for them. Although the statute permits waivers in appropriate circumstances, the waiver process is uncertain and could result in significant administrative burdens.

Timing rules for improvements in funded status under a funding improvement plan

Under current law, a multiemployer plan's actuary must certify the plan's status (endangered, critical, or neither) by the 90th day of each plan year. Within 240 days of that due date, a plan that has received an initial certification of endangered status must adopt a FIP. The FIP must be formulated to provide for an increase in the plan's funded percentage so that, as of the end of the funding improvement period, the plan's funded percentage equals or exceeds the sum of: (i) the funded percentage as of the beginning of the funding improvement period, plus (ii) 33 percent¹⁰² of the difference between 100 percent and the plan's funded percentage as of the beginning of the funding improvement period. The funding improvement period is the 10-year period¹⁰³ that begins on the first day of the first plan year beginning after the earlier of (i) the second anniversary of the date on which the funding improvement plan is adopted, or (ii) the expiration of the collective bargaining agreements that were in effect on the due date for the plan's initial endangered status certification and covering, as of such date, at least 75 percent of the active participants in the plan.

A FIP is designed to achieve a required increase in the multiemployer plan's funded percentage, based on the plan's funded percentage as of the beginning of the funding improvement period. However, the funding improvement period does not begin until after the FIP is adopted. Therefore, the FIP must use an estimate of what the funded percentage will be as of that date.

Administrative questions have been raised regarding whether the starting point for the required increase in the plan's funded percentage should be based on the more certain funded percentage as of the plan's initial endangered status certification, rather than an estimated funded percentage as of the date the funding improvement period begins.

Other administrative issues

Groups in the multiemployer plan community have raised other administrative issues as well:

- Whether a plan that is moving from endangered status to critical status should operate under a FIP or a RP during the period before the rehabilitation period begins.
- When is a default schedule imposed if a collective bargaining agreement expires before, rather than after, the plan enters endangered or critical status and how does the 180-day period apply.

Another interpretation regarding the application of section 4971(g)(3)(B)(i) in the case of a reasonable measures plan might involve determining whether the plan has met the requirements of section 432(e) by the end of the rehabilitation period by analyzing whether all reasonable measures have been taken to enable the multiemployer plan to emerge from critical status. However, in situations where all reasonable measures have not been taken, it would be difficult to determine the amount of the sanction, which is based in part on the "amount of contributions necessary to meet such . . . requirements." Such an interpretation would make it more difficult to impose a sanction in the case of a reasonable measures plan, would result in disparate treatment of plans in critical status that are scheduled to emerge by the end of the rehabilitation period and those that are not (even if the plan were scheduled to emerge just one year after the rehabilitation period ends), and accordingly could create incentives for a plan to characterize itself as a reasonable measures plan.

¹⁰² For certain seriously endangered plans, 20% is substituted for 33%.

¹⁰³ This period may be longer for plans that made WRERA elections and for certain seriously endangered plans.

- Whether a critical status plan may treat the restriction on lump sum payments as eliminating the lump sum form of payment, as opposed to simply suspending the form of payment, if such elimination is necessary for the plan to emerge from critical status.
- Whether the prohibition against a reduction in the level of contributions was intended to apply for endangered status plans but not critical status plans (after the rehabilitation plan adoption period), or whether the rules for such plans should be harmonized.
- Whether surcharges paid by employers in critical status plans should be included as part of the employer's contribution rate for purposes of determining the annual payment withdrawal liability amount.
- How the rules for plans in reorganization status operate in interaction with the PPA rules.

Subsequent Funding Relief Legislation

WRERA was signed into law on December 23, 2008, to give plans respite from the effect of losses experienced during the 2008 stock market decline. With respect to the plan year beginning on or after October 1, 2008, and not later than September 30, 2009, plans were permitted to elect to temporarily freeze their prior plan year's certified funding status,¹⁰⁴ and/or to defer any updates or actions required under a FIP, RP, or schedule relating to the prior plan year. (If the plan would have been in critical status but for the election to freeze the prior year's status, the exemption from the excise tax for any funding deficiency continues to apply.) In addition, plans that were in endangered or critical status for a plan year beginning in 2008 or 2009 were permitted to extend any funding improvement period or rehabilitation period for an additional three years (*i.e.*, from ten years to 13 years in the case of a plan in endangered or critical status, and 15 to 18 years in the case of a seriously endangered plan). Because multiemployer plan contributions are fixed in multi-year collective bargaining agreements, such an election bought the trustees and the bargaining parties time to increase contributions and adopt other changes needed to shore up plan assets.

The IRS received 764 WRERA elections. This represented most of the plans that were certified to be in endangered or critical status for the 2009 plan year. Of the 764 WRERA elections received, the vast majority – 638¹⁰⁵ – were elections to freeze the prior year's certified status (if the plan had the same status for both the election year and the prior year, the effect of that election was to defer an update of the plan's rehabilitation or funding improvement plan for the year). About one-quarter of the elections extended the plan's rehabilitation or funding improvement period by three years. One-half of WRERA elections were made by critical status plans, and the other half were made by endangered status and seriously endangered status plans.

¹⁰⁴ If the prior plan year began before the plan was subject to PPA, the plan was permitted to submit an actuarial certification of the plan's status for the prior year in the same manner as if PPA had applied.

¹⁰⁵ Of the 638 elections, 19 were applicable for the 2008 plan year and 619 were applicable for the 2009 plan year.

Table 20. WRERA Elections

Funding Status (Certified)	Number of WRERA Elections	Elections to Freeze Status or Defer FIP/RP		Election to Extend Funding Improvement/Rehabilitation Period	Both Elections
Critical	379	295		127	43
		Frozen Green Status	195		
		Frozen Endangered Status	32		
		Frozen Seriously Endangered Status	11		
		Frozen Critical Status	47		
		Did not submit a certification	10		
Seriously Endangered	109	102		16	9
Other Endangered	267	232		45	10
Neither Endangered nor Critical	9 ¹⁰⁶	9		0	0
Total	764	638		188	62

As shown in Table 20 above, 295 plans that were certified to be in critical status elected to freeze their prior year's status: 195 of those plans were certified as being in "green" status, neither endangered nor critical status, for the prior plan year and 43 of those plans were certified as being in endangered or seriously endangered status for the prior plan year. Forty-seven of the plans certified to be in critical status elected to defer any updates or actions required under a rehabilitation plan, and 127 plans elected a three-year extension of the rehabilitation period.

¹⁰⁶ Nine elections to freeze the prior year's plan status were received from plans that reported they were neither endangered nor critical for the plan year of the election. In some of these cases, the plan was eligible for WRERA relief but misreported the plan's certified status for the year of election; in a few cases, elections reflected a misunderstanding of the effect of WRERA relief.

PRA 2010 Relief

While WRERA provided short-term relief, a significant number of multiemployer plans were still faced with increased funding obligations and the prospect of either falling into endangered or critical status or remaining in such status for a sustained period of time. In response, Congress enacted PRA 2010 in June 2010 in order to provide funding relief from the significant investment losses that occurred in and around 2008. PRA 2010 provided special funding rules that enable plans to decrease annual minimum required contributions, increase funding standard account credit balances, and improve zone statuses, which in turn alleviate pressures on contribution increases and benefit cuts under collective bargaining agreements.

Under a special amortization extension rule, plans that meet a solvency test may amortize net investment losses¹⁰⁷ incurred during one or both plan years ending after August 31, 2008 over a 29-year period, rather than the shorter 15-year period that would otherwise apply (e.g., a plan may pay down 2008 investment losses through the plan year ending in 2037). This reduces the plan's annual amortization charges relating to the 2008 losses (although the reduced charges continue for a longer time). One plan, for example, established an asset loss of \$21.4 million during the 2008 plan year: a 15-year amortization schedule produced an annual charge of \$2.3 million, but by adopting special funding relief, this charge was lowered to \$1.7 million based on a 29-year schedule. Reducing a plan's annual charges under the funding standard account has the effect of reducing the plan's minimum required contribution. For a plan with a looming funding deficiency, the lower minimum required contribution will delay the date of that funding deficiency, which will impact the plan's zone status under PPA.

Under a special asset valuation rule, plans that meet a solvency test may recognize investment losses incurred during one or both plan years ending after August 31, 2008, over a period of up to ten years, rather than the regular smoothing period of five years typically used by plans. By taking into account only one-tenth of the investment loss each year over 10 years, plans can spread the recognition of the huge drop in asset losses over a longer period. In addition, for purposes of smoothing, plans are permitted to use an actuarial value of assets that is as much as 30% greater than the market value of assets for one or both of the plan years beginning after August 31, 2008. Applying this rule will inflate the plan's funded percentage for certification purposes because the actuarial value of plan assets will make the funded percentage for that plan year higher than what it otherwise would have been.

Plans have relied extensively on PRA 2010 relief. PRA 2010 required plans applying the special funding relief to give notice to participants and beneficiaries, and to PBGC. As shown in Table 21 below, PBGC received more than 700 plan notices of a decision to use the special funding rules: 556 plans used 29-year amortization of applicable losses, 587 plans used ten-year smoothing in determining the actuarial value of assets, and 358 used the 130% corridor for

¹⁰⁷ Net investment losses are defined as the difference between the plan's actual and expected returns (*i.e.*, between the market value of assets as of the end of an eligible plan year and the market value of assets as of the beginning of the eligible plan year, plus contributions less disbursements for the year, increased at the plan's valuation interest rate).

determining actuarial value of assets.¹⁰⁸ The majority of these plans used both 29-year amortization and 10-year asset smoothing, and 225 plans used all three types of relief.

The 2010 status notices for plans that used PRA 2010 relief provide a rough break-down of these decisions by zone status: out of 716 plans electing relief, 411 plans were in “green” status; 135 plans were in endangered or seriously endangered status, and 170 plans were in critical status. Among all critical status plans in 2010, nearly 45% used the relief. It is unclear whether the remaining critical status plans were ineligible for the relief¹⁰⁹ or preferred the additional flexibility of critical status (*i.e.*, ability to reduce adjustable benefits, continue in critical status beyond the 10-year rehabilitation period if all reasonable measures are exhausted, and avoid excise taxes for funding deficiencies).

Table 21. Plans Using PRA 2010 Relief¹¹⁰

Plan Status (2010)	(1) 29-Year Amortization Schedule	(2) 10-Year Asset Smoothing	(3) 130% Corridor	Plans using one or more types of relief ((1), (2), and/or (3))	Plans using all three types of relief (1), (2), and (3)
Critical	128	137	96	170	60
Seriously Endangered	14	18	17	21	10
Other Endangered	90	82	50	114	31
Neither Critical nor Endangered	324	350	195	411	124
All Plans Using Relief	556	587	358	716	225

The special amortization rule first applies to reduce annual charges for the 2009 plan year. Because PRA 2010 was enacted in June 2010, the effects of the rule on minimum required

¹⁰⁸ The numbers of notices for each type of relief described herein are approximate because the notices were individually drafted by plans and did not always clearly describe the relief adopted.

¹⁰⁹ A condition of the relief is a solvency certification by the plan’s actuary that the plan is projected to have sufficient assets to cover benefit payments and expenses over the period of the relief. The solvency certification appears to have had little effect on the ability to use the asset valuation relief, but it did appear to have a more significant effect on the ability to use 29-year amortization. Anecdotal information indicates that the limitation on benefit increases for two plan years following the years in which the special rules apply deterred some plans from taking relief; other plans took the relief but explained in the notice that future benefit increases were possible by suspending the relief. In other cases, trustees chose not to adopt the relief but to tackle their plans’ funding problems immediately.

¹¹⁰ Due to the large volume of notices received, the wide range of formats and variety of descriptions used in describing the elections made, and the fact that many plans filed more than one notice changing their elections over time, these numbers are estimates. Also, the number of “green” status plans may be overstated because it includes any plan that did not provide notice of its 2010 status to PBGC (*i.e.*, because only endangered and critical status plan are required to provide a status notice to PBGC, the category “neither critical nor endangered” may include plans that should have filed the required notice but failed to do so). Individual plan certifications are not generally available from the IRS (although a plan’s status is later reported on the Form 5500 annual return).

contributions and credit balances would first be reported in many cases on the 2010 Form 5500.¹¹¹ In these 2010 filings, 666 plans reported a change in their credit balance for the 2009 plan year between the 2009 and 2010 annual reports; *i.e.*, specifically, the aggregate credit balances of these plans increased by \$2 billion – from \$32.3 billion to \$34.2 billion – for the 2009 plan year.¹¹² For many of these plans, Schedule MB attachments explained the difference in the prior year’s credit balance, showing a decrease in the amortization charges and an increase in the amortization credits due to the application of PRA 2010 relief.¹¹³ On average, these plans reported a prior year increase that was 6% higher (an average increase of \$2.9 million per plan) than what had been reported on the 2009 annual report.

The direct effects of the special amortization and the special asset valuation rules on plan status certifications may not be known immediately. Plans are permitted to apply the special rules in determining their zone status beginning with the 2010 plan year.¹¹⁴ While status certifications in 2010 and 2011 show a clear improvement in plans’ funding status (between 2009 and 2011, critical status plans dropped from more than one-third to fewer than one-quarter of all plans, and green status plans increased from nearly one-third to 60% of all plans), it is difficult to distinguish the effects of funding relief from other possible sources of funding improvement. Below are examples of the effects on zone status that many plans described in their election notices:

- Endangered status plans – Notices from certain endangered and seriously endangered plans indicated that higher actuarial asset values would cause the plans to move into “green” status. For example, one plan certified as endangered for 2010, based on a funded percentage of 78%, was recertified as “green” in December 2010 based on a funded percentage of 83% after applying the special asset valuation rule.
- Critical status plans – In some cases, notices from plans in critical status indicated that the plan was projected to move into “green” or endangered status due to increases in the plan’s credit balance and the number of years projected before a funding deficiency. In other cases, the notices explained that the plans remained in critical status despite the relief but were expected to emerge from critical status sooner as a result of the relief.
- Green status plans – There were a large number of “green” status plans that applied one or both of the special funding rules. Notices from many of these plans explained that the relief provided a buffer against future adverse experience and made it easier to avoid endangered or critical status in future years.

¹¹¹ IRS guidance provides that the effects of the special amortization rules need not be reflected in the 2009 Schedule MB, as long as the plan reflects those effects in an attachment to the 2010 Schedule MB.

¹¹² An additional \$20 billion in credit balances for the 2009 plan year is attributable to plans that did not report a change in their 2009 credit balance on the 2010 Form 5500 annual report.

¹¹³ In some cases, the increase may be due to other sources, such as a plan merger or additional contributions not previously reported.

¹¹⁴ It is not known how many plans with plan years beginning late in 2010 filed certifications that took into account PRA 2010 relief. In addition, IRS guidance permits plans to re-certify their 2010 zone status before the end of the 2010 plan year: PBGC received 25 notices indicating the plan was recertifying its status for the 2010 plan year to take into account the special funding rules. About 23 of these re-certifications indicated that the plan moved into “green” status from endangered, seriously endangered, or critical status. Other notices described the special rules as first having an effect on the plan’s status in 2011 or later plan years.

Assessing the Effects of PPA on Plan Decision-Making

In light of the substantial economic and market dislocations that have occurred since the enactment of PPA, the repeated changes in legal funding requirements since enactment, and the substantial lag before plan information is reported to the ERISA agencies, one cannot draw conclusions about the effects of PPA with confidence.

Some things we do know. Many plans have since 2008 become subject to the additional funding requirements under PPA's endangered and critical status rules, which compel the adoption of FIPs and RPs as a means toward orderly funding recovery. For the 2011 plan year, 41% of all plans were subject to these additional requirements. See Table 15. These requirements were in part responsible for the nearly 275 plans that reported reductions in future benefit accruals and/or past adjustable benefits in 2010. Disciplined increases in contributions have also been an outcome of FIPs and RPs. PPA has restricted plans in critical status (nearly 30% of all plans in 2010 and 25% of all plans in 2011) from payments of lump sums otherwise available under plan terms. It has also restricted benefit increases under plans in endangered or critical status. Many plans are beginning to report that they are making scheduled progress under the requirements of their funding improvement or rehabilitation plans. We also know that plans have widely benefitted from PPA provisions (such as automatic amortization extensions and the excise tax exemption for funding deficiencies) that helped relieve employers and participants from excessive funding pressures.

PBGC's projection model provides additional support for the view that PPA authorities will improve future funding status for some plans. PBGC ran a series of simulations on a broad range of potential future economic scenarios to assess the effects of PPA (assuming no sunset) and funding relief enacted in 2010 on multiemployer plans. These were compared to simulations that did not include the PPA tools and authorities. There are many uncertainties about the extent to which plans will use the tools and authorities under PPA over the coming years to improve their financial standing, and about our ability to predict that use. Nonetheless, the simulations that included the PPA authorities (and funding relief in 2010) projected significantly better average 2022 funding levels, supporting the view that PPA authorities should continue to help in the future.¹¹⁵

¹¹⁵ For information on ME-PIMS, see [PBGC 2012 Exposure Report](#).

Reporting and Disclosure Requirements

PPA added a number of new disclosure and reporting requirements to provide a wider dissemination of information about multiemployer plan funding. For example, the expanded disclosure requirements for the annual funding notice and the notice of endangered or critical status provide funding information to participants and beneficiaries, the bargaining parties, and the ERISA agencies. In particular, in enacting the new disclosure requirements, Congress believed that it was important that workers and retirees receive information about the funded status of their plan, including whether their pension plan was in endangered or critical status. Requiring disclosure of this information on a more timely and prominent basis was intended to make the information more useful to workers and retirees. To the extent that participants understood their benefits might be at risk, they would be motivated to bring pressure on the bargaining parties to ensure adequate plan funding.

This section describes some of the disclosure requirements added by PPA. While PPA provided for needed disclosure on plan funding, some of the required information is duplicative and some within the multiemployer community have reported that the information may cause confusion for workers and retirees.

Annual Funding Notices

Effective for plan years beginning after December 31, 2004, the Pension Funding Equity Act of 2004, P.L. 108-218 (PFEA '04), amended ERISA to require administrators of multiemployer defined benefit pension plans to furnish an annual funding notice to each participant and beneficiary, to each labor organization representing such participants or beneficiaries, to each employer that has an obligation to contribute under the plan, and to the PBGC. PPA expanded the annual funding notice requirement for plan years beginning after December 31, 2007, to apply to both multiemployer and single-employer defined benefit pension plans, changed the information required to be provided in the notice, and shortened the time frame for furnishing the notice. For 2008 and 2009, PBGC received 1,083 and 1,000 annual funding notices from multiemployer plans.

For multiemployer defined benefit plans, the annual funding notice is required to include, among other information:

- the plan's funded percentage on the valuation date¹¹⁶ of the plan year to which the notice relates (the "notice year") and the preceding two years;
- a statement of the value of the plan's assets and liabilities underlying each of these three funded percentages;
- a statement of the fair market value of assets on the last day of the notice year and the preceding two years;
- a description of any event that has a material effect on the plan's liabilities or assets during the current year with a projection to the end of the year of the impact of such event on plan liabilities;
- demographic information;

¹¹⁶ The valuation date for virtually all of the multiemployer plan universe is the first day of the plan year.

- a statement of the funding policy and the asset allocation of investments (expressed as percentages of total assets) on the last day of the notice year;
- a description of the rules relating to the reorganization and insolvency of multiemployer plans under title IV of ERISA, including limits on benefit payments; and
- a description of plan benefits eligible to be guaranteed by the PBGC.

If a multiemployer plan is in endangered or critical status, the funding notice must include: a summary of the plan's FIP or RP; a description of any updates or modifications to such FIP or RP adopted during the notice year; and an explanation of how to obtain a copy of the FIP or RP along with the actuarial and financial data that demonstrate any action taken toward fiscal improvement.

Administrators are required to furnish the annual funding notice generally within 120 days after the end of the notice year. Small plans covering 100 or fewer participants on each day during the plan year preceding the notice year have until the earlier of the date on which the Form 5500 annual report is filed or the latest date the report could be filed (with granted filing extensions).

In February 2009, DOL issued Field Assistance Bulletin (FAB) 2009-01 to provide interim guidance on the annual funding notice. Included with FAB 2009-01 was a model notice which plan administrators of multiemployer plans could use to satisfy the content requirements of the funding notice. In November 2010, DOL issued proposed regulations with new model notices. Plan administrators may use the model notices in FAB 2009-01 or in the proposed regulations until other funding notice guidance is published.¹¹⁷

Under section 502(c)(1) of ERISA, a plan participant or beneficiary may bring an action against a plan administrator who fails to meet the notice requirements. The court may hold the administrator personally liable to the participant or beneficiary for up to \$110 per day from the date of such failure. A search of court decisions at the end of November 2012 revealed only two actions brought by participants or beneficiaries to enforce the annual funding notice requirement.¹¹⁸

DOL does not generally have any authority to issue penalties for failure to file the annual funding notice. However, ERISA permits DOL to obtain equitable relief from a plan administrator that fails to furnish a complete annual funding notice and permits private parties entitled to receive a funding notice to sue for the same relief.¹¹⁹ To date, DOL has not brought an action under ERISA to enforce the annual funding notice requirements.

Notice of Endangered or Critical Status

Within 30 days after a certification of endangered or critical status, the plan sponsor must provide written notice of the status to the plan's participants and beneficiaries, the bargaining

¹¹⁷ In response to the proposed regulations, DOL received comments requesting that the final rule specifically address the application of the funding notice requirement to multiemployer plans that had terminated by mass withdrawal.

¹¹⁸ See *McDowell v. Price*, 853 F. Supp. 2d 776 (E.D. Ark. 2012); and *Legassie v. Raytheon Co. Emp. Benefits Admin. Cttee.*, No. CV 10-1850 ABC, 2011 WL 1296395 (C.D. Cal. Apr. 4, 2011).

¹¹⁹ See ERISA sections 502(a)(3), (a)(5), and (a)(8).

parties, the PBGC, and DOL. A notice of critical status must explain the possibility that adjustable benefits will be reduced and that such reductions may apply to participants whose benefit commencement date falls on or after the date the notice was given for the first year that the plan was in critical status. Under proposed Treasury regulations issued in March 2008, if the plan is in critical status, the notice must also advise participants that the plan is not permitted to pay lump-sums (or any other payment in excess of the monthly amount paid under a single life annuity) while it is in critical status.

DOL issued a model notice in 2008 before responsibility for the model notice was transferred to Treasury by WRERA.

Table 22 below shows submission patterns of these notices to DOL and the PBGC in 2009-2011. In general, only about 50% to 60% of the plans required to submit notices actually submitted them to both agencies. In 2009, a significant number of plans, 19%, did not submit a notice to either agency. Submission patterns improved in subsequent years, although 10% of all plans still failed to submit the required notice to either agency in 2011. Plans in critical status were slightly less likely to submit a notice to either agency than plans in endangered status. The reasons for non-compliance are unclear: they may relate to the fact that the notice is new and there are many recipients (participants and beneficiaries, the bargaining parties,¹²⁰ and two ERISA agencies). Also, in 2009, many plans elected to freeze their prior year “green” status (neither endangered nor critical status) under WRERA (see “WRERA Relief” above). Although plans in green status are not generally subject to a notice requirement, WRERA required plans electing green status to provide a special notice; some plans may have overlooked the special notice.

¹²⁰ Information is not available on compliance with the requirement to furnish the notices to participants and beneficiaries, and the bargaining parties.

Table 22. Status Notices to DOL and PBGC

Critical or Endangered Status ¹²¹		Plans sending critical status or endangered status notices (or any notice in connection with a WRERA freeze election) to:				Plans certifying status with IRS
		Both agencies	DOL only	PBGC only	Neither agency	
2009	Critical	237	52	67	116	472
		50%	11%	14%	25%	100%
	Endangered	226	69	106	61	462
		49%	15%	23%	13%	100%
	Total	463	121	173	177	934
50%		13%	19%	19%	100%	
2010	Critical	252	28	58	48	386
		65%	7%	15%	12%	100%
	Endangered	163	29	56	25	273
		60%	11%	21%	9%	100%
	Total	415	57	114	73	659
63%		9%	17%	11%	100%	
2011	Critical	193	12	80	34	319
		61%	4%	25%	11%	100%
	Endangered	121	10	62	20	213
		57%	5%	29%	9%	100%
	Total	314	22	142	54	532
59%		4%	27%	10%	100%	

Multiemployer Pension Plan Information Made Available Upon Request

In response to an appeal to Congress for greater access to plan information, effective for plan years beginning after December 31, 2007, PPA requires the administrator of a multiemployer plan to provide copies of certain actuarial and financial documents to participants,

¹²¹ Although WRERA permitted plans for one year (generally the 2009 plan year) to temporarily treat their status as the same as their status for the immediately preceding plan year, plans were required to report their actual certified zone status.

beneficiaries, employee representatives and contributing employers upon written request. Under section 101(k) of ERISA and DOL final regulations issued on March 2, 2010, the following documents must be made available:

- regularly recurring actuarial reports and any study, test (including a sensitivity test), document, analysis or other information (whether or not called a “report”) prepared by the plan’s actuary that depicts alternative funding scenarios based on a range of alternative actuarial assumptions, whether or not such information is received by the plan at regularly scheduled, recurring intervals;
- quarterly, semi-annual, or annual financial reports prepared for the plan by any plan investment manager, adviser or other fiduciary of the plan; and
- any application filed with the Secretary of the Treasury requesting an extension of an amortization period under section 431(d) of the Code and the determination of the Secretary of the Treasury pursuant to such application.

Documents must be furnished not later than 30 days after receipt of the written request. A plan administrator is not required to furnish to any requester more than one copy of a document during any 12-month period or any actuarial or financial documents which have been in the plan’s possession for less than 30 days.

The plan administrator must delete any information from a requested document that it reasonably determines to be:

- individually identifiable information regarding any participant, beneficiary, employee, contributing employer or fiduciary who is not an investment manager, adviser or other person (other than an employee of the plan) preparing a financial report for the plan; or
- proprietary information regarding the plan, a contributing employer or a service provider.¹²²

The Secretary of Labor may assess a civil penalty of not more than \$1,000 a day for each violation of section 101(k) under section 502(c)(4) of ERISA. Because identifying violations of section 101(k) is complaint driven, DOL is coordinating with its regional enforcement offices of the Employee Benefits Security Administration to find and pursue plan administrators who fail to comply. As of the beginning of November 2012, DOL had not received any complaints regarding possible violations of section 101(k) and thus had not assessed a penalty for a violation of this provision.

Notice of Potential Withdrawal Liability

Effective for plan years beginning after December 31, 2007, under section 101(l) of ERISA, the plan sponsor or administrator of a multiemployer plan is required to provide to any employer having an obligation to contribute to the plan, within 180 days of a written request, notice of potential withdrawal liability. An employer is not entitled to more than one notice during any 12-month period.

¹²² In addition, documents in the plan’s possession for six years or more as of the date of the request need not be provided. 29 CFR 2520.101-6(d)(2).

The notice is required to include:

- the estimated amount of the employer's withdrawal liability assuming such employer withdrew on the last day of the plan year preceding the date of the request; and
- an explanation of how such estimated withdrawal liability was determined, including the actuarial assumptions and methods used to determine the value of the plan liabilities and assets, the data regarding employer contributions, unfunded vested benefits, annual changes in the plan's unfunded vested benefits, and the application of any relevant limitations.

The Secretary of Labor may assess a civil penalty of not more than \$1,000 a day for each violation of section 101(l) under section 502(c)(4) of ERISA. Because identifying violations of section 101(l) is complaint driven, DOL is coordinating with its regional enforcement offices of the Employee Benefits Security Administration to find and pursue plan administrators who fail to comply. As of the beginning of November 2012, DOL had not received any complaints regarding possible violations of section 101(l) and thus had not assessed a penalty for a violation of this provision.

Summary Plan Information for Employer and Employee Representatives of Multiemployer Plans

Under section 104(d) of ERISA, effective for plan years after December 31, 2007, the plan administrator of a multiemployer plan is required to provide a report containing certain summary plan information to each employee organization and each employer with an obligation to contribute to the plan within 30 days after the due date of the plan's annual report.

The report must contain:

- a description of the contribution schedules and benefit formulas under the plan, and any modification to such schedules and formulas, during such plan year;
- the number of employers obligated to contribute to the plan;
- a list of the employers that contributed more than 5 percent of the total contributions to the plan during such plan year;
- the number of participants under the plan on whose behalf no contributions were made to the plan by an employer as an employer of the participant for such plan year and for each of the two preceding plan years;
- whether the plan was in critical or endangered status for the plan year and, if so, a list of the actions taken by the plan to improve its funding status and a statement describing how to obtain a copy of the plan's funding improvement or rehabilitation plan, as appropriate, and the actuarial and financial data that demonstrate any action taken by the plan toward fiscal improvement;
- the number of employers that withdrew from the plan during the preceding plan year and the aggregate amount of withdrawal liability assessed, or estimated to be assessed, against such withdrawn employers, as reported on the annual report for the plan year;

- if the plan has merged with another plan or if assets and liabilities have been transferred to the plan, the actuarial valuation of the assets and liabilities of each affected plan during the year preceding the effective date of the merger or transfer, based upon the most recent data available as of the day before the first day of the plan year, or other valuation method performed under standards and procedures as prescribed by regulation;
- a description as to whether the plan sought or received an amortization extension or used the shortfall funding method for the plan year; and
- notification of the right to obtain upon written request a copy of the annual report filed with respect to the plan and other documents.

Administrative Issues Presented by PPA

The multiemployer plan community and the ERISA agencies have raised administrative issues about the operation of certain notices and sanctions under PPA.

Funding Notices and Status Notices

As explained above, PPA significantly changed the information required to be provided in the annual funding notice for multiemployer defined benefit plans and created additional reporting and notice requirements. Some of the required information in the annual funding notice is either duplicative or could be consolidated with other notice requirements. For example, the annual funding notice requires disclosure of the plan's endangered or critical status for the prior plan year, while the notice of endangered or critical status requires disclosure of the plan's endangered or critical status for the current plan year. The funding notice has been described by some interest groups as too long, confusing, or not providing useful information. Information currently in the funding notice that may be better consolidated in the endangered or critical status notice includes: a summary of the FIP or RP, how to obtain a copy of the FIP/RP, actuarial and financial data that demonstrate any action taken by the plan toward fiscal improvement, a summary of the rules governing reorganization or insolvency, and a description of PBGC guarantees, including an explanation of the limitations on the guarantee.

Providing More Current Information

A plan's actuary is required to certify the plan's status (endangered, critical, or neither) for a plan year by the 90th day of the plan year. The zone certification is provided to the IRS and the plan sponsor. In addition, plans are required to disclose certain actuarial information in their annual report filed on Form 5500, including some of the details supporting the plan's certification. However, the data reported on the Form 5500 is significantly out of date. For example, for a plan with a plan year that begins January 1, 2012, the results of the January 1, 2012 actuarial valuation will not be provided to the government until the Form 5500 is filed in 2013. If, as is commonly the case, the plan files for an extension, the deadline for filing this Form 5500 is October 15, 2013 (21 ½ months after the valuation date).

The ERISA agencies would have more timely access to plan information if certain actuarial information, including the details supporting a plan's certification, were required to be included with the plan's certification rather than the plan's Form 5500 filing. The submission of information electronically to a database that all the ERISA agencies can readily access would

give DOL and PBGC faster access to the information. (The submission of certifications to the IRS requires the other ERISA agencies to go through certain procedures to obtain this information in order to satisfy statutory requirements regarding disclosure of taxpayer information.) Up-to-date information and documentation regarding certifications (*e.g.*, cash flow projections, explanation of reasonable measures, copies of funding improvement and rehabilitation plans) would help identify plans that need assistance.

Inconsistency of Sanctions

PPA imposes new sanctions with respect to multiemployer plans in endangered or critical status. As discussed above, these include ERISA penalties and/or excise taxes for failure to timely certify the plan's status; failure to timely adopt a funding improvement or rehabilitation plan; failure of contributing employers to timely remit contributions required by a funding improvement or rehabilitation plan; failure of a plan in critical status to make scheduled progress under its RP for three consecutive years; failure of an endangered status plan to meet the applicable funding targets by the end of a funding improvement period; and failure of a plan in critical status to meet the requirements of section 432(e) of the Code by the end of the rehabilitation period. A contributing employer or union may also file a lawsuit to compel the multiemployer plan to adopt, update, or comply with the terms of a funding improvement or rehabilitation plan.

There are other requirements and notice provisions under PPA that do not have a corresponding sanction or an adequate remedy for all affected parties.¹²³ For example, under current law, there are no government sanctions for failure to provide the annual funding notice or the notice of endangered or critical status, even though the notices are required to be furnished to participants and beneficiaries, unions and contributing employers, the PBGC, and, in the case of the critical or endangered status notice, DOL. As discussed above, only a participant or beneficiary may bring an action for a civil penalty of up to \$110 per day from the date of each failure against a plan administrator who fails to meet the annual funding notice requirement.¹²⁴ There is no such penalty available for the failure to provide this notice to the employers or labor organizations that maintain the plan. The threat of a lawsuit under ERISA may not provide a sufficient enforcement mechanism because private parties may be unlikely to bring lawsuits against plans to enforce the notice and funding requirements. A claim that a plan has failed to comply with funding requirements may be difficult to detect and may have only attenuated consequences for any individual private party. Other requirements that are not backed up by any statutory sanctions include: the requirement that a plan sponsor of a plan in critical status notify contributing employers that the surcharge on contributions is in effect; the requirement that a plan sponsor provide bargaining parties with contribution and benefit schedules under a funding improvement or rehabilitation plan; and the requirement that a plan administrator provide a report of summary plan information to employee organizations or employers.

¹²³ There is a general cause of action under section 502(a)(3) of ERISA, which authorizes a plan participant, beneficiary, or fiduciary to bring a lawsuit to compel a plan to comply with ERISA.

¹²⁴ This civil penalty does not apply to a failure to provide a notice of endangered or critical status.

Small Business Participation in Multiemployer Plans

Most of the participating employers in multiemployer plans are small businesses. Multiemployer plans offer small businesses a way to provide a pension plan with a minimum of administrative burden. They offer the employees of small businesses portability, a way to have an assured pension without being tied to a particular employer.

Congress directed the ERISA agencies to study: (i) the effect of multiemployer plans with funding difficulties on small businesses, and the effect of pre-and post-PPA funding rules, (ii) the effect on the financial status of small employers of funding targets under FIPs and RPs (and associated contribution increases), funding deficiencies, excise taxes, withdrawal liability, the possibility of alternative schedules and procedures for financially troubled employers, and other aspects of the multiemployer system, and (iii) the role of the multiemployer pension system in helping small employers to offer pension benefits.

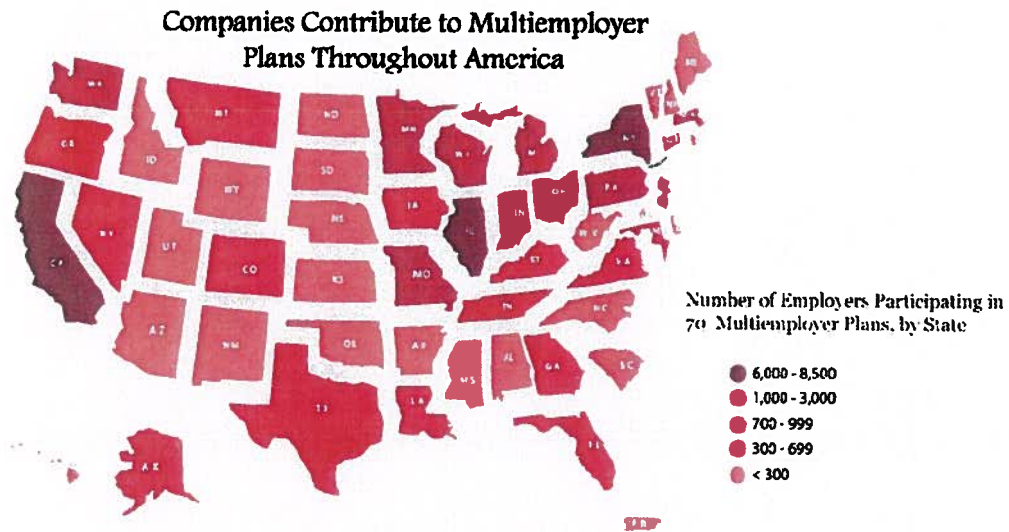
There is limited information on these issues. The Federal government itself has little information on small businesses that participate in multiemployer plans.¹²⁵ The ERISA agencies explored other sources: We examined available survey data, as well as information from trade associations and industry representatives.¹²⁶ We consulted with both government and private sector researchers focused on small businesses. The information that was available is presented below.

The first part of this Chapter describes some of the benefits and drawbacks for small employers of participating in a multiemployer plan. It then focuses on construction industry plans because these plans are made up predominantly of small business employers, and employers' associations can offer insights into the effect of multiemployer plan funding and operations on construction contractors. The remaining parts of this section present data compiled by the Bureau of Labor Statistics (BLS) and other sources that may be useful for commencing a discussion regarding small business participation in multiemployer plans. These include the incidence of multiemployer plans among private industry employers of different sizes and different industries, and the employer costs for retirement and savings plans generally (however, the data sources do not usually distinguish between multiemployer plans and single-employer plans for this purpose).

¹²⁵ Multiemployer plans are not required to report any information to the ERISA agencies about how many of their participating employers are small businesses. Pursuant to section 103 of ERISA, each multiemployer plan must now report annually the total number of employers obligated to contribute to the plan, and the identity of employers that contributed more than 5 percent of total contributions each year ("significant employers"). (The Form 5500 also requires the dollar amounts contributed by significant employers.) Presumably, because the burden of reporting was thought to exceed the value of the information, Congress did not require such reporting for other contributing employers. (The role of small businesses in multiemployer plans is generally limited to making contributions. The fact that small businesses do not have reporting obligations may make participation in multiemployer plans attractive to small businesses, as opposed to sponsoring their own single-employer plans.) The information that is reported is not useful for identifying small businesses participating in multiemployer plans, or evaluating the effects of multiemployer operations and requirements on the financial status of small employers.

¹²⁶ Plans also often lack information on the size of contributing employers. They generally receive copies of collective bargaining agreements and contribution remittances from signatory employers, but little additional information. In some cases, separate reporting establishments operating at different sites (and perhaps contributing to different plans) may be part of a single employer.

The map below illustrates the prevalence of contributing employers to multiemployer plans throughout the United States. The map reflects the results of a survey by the National Coordinating Committee for Multiemployer Plans (NCCMP) of 70 plans that provided information on the zip codes of companies contributing to their plans in 2011. These 70 plans received contributions from approximately 53,000 companies.¹²⁷ While it is known that most contributing employers to multiemployer plans are small employers, plans generally do not collect information on the size of contributing employers and the map does not present distinctions on this basis.



Why Small Businesses Use Multiemployer Plans

Small employers are less likely than large employers to sponsor a defined benefit plan.¹²⁸ Analysts have suggested that this is due to the higher per participant cost for administration and compliance. Costs associated with sponsoring a single-employer plan include (i) establishing the plan's trust, drafting the plan's documents, complying with the tax-qualification requirements, and satisfying fiduciary standards; (ii) determining the costs of the plan and preparing governmental filings on the plan's minimum funding requirements; (iii) auditing and reporting the plan's financial condition; (iv) handling the plan's assets; and (v) distributing benefits, providing required notices to participants, reimbursing service providers, and making premium payments. The sponsor of a single-employer defined benefit plan will generally need to retain an

¹²⁷ There is likely to be a small amount of duplication in these numbers, as some companies contribute to more than one plan. Because NCCMP's membership is weighted towards larger plans, the survey and this map do not provide a precise representation – but only an approximation – of nationwide employer participation figures.

¹²⁸ They are also less likely than larger employers to offer other forms of employee retirement plans.

attorney, actuary, independent qualified public accountant, trustee, and plan administrator to perform these functions.¹²⁹

Employers participating in multiemployer plans are relieved from these responsibilities. Their role is limited to the payment of contributions to the plan, usually remitted on a monthly basis based on a unit measure, such as hours worked, in accordance with the terms of a collective bargaining contract. The plan's board of trustees assumes responsibility for all of the plan's administrative, fiduciary, investment, legal and accounting tasks (the operational and administrative functions are transferred to persons or firms specializing in those areas), and the costs are paid out of the plan's assets. Economies of scale from pooling investment and administrative activities also have a lessening effect on costs, making these plans more affordable for small employers.

Also, in numerous industries, workers are employed by many employers in a locale over their working lifetimes. In the construction industry, for example, employment fluctuates on a project-by-project basis and many small employers depend on a ready supply of skilled workers for their changing needs. The administrative costs of offering pension benefits or health benefits to their employees would be prohibitive for employers in such industries in the absence of multiemployer plans.

However, small employers can be adversely affected by participating in a multiemployer plan. Generally, when a small employer participates in a multiemployer plan, it expects that its contributions will fluctuate depending on the employer's business conditions – and, particularly, that contributions based on hours worked will decline as hours of work decline. But when a plan experiences funding difficulties, contributions may still rise – even though hours on which contributions are made have dropped. In this respect, an employer participating in a multiemployer plan may be subject to the vagaries of the economy as much as an employer sponsoring a single-employer plan. And small employers are often less able to absorb contribution rate increases than large employers in the same plan. Also, in industries where small employers bid for projects, increased costs related to their participation in multiemployer plans can put them at a competitive disadvantage against nonunion competitors.

Furthermore, small employers may have less influence than large employers over multiemployer plan operations, benefits, contributions, and investments. Large employers are more frequently represented in employer associations that negotiate master collective bargaining agreements and set contribution rates that affect all other employers. Also, large employers are more often appointed to a plan's board of trustees that sets benefit levels and investment guidelines. Thus, small employers may give up control over factors such as benefits, contributions, and investments that could influence their costs if they sponsored a single-employer plan. In addition, because employers participating in a multiemployer plan must remit contributions monthly, small employers have less flexibility to control their cash flow than they would if they sponsored a single-employer plan.

¹²⁹ Sponsors can save on administrative costs by utilizing a prototype plan (a qualified plan whose form has been pre-approved by the IRS) offered by an insurance company, mutual fund or bank trust department. The vendor offering the prototype document may also offer other services, such as holding and investing the assets contributed to the plan, and performing record keeping and annual disclosure and reporting requirements.

Members of the multiemployer community also report that, despite increased disclosure requirements for plans, small employers are often unaware of the funding problems of the multiemployer plans in which they participate. Steep and unexpected contribution rate increases can appear particularly burdensome if they relate to the underfunding of benefit liabilities attributable to large employers or to orphan participants. In addition, small employers are often surprised by the presence of withdrawal liability when they are ready to close or sell their business or to retire. The cost of potential withdrawal liability – particularly if the plan’s unfunded liabilities are significant (due usually to events beyond the small employer’s control) – may discourage a prospective buyer from the purchase of a small business.

Construction Industry Plans

There are nearly 3.9 million participants in construction industry multiemployer plans,¹³⁰ and most contributing employers to these plans are small businesses.¹³¹ Construction industry employers in an area are often represented by an employers’ association that negotiates a collective bargaining agreement with the union on behalf of the employers in the association.¹³² For example, one of these employers’ associations, the Sheet Metal and Air Conditioning Contractors’ National Association (SMACNA), indicates that 80% of their members employ 20 or fewer employees, and 40% of their members employ ten or fewer employees. Their members also include some larger employers with as many as 250 to 500 employees that are engaged in larger projects, such as power plants, refineries, and big facilities.¹³³ Through collective bargaining agreements, the members of these employers’ associations contribute to national, local, and/or regional construction industry multiemployer defined benefit pension plans; in addition, they generally contribute to multiemployer health and welfare benefit plans and, in some cases, to multiemployer defined contribution plans. Construction industry plans often have hundreds or thousands of participating employers, and may have no employers that contribute more than 5% of total contributions to the plan.

In 2009, there were 822 construction industry multiemployer defined benefit plans in the country: 66 are very large plans with 10,000 or more participants, and 51 plans cover 5,000 to 9,999 participants.¹³⁴ These 117 plans with 5,000 or more participants cover 75.5% of all

¹³⁰ Most construction industry workers are not, however, participants in multiemployer plans; only 14.9% of all employees in the construction industry were represented by a union in 2011. Union Members – 2011, Bureau of Labor Statistics, Table 3. Union affiliation of employed wage and salary workers by occupation and industry.

¹³¹ According to the U.S. Census Bureau, 91% of the 712,977 construction establishments in the U.S. employ fewer than 20 employees. U.S. Census Bureau, Statistics of U.S. Businesses (last revised: January 9, 2012).

¹³² The employers often belong to a national contractors’ association with local chapters that negotiate collective bargaining agreements on behalf of area employers. National and local unions and plans are generally organized on a craft basis in areas such as industrial and architectural sheet metal, electrical work, heating, ventilating and air conditioning, carpentry, plumbing and pipefitting, bricklayers, boilermakers, painters, asbestos workers, cement masons, siding and decking, testing and balancing, and energy management and maintenance.

¹³³ Employers’ associations for electrical contractors also report high percentages of small signatory contractors to multiemployer defined benefit plans. Likewise, the bulk of contractors in the mechanical construction industry (plumbers and pipefitters) are small privately-owned companies, although large firms will occasionally hire workers in an area to work on a major construction project and will contribute to the plan for the duration of the project.

¹³⁴ These data are from the 2009 Form 5500 filings. 790 construction industry plans filed a Schedule MB.

participants in construction industry plans. On average, construction industry plans are smaller than multiemployer plans in other industries, with a mean of about 5,000 participants compared to 10,500 participants in non-construction industry plans. Construction industry plans represented nearly one-half of all multiemployer plan assets and nearly one-half of all multiemployer plan liabilities in 2009. The number of construction plans decreased slightly in 2010, to 817, but these plans continued to represent virtually one-half of the assets and liabilities in all plans.

The economic downturn has particularly hurt the construction industry, reducing significantly the hours of work on which contributions are made to multiemployer plans (a combination of both fewer active participants performing work and fewer hours of work for those working). Form 5500 filings between 2007 and 2010 show a decline in total contributing employers to construction industry plans. About 33% of the 66 very large construction industry plans were in critical status in 2009.¹³⁵ In 2009, 17 critical status plans that covered 5,000 or more participants experienced an increase of 10% or more in the number of inactive vested participants, and three of these plans experienced at least a 20% decline in the number of active participants. The number of retired participants drawing benefits is growing; one national plan experienced a 30% increase in retired participants over the 2000s decade. Even under the best of circumstances, construction industry employer associations estimate that it would take 10 years or more for plans to recover from the 25%-plus market losses in 2008 and 2009.

Information provided from SMACNA indicates that, in the case of one national plan in critical status, a solid majority of collective bargaining agreements adopted an alternative “preferred schedule,” which is structured around an increase in contribution rates, rather than a default schedule, which relies more on reductions in benefits. These schedules often require contribution rate increases in the range of 7% or more per year for most of the next decade. Under this plan’s rehabilitation plan, a modest \$3.00 hourly contribution rate in 2003 would be expected to increase to \$8.87 by 2017 (assuming no further adjustments to the rate); for many locals, initial rates were higher. In one construction plan that was acutely affected, there was a reduction of more than 40% in the number of hours worked between the period just before the market decline in 2008 and 2011, and the hourly contribution rate was scheduled to increase from \$8.40 in 2008 to \$16.40 by 2014.

It is difficult to know what portion of the contribution increases required under these plans is borne by the employers as opposed to the employees. While contribution rate increases may in some cases result in an increase in total labor costs, in other cases contribution rate increases may be reallocated from other parts of the employees’ compensation package, such as contributions to a health or welfare plan or current wages.¹³⁶ Over the long-term, however, there

¹³⁵ Among all construction industry plans, 2009 Form 5500 data showed that 26.7% were in critical status, 9.2% were in seriously endangered status, and 24.5% were in endangered (but not seriously endangered) status.

¹³⁶ According to SMACNA, increases to wage and fringe benefit packages have declined each year since 2008; any negotiated increases have largely gone for increased contributions to pension plans and health and welfare plans, and actual take-home wages increased very little or not at all (and in some cases may have declined). Employers’ association in the construction industry indicated that they traditionally had little or no input in the allocation of negotiated increases. Since PPA, they have increasingly included a provision in collective bargaining agreements requiring that all pension increases be paid out of the existing package and/or out of negotiated increases to ensure payment is made to the pension fund.

may be a limit on the extent to which pension costs may be shifted within the employee's compensation package, leading to an increase in total labor costs.

Information from the construction multiemployer plan community also indicates that for larger contractors, demand is less price elastic than for small contractors. This means that large contractors are affected less by pension contribution increases because they can more easily pass on their labor costs to clients. In contrast, small employers, faced with more intense competition, generally cannot respond by shifting pension costs to clients, and must either reduce their employees' wages and benefits or absorb the costs directly. Thus, employers of different sizes may have different interests within the same plan. In plans subject to FIPs and RPs, an increasing contribution burden is expected to have a disproportionate effect on small employers who operate on a thin profit margin and must maintain a positive cash-flow until completion of a construction project.¹³⁷

Effect of PPA Changes

Members of the multiemployer community report that small employers benefited directly from certain PPA changes, such as the elimination of the excise tax for critical status plans' funding deficiencies and enhanced plan disclosure requirements for employers and unions. They are also expected to benefit in the long run from a higher contribution deductibility limit.

Some analysts believe that, although small businesses do not pay a higher per-hour charge, nonetheless they may have less ability to handle increased contributions that have resulted from the economic downturn. When Congress enacted PPA, small employers may not have anticipated the onerous contribution increases and benefit reductions that came on the heels of PPA, particularly as a consequence of the economic downturn.

Although PPA requirements for FIPs and RPs led to increased contributions for small employers, they also provided funding relief that did not exist under prior law, including the automatic use of 5-year amortization extensions for certain plans, the elimination of excise taxes on employers for funding deficiencies in critical status plans, and a framework for plans to improve their funding status over an extended period of ten or fifteen years. In addition, certain plans will not have to take any steps that go beyond reasonable measures if those steps could risk the voluntary continuation of the plans by employers and unions.

Small Businesses and Incidence of Defined Benefit Multiemployer Pension Plans

There is a possible correlation between employer size and the likelihood of participation in a multiemployer plan rather than a single-employer plan. Among all workers participating in a defined benefit plan who work for companies with 1 to 99 employees, 64% are covered by a single-employer plan; this percentage increases to 86% for workers of companies with 100 or more employees.¹³⁸ Presumably, multiemployer plans account for much of the remaining percentage of participants covered by a defined benefit plan. Thus, a defined benefit plan

¹³⁷ Industry analysts indicate that smaller employers were slower to react to the market downturn after 2008 due to more limited financial information, fewer loan financing possibilities, and leaner overhead costs that could not be cut as revenue and margins dropped.

¹³⁸ National Compensation Survey: Health and Retirement Plan Provisions in Private Industry in the U.S., 2010 (August 2011). Table 30 - Defined benefit plans: Plan sponsor, private industry workers.

participant who works for an employer with fewer than 100 employees is more likely to participate in a multiemployer plan than a defined benefit plan participant who works for an employer with 100 or more employees. The data also indicate that multiemployer plans cover many lower-paid and part-time employees. A BLS survey reports that 23% of part-time workers participating in a defined benefit plan are covered by a multiemployer plan, and 26% of workers with an average wage within the lowest 25th percentile participating in a defined benefit plan are covered by a multiemployer plan.¹³⁹ In addition, BLS reports that 16% of private industry workers in the construction industry participate in a defined benefit plan,¹⁴⁰ and 99% of all such participants are covered by multiemployer plans.¹⁴¹

Employer Costs for Retirement and Savings Plans

BLS reported that, in March 2012, 19% of private industry workers (22% for full-time) had access to a defined benefit plan; access to a defined benefit plan was correlated with employer size, ranging from 7% for establishments with 1 to 49 workers, to 12% for establishments with 50 to 99 workers, to 21% for establishments with 100 to 499 workers, and 46% for establishments with 500 or more workers.¹⁴² Small employers spent substantially less than mid-size employers and large employers for defined benefit plans: defined benefit costs ranged from \$0.23 per hour worked for small employers with 1 to 99 workers (1% of total average hourly compensation of \$23.87), to \$1.00 per hour worked for large employers with 500 or more workers (2.3% of total average hourly compensation of \$42.39).¹⁴³

In June 2012, average private industry costs for retirement and savings plans for all workers were \$1.02 per hour worked (*i.e.*, 3.5% of total average hourly compensation of \$28.80). These are the costs for such plans across all employers – those that did contribute and those that did not contribute to retirement and savings plans (and across all workers, whether or not they were covered by a plan). Of this total average, the subset of costs for defined benefit plans was

¹³⁹ Ibid.

¹⁴⁰ National Compensation Survey: Employee Benefits Survey (March 2012). Table 2 - Retirement benefits: Access, participation, and take-up rates, private industry workers.

¹⁴¹ Ibid. Footnote 138.

¹⁴² Ibid. Footnote 140. This source indicates that access to a defined benefit plan is also correlated with collective bargaining status: 69% of union workers had access to a defined benefit plan, compared to only 14% of nonunion workers. ERISA permits a small number of non-union employees to participate in multiemployer plans, including owners of small businesses that came from the construction trade and previously earned a benefit in the plans to which they contribute as part of the bargaining unit, employees of the plan or an affiliated employee health or welfare plan, and employees of unions with members in the plan. Lastly, PPA permitted a one-time election of multiemployer plan status by plans sponsored primarily by international and local unions for the benefit of their officers and employees; pursuant to procedures prescribed by PBGC, 26 plans made elections.

¹⁴³ Employer Costs for Employee Compensation – June 2012, Bureau of Labor Statistics (USDL-12-1830). Table 8 - Private industry workers, by establishment employment size.

\$0.43 per hour worked (*i.e.*, 1.5% of total average hourly compensation). The costs for defined benefit plans for union workers were higher than such costs for nonunion workers.¹⁴⁴

Because defined benefit plan coverage varies widely in different sectors of the economy, these figures do not indicate the cost of retirement and savings plans per participating worker. They do provide an indication, though, of the relative costs of these plans across different sectors of the economy, between the union and nonunion sectors, and between small employers and larger size employers.

¹⁴⁴ The average defined benefit plan cost for union workers is \$2.11 per hour (*i.e.*, 5.4% of total average hourly compensation of \$38.80), compared with \$0.26 per hour for nonunion workers (*i.e.*, 0.9% of total average hourly compensation of \$27.76). (Employer Costs for Employee Compensation – June 2012, Bureau of Labor Statistics (USDL-12-1830). Table 5 - Private industry workers, by major occupational group and bargaining unit status.) This includes employer costs for employers that do not contribute to retirement and savings plans. Thus, the higher costs for union workers reflects the higher incidence of coverage for those workers and should not be interpreted as union plans being eight times more expensive as non-union plans. Compensation figures include full-time and part-time workers.

Further Steps to Strengthen Plans and Protect Pensioners

The nation's approximately 1,500 multiemployer defined benefit plans cover more than 10 million participants and beneficiaries. For decades, multiemployer plans have been an important source of retirement security, a mechanism to facilitate portability of pension benefits for millions of workers, and a useful way for small businesses to provide meaningful retirement benefits without the burdens of individual plan sponsorship.

The 2008 financial crisis and ensuing recession have had a harmful effect on the funding status of most plans, which has been exacerbated by a declining number of active participants. Data available through late 2012 indicate that a majority of participants –52%– are in moderately or severely distressed plans.¹⁴⁵

The condition of multiemployer plans varies widely. Many plans have adjusted their income and expenses to respond to the funding challenges of the past few years and appear to be sustainable over the longer-term using the tools already provided under PPA.¹⁴⁶ With the economic recovery may come an increase in the hours worked for which contributions are made and restoration of asset values, returning these plans to a sound financial footing.

For many other plans, however, funding levels remain depressed. These plans face sharp funding improvement requirements and have limited tools for restoring fiscal balance. The deteriorating financial condition of some critical status plans indicates that, without further changes, they will never recover and will become insolvent over time. Achieving long-term sustainability for this substantial minority of multiemployer plans is of paramount importance to the participants and contributing employers of such plans.

Participants and their families in once healthy multiemployer plans may face pension losses in the future if the financial status of their plans deteriorates further. Contribution increases negotiated by active participants are often used to fund the benefits of retired and separated vested participants, in some cases including large numbers of “orphan” participants whose employers have withdrawn from the plan. At some point, contributing employers in some plans may face a financial burden so high that they cannot continue their multiemployer contribution obligations and stay in business.

Furthermore, policymakers cannot ignore the possibility that the PBGC may be unable to meet its obligations to multiemployer beneficiaries in the future.

Stakeholders cannot ignore the danger to plans, contributing employers and participants and beneficiaries: unless steps are taken to provide additional tools for the trustees of multiemployer plans to stabilize the financial conditions of their plans, more costly and intrusive intervention may ultimately be necessary. That is a result everyone surely wants to avoid.

¹⁴⁵ As described earlier in this report, under PPA, there are several triggers for “critical” status, including a funded percentage of less than 65% and projected insolvency during the next 7 years, or a projected accumulated funding deficiency or insolvency within 4 years. Plans with a funded percentage of less than 80% or with a projected funding deficiency within the next 7 years are in “endangered” status; plans that have both are “seriously endangered.” Plans that are in neither endangered nor critical status are in “green” status.

¹⁴⁶ Funding relief enacted in 2009 and 2010 has helped many plans postpone the strain of increased contributions, reduced benefits, and impending funding deficiencies.

In PPA, Congress gave plans in financial trouble and the bargaining parties associated with those plans significant new tools and incentives to get the plans back on a sounder financial footing. For some plans, those tools will be insufficient to do the job. Before the PPA changes sunset at the end of 2014, it is critical that all stakeholders undertake a serious effort to identify the current and potential future problems faced by multiemployer plans and to work to identify the best ways to address them.

Those efforts have already begun. The representatives of the ERISA agencies and Congressional staff are prepared to engage in ongoing discussion of these critical issues as Congress prepares to consider multiemployer funding rules in advance of the sunset of the PPA provisions.

Individuals and groups working in the multiemployer plan community, such as the National Coordinating Committee for Multiemployer Plans (NCCMP), stakeholders from the major pension funds, and the American Academy of Actuaries Multiemployer Pension Plans Subcommittee, have suggested a range of possible tools and approaches for strengthening these plans. Some of these ideas have been reflected in recent legislative initiatives; others arise from suggestions raised by constituencies in various discussions that have been held. Presently there is no consensus among the various constituencies concerning which approaches are desirable or effective.

Advances in pension policy benefit from a collaborative process among stakeholders, the Administration and Congress, to provide trustees, employers, and unions the tools to deal with the financial and other challenges they face. Ultimately such an approach can restore fiscal stability to multiemployer plans and the thousands of small and large businesses and millions of workers and retirees that depend on them.

Limitations of This Report

Since the PPA was enacted and its funding provisions took effect, there have been significant unforeseen changes to the economy and to financial markets. Some of the requirements for improving funding under PPA were modified by subsequent funding relief legislation due to the stock market downturn of 2008.

The ability of plans to defer actions that would normally have been required under PPA for 2009 has delayed the implementation of PPA. While this report includes information about the numbers of plans that applied for funding relief under WRERA and PRA 2010 and the possible impact on some PPA provisions, information on the actual effects of this relief on plans will generally not be available to the ERISA agencies until later years. This is because the data available to the ERISA agencies provide only preliminary indication of how plans are responding to the new rules: most of the data for this report is drawn from the 2010 Form 5500 series annual report filings (the last plan year for which we have complete data for all plans).¹⁴⁷ Thus, plans that entered endangered or critical status for the first time in the 2008 or 2009 plan year were only beginning to implement actions to improve their funding status.

For example, many of the tools available to plans in endangered and critical status – such as contribution increases and reductions in future accruals (and reductions in adjustable benefits in the case of critical status plans) – are subject generally to collective bargaining over schedules provided by the plans' boards of trustees. Due to multiple-year collective bargaining agreements, the outcome of such bargaining – *i.e.*, the extent to which these tools will be employed – will not be known for several years to come when new collective bargaining agreements are entered into. The effects of those changes on the operation and status of plans will be reported in future Form 5500 filings. However, to the extent that PPA provisions were implemented in 2009 or 2010 – *e.g.*, plans used the 5-year automatic amortization extension extensively following the market downturn – they are reported here.

Because multiemployer plans are not required to report any information to the ERISA agencies about many of their participating employers that are small businesses (and very little about any participating employers other than significant contributors), the report provides only general information on this subject. The ERISA agencies consulted with both government and private sector researchers working with small business issues, but found many of these avenues of investigation unfruitful with respect to the questions posed by section 221(a) of PPA. In lieu of more precise information, this report gathers data from trade associations and industry representatives, as well as available data from the National Compensation Survey of DOL's Bureau of Labor Statistics. Additional information about participating employers would be useful to inform future analysis and understanding of the issues affecting multiemployer plans.

¹⁴⁷ Many plans file the Form 5500 as late as nine and one-half (9½) months after the end of the plan year (making use of a 2½ month extension under the law). For example, for a plan with a plan year that begins January 1, 2009, the extended deadline for filing the Form 5500 is October 15, 2010; in addition, much of the data reported relates to the plan's status as of January 1, 2009. Similarly, for a plan with a plan year that begins December 1, 2010, the extended deadline for filing the Form 5500 is September 15, 2012, with data generally reported as of December 1, 2010. Limited supplemental data for more recent periods include funding status certifications submitted by plans to the IRS for the 2008 through 2011 plan years.

Acknowledgements

This report represents the efforts of many individuals from many Federal agencies. The analysis and discussion were undertaken by an interagency working group composed of career Federal staff from the Department of Labor, the Pension Benefit Guaranty Corporation, and the Department of the Treasury. From the Department of the Treasury: Harlan Weller, Linda Marshall, Jamie Dvoretzky, William Evans, Yaguo Zhang, Diane Bloom, Steven Klubock; from the PBGC: John Thompson, Marc Ness, Bruce Perlin, Eric Field, William James, James Bloch, Gail Sevin; from the Department of Labor: career staff from the Employee Benefits Security Administration. The Form 5500 data for the report were generally assembled by the Policy Research and Analysis Department and the Multiemployer Program Division, at PBGC, with input from the IRS/Department of the Treasury and the Department of Labor. Data from other sources were compiled by staff of the Department of Labor and the IRS/Department of the Treasury. The principal drafter of the report was Constance Markakis, attorney in the Legislative Department of PBGC.

The working group consulted extensively with individuals and organizations outside government that have an interest in multiemployer plans and retirement security generally. These include, but are not limited to, the National Coordinating Committee for Multiemployer Plans (NCCMP), the American Academy of Actuaries Multiemployer Pension Plans Subcommittee, and the Sheet Metal and Air Conditioning Contractors' National Association (SMACNA). Of course, these organizations are not responsible for the information contained in the report.

PBGC Insurance of Multiemployer Pension Plans

*Report to Congress required by the
Employee Retirement Income Security Act of 1974,
as amended*





Pension Benefit Guaranty Corporation
1200 K Street, N.W., Washington, D.C. 20005-4026

Office of the Director

January 22, 2013

U.S. House of Representatives Committee on Education and the Workforce
U.S. House of Representatives Committee on Ways and Means
U.S. Senate Committee on Health, Education, Labor, and Pensions
U.S. Senate Committee on Finance

Every five years, PBGC is required under section 4022A(f)(1) of ERISA to review its multiemployer insurance program, to determine the premiums needed to maintain the current guarantee levels and whether the guarantee levels may be increased without increasing the premiums.

The report notes that Congress will need to review broader changes to multiemployer plans prior to the sunset of certain provisions of the Pension Protection Act of 2006, and suggests that changes to the PBGC program and premiums be considered as part of that review.

Sincerely,

PBGC Multiemployer Insurance Program

Summary

Multiemployer defined benefit pension plans are insured by PBGC. When a multiemployer plan becomes insolvent, PBGC provides financial assistance to cover the cost of guaranteed benefits to participants and the plan's administrative expenses. (Unlike single-employer plans, PBGC cannot intervene in multiemployer plans prior to insolvency, and multiemployer plans continue to pay full benefits until they run out of assets.)

The statutory guarantee limit for participants in multiemployer plans is \$12,870 per year for a participant with 30 years of service; this is less than the benefits many multiemployer plans provide and less than PBGC guarantees in single-employer plans. Plans pay PBGC a premium for this insurance, currently \$9 per participant per year, rising to \$12 in 2013 and indexed thereafter.¹

PBGC is required every five years to conduct a study to determine the premiums needed to maintain the basic-benefit guarantee levels for multiemployer plans and whether such guarantee levels may be increased without also increasing basic-benefit premiums for multiemployer plans.²

As explained below, although the timing is uncertain, PBGC projects that current premiums ultimately will be inadequate to maintain benefit guarantee levels. However, since significant changes may be contemplated in the laws governing such plans, it is not possible to say now what corresponding changes in PBGC's multiemployer program will be necessary or appropriate. If, as expected, Congress undertakes a broader review of multiemployer plans as it considers the extension of the multiemployer provisions of the Pension Protection Act of 2006 (PPA)³ then changes to PBGC's program or premiums should be made part of that review. At this time, PBGC is neither requesting Congressional action nor making any recommendations.⁴

¹ Premiums were raised in 2012 in the Moving Ahead for Progress in the 21st Century Act (MAP-21).

² Section 4022A(f)(1) of ERISA requires PBGC to report the findings of the study to PBGC's committees of jurisdiction in the House of Representatives and the Senate.

³ Under PPA, certain provisions affecting multiemployer plans will sunset at the end of 2014. PBGC anticipates that the Congress will consider proposals that would affect the funding and future prospects of multiemployer plans, particularly distressed plans. PBGC expects to make recommendations for its own program over the next two years.

A separate report, required by section 221(a) of the PPA, is being submitted simultaneously by the ERISA agencies. That report offers general information on multiemployer plans that may be useful as Congress prepares for the reconsideration of the multiemployer funding provisions.

⁴ Under section 4022A(f)(2) of ERISA, if the five-year report under section 4022A(f)(1) indicates that a premium increase is necessary, PBGC is required to transmit to its committees of jurisdiction by March 31 of any calendar year in which congressional action is requested (i) a revised schedule of basic-benefit guarantees which would be necessary in the absence of an increase in premiums, (ii) a revised schedule of basic-benefit premiums which is necessary to support the existing benefit guarantees, and (iii) a revised schedule of basic-benefit guarantees for which the schedule of premiums necessary is higher than existing premium schedule but lower than the revised schedule of premiums in clause (ii). For the reasons discussed in this report, PBGC is not yet able to determine what change to PBGC premiums will be appropriate in the future. Therefore, PBGC is not requesting Congressional action at this time and this report is limited to the first step in its responsibilities under section 4022A(f)(1).

DISCLAIMER

Readers should be aware that this report is an actuarial evaluation and contains estimates and projections. Unlike the historical financial balance sheet and income statement values, which are subject to accounting and audit standards, the standard for actuarial projections is that they be reasonable. The values shown are estimates, not predictions; they reflect the range of values that might result based on the assumptions that underlie our projection models. The results shown in this report are mean values. The mean values (PBGC's probability of insolvency and net position in 2022) are highly variable and unpredictable stochastic projections of many factors, such as future interest rates and future equity returns. **The results that ultimately occur can and often do vary materially from the reported results.**

The projections in this report are subject to limitations. Although **the Multiemployer Pension Insurance Modeling System (ME-PIMS)** currently is our best available tool for undertaking the exposure analysis required by ERISA, it was designed before implementation of the Pension Protection Act (PPA) changes for multiemployer plans. Experience with multiemployer plans since implementation of PPA changes has caused PBGC to revisit certain assumptions underlying ME-PIMS which we discuss below and on page 14 ("Possible Future Refinements to the ME-PIMS Model").

After commissioning an external review of ME-PIMS by an outside consulting firm with substantial multiemployer expertise, in September 2012 we received recommendations that certain ME-PIMS assumptions and methods should be modified to better reflect current experience. The primary modifications addressed four areas: (1) The population of active plan participants should be assumed to decline in the future; (2) Per capita active participant contributions should be assumed to increase at a lower rate than currently assumed; (3) Some plan outcomes should be modified to reflect that many plan trustees have decided not to follow all of the plan steps under the law, a decision that is permitted under the "reasonable measures" provision of PPA; and (4) Employer withdrawal and mass withdrawal⁵ assumptions based on pre-PPA experience should be modified to reflect how plans have responded to changes under the PPA rules. In addition, when management reviewed the process of preparing the FY 2010 Exposure Report, we identified two other issues that affect projections for the multiemployer system and require modification. First, we determined that ME-PIMS under-sampled probable plans. Second, we identified two algorithms that need to be modified to better reflect future cash flows. These algorithms affect projected multiemployer plan cash flows because of assumptions about retirement ages and about the timing of withdrawal liability payments. We expect to continue to modify and improve our models in the future.

We cannot predict with confidence how projections will change when various modeling modifications are implemented.⁶

⁵ A mass withdrawal occurs when every contributing employer withdraws from a multiemployer plan, which results in the plan's termination.

⁶ In addition, the Moving Ahead for Progress in the 21st Century Act (MAP-21) requires an annual peer review of PIMS, which may result in additional recommendations for modifications.

Current and Historical Premium Rates

The PBGC premium rate for multiemployer plans is a flat \$9 per participant for 2012 and \$12 per participant for plan years beginning in 2013.

The Deficit Reduction Act of 2005 increased the annual premium rate for multiemployer plans from \$2.60 per participant to \$8, effective for plan years beginning after December 31, 2005. For the first time, the multiemployer premium was indexed to the National Average Wage Index. As a result, the rate increased to \$9 per participant for the 2008 plan year, but did not increase again through 2012. The flat per-participant premium is paid by multiemployer pension plans for all active and inactive (retired and separated vested) participants in the plan.

MAP-21 increased multiemployer premiums to \$12 per participant beginning in 2013, and called for indexing the rate thereafter. Total multiemployer premiums during the fiscal year ended September 30, 2012, were \$92 million.⁷

For single-employer plans, on the other hand, the flat per-participant premium increased to \$42 for plan years beginning in 2013 under MAP-21; the single-employer flat rate is also indexed. Underfunded single-employer plans also pay a variable-rate premium, but there is no variable-rate premium for underfunded multiemployer plans.

Current Guarantee

By statute, PBGC's maximum guarantee for a multiemployer participant with 30 years of service is \$1,072.50 per month (\$12,870.00 per year).

The guarantee is calculated based on the participant's annual accrual rate. The maximum guaranteed accrual rate is \$35.75 per year of service. (This maximum rate applies once a participant's accrual rate reaches \$44 per year of service or more.) The guarantee formula is 100% of the first \$11 of the accrual rate, plus 75% of the next \$33 of the accrual rate, multiplied by the participant's years of service. Congress increased the guarantee limit to this amount in 2001; there is no indexing provision.

By contrast, the statutory maximum guarantee for single-employer plans is adjusted each year, and for 2013 will be \$4,789.77 per month (\$57,477.24 per year) at age 65, payable in the form of a single-life annuity. For 2012, the single-employer maximum guarantee at age 65 was \$4,653.41 per month; this amount is indexed annually.

Maintaining the Multiemployer Program

PBGC's multiemployer and single-employer insurance programs are separately funded and administered. As of September 30, 2012, the multiemployer program had total assets of \$1.8 billion, while PBGC's multiemployer liabilities totaled \$7.0 billion.⁸ (Multiemployer liabilities are obligations, measured in present value, for future financial assistance payments [FFAP] for plans

⁷ \$9 per participant for 10.3 million participants.

⁸ As stated on page 52 of PBGC's 2012 Annual Report, "PBGC values its financial assets at estimated fair value, consistent with the standards for pension plans contained in the FASB Accounting Standards Codification Section 960, *Defined Benefit Pension Plans*. PBGC values its liabilities for the present value of future benefits and present value of nonrecoverable future financial assistance using assumptions derived from annuity prices from insurance companies, as described in the Statement of Actuarial Opinion. As described in Section 960, the assumptions are 'those assumptions that are inherent in the estimated cost at the (valuation) date to obtain a contract with an insurance company to provide participants with their accumulated plan benefits.'"

that are already insolvent or expected to become insolvent.⁹) As a result, the program reported a negative net position or “deficit”¹⁰ of \$5.2 billion, as of September 30, 2012.

To maintain the multiemployer program, premiums must be sufficient to cover current and future financial assistance obligations.

The net deficit reported in our financial statements does not take into account either future premiums or future plan insolvencies that are not yet sufficiently certain to be recorded as liabilities.

Estimating Future Claims and Premiums

In PBGC’s risk exposure projections, by comparison, we attempt to capture and estimate other potential future insolvencies.¹¹ To anticipate future claims and premiums, PBGC developed a stochastic model that analyzes a range of potential future economic scenarios. This model, PBGC’s Multiemployer Pension Insurance Modeling System (ME-PIMS), is described in the attached Appendix.

ME-PIMS does not predict a single outcome or scenario. Rather, it runs many simulations to derive a range of possible outcomes over a 10- or 20-year projection period. ME-PIMS projects outcomes of hundreds of possible future scenarios that incorporate many possible economic patterns. Those patterns include varying levels of investment returns, inflation, and interest rates.

The structure and assumptions used in ME-PIMS have been developed in consultation with outside experts and the model uses a detailed database comprised of multiemployer plans that currently represent more than half of PBGC’s insured liabilities. Nonetheless, there have been only a small number of plan failures, so there remains considerable uncertainty about the actual likelihood and timing of future multiemployer plan insolvencies.

One of the greatest areas of uncertainty is the modeling of plan terminations due to the mass withdrawal of contributing employers from multiemployer plans. The experience with mass-withdrawal terminations and the information about the range of businesses that contribute to multiemployer plans is very limited, providing only a limited basis on which to validate mass withdrawal modeling.

Adequacy of Current Premiums

Projections of premiums at current rates, plus current assets and likely returns on those assets, are insufficient to cover PBGC’s existing obligations, even before consideration of as-yet unrecognized future plan insolvencies.

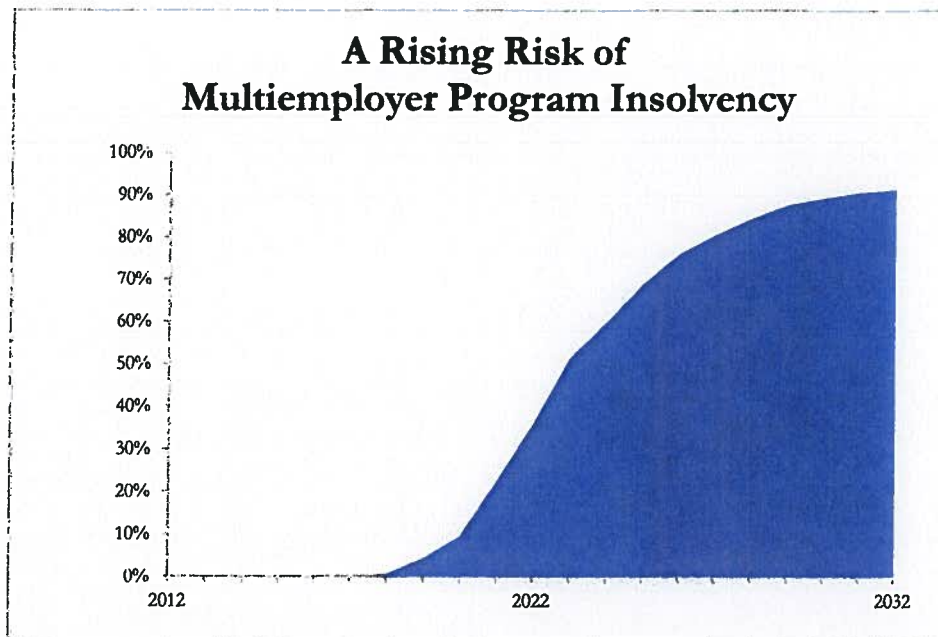
PBGC used the ME-PIMS model to estimate the probability that our multiemployer funds will be exhausted during the projection period. The chart immediately below projects the increasing likelihood that the multiemployer program trust fund will be insolvent (i.e., the assets will be exhausted) over a 20-year projection period. These projections depend heavily on the timing of projected cash flows, which in turn are very sensitive to variations in the occurrence and timing of mass withdrawals. The distribution of that timing is also sensitive to small changes in the starting data and assumptions. Recognizing these limitations, we present these probabilities as a general

⁹ As shown on page 78 of PBGC’s 2012 Annual Report: for 41 plans currently receiving financial assistance, the present value of FFAP is \$1.388 billion; for 61 terminated plans that will receive financial assistance in the future, FFAP is \$1.725 billion; for 46 ongoing plans that PBGC expects will need financial assistance in future years, FFAP is \$3.897 billion.

¹⁰ “Deficit” in this Report means total booked liabilities less total assets in the multiemployer program as of a certain date.

¹¹ Every year PBGC is required to estimate and report on our single-employer and multiemployer program exposure.

measure of the very real risk to PBGC's multiemployer program and to the protections that the program provides.



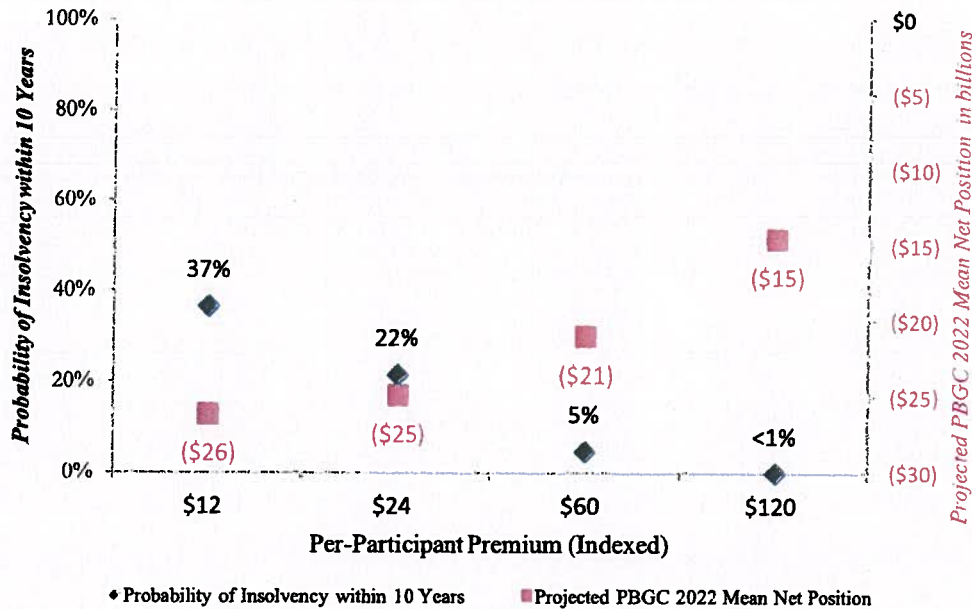
The financial position for the multiemployer program is -\$5.2 billion as of FY 2012, the result of liabilities of \$7.0 billion and assets of \$1.8 billion. Because the multiemployer program has only a small base of assets, the program's large negative net position carries a substantial risk of exhaustion of multiemployer fund assets in the foreseeable future. Based on these projections, and assuming no changes either in multiemployer plans or in PBGC's multiemployer program, there is about a 35% probability that the assets of PBGC's multiemployer insurance program will be exhausted by 2022 and about a 90% probability of exhaustion by 2032.

These high probabilities of insolvency and the current program net deficit suggest that current premium levels will not support an increase in the multiemployer guarantee level.

Factors Relevant to Assessing Appropriate Future Premium Levels

Estimating the premium levels necessary to continue to provide financial assistance is not straightforward because of the substantial uncertainties about the timing and magnitude of future plan insolvencies, and about whether efforts to prevent them will succeed. Nonetheless, in response to the requirement in Section 4022A(f)(1)(A)(i) to report on the premiums needed to maintain current guarantee levels for multiemployer plans, PBGC provides the following order-of-magnitude analysis. In it we estimate the effect of varying premium increases on PBGC's risk of insolvency within 10 years and our projected financial position at the end of those 10 years. The graph below shows the percentage of modeling outcomes at each premium rate that result in the exhaustion of the multiemployer program's funds, and the value of PBGC's mean pro forma net financial position, in 2022. Progressively higher premium levels result in a decreasing probability of program insolvency, and an improving pro forma financial position.

**Effect of Varying Premium Levels on
Projected Multiemployer Program Financial Condition in 2022**
Current-Law Guarantee Levels



It is uncertain how plans will utilize the existing tools and authorities at their disposal to improve their financial standing. Therefore, these projections should be recognized as being only rough order-of-magnitude estimates. Based on current trends, there is a substantial chance that currently severely distressed multiemployer plans will become insolvent within 10-15 years. However, both the timing and magnitude of the PBGC obligations that might result are highly uncertain.

The ultimate level of PBGC’s obligations will depend on the ongoing finances of these distressed plans (and others) as well as the effects of any measures that the plans may take in the intervening years. Our projections assume that plans will take certain measures in response to PPA and legislation enacted since; those measures are chiefly increases in contributions and, in some cases, decreases in future and past (adjustable) benefits. There is only limited experience with the tools and authorities granted to plans under PPA (and that experience has been complicated both by substantial market dislocations and by subsequent changes in law); as such, the existing data provide only a limited basis to validate modeling assumptions about how these plans will respond. (See Appendix for a description of the methodology of the ME-PIMS modeling.)

Furthermore, for some plans the tools and authorities under PPA will be insufficient to ensure long-term solvency. Over the next two years, PBGC anticipates that the Congress will consider proposals that affect the future prospects of these plans. This could, in turn, affect the level of any necessary changes in premiums.

Next Steps

Although the timing is uncertain, currently PBGC is at risk of not having the tools to help sustain multiemployer plans or the funds to continue to pay benefits beyond the next decade under the multiemployer insurance program. If, as it has in the past, Congress acts to address the rules

governing multiemployer plans, PBGC's own program can and should be re-evaluated, too. For that reason, PBGC is not proposing any particular changes, whether in premiums or benefits, at this time.

The Administration expects to engage with Congress and the multiemployer community in a cooperative process over the next several years, to develop a supportive, financially sound insurance program and to help preserve the multiemployer plans that provide lifetime retirement security for more than ten million participants and their families.

Appendix

Overview of ME-PIMS

The analysis contained in this report was done using the Multiemployer Pension Insurance Modeling System (ME-PIMS). ME-PIMS projects long-term exposure by running many simulations, each modeling year-by-year changes over 10 years. Each simulation starts with known facts about the economy, the world of insured plans, and PBGC's financial position. Then the program introduces random year-by-year changes (within certain bounds) to model economic fluctuations, producing new outcomes a year at a time. Within a scenario, one year's outcomes form the next year's starting-point, and so on. The models recognize that all multiemployer plans have some chance of insolvency, and that these probabilities change over time.

ME-PIMS is not a predictive model. It does not, for instance, attempt to anticipate individual employers' behavioral responses to changed circumstances (e.g., the impact on premium revenue from a decline in the number of participants if the per-participant premium rate doubles or triples). Although ME-PIMS mathematically models the likelihood of mass withdrawal from a given plan, or plan insolvency prior to mass withdrawal, it does not anticipate behavioral responses by individual employers.

Throughout this report, we express all future outcomes in present value terms (i.e., discounted back to 2012). Each scenario's outcomes are discounted based on the 30-year Treasury bond yields projected for that scenario, regardless of whether the underlying simulated cash flows are generated from holdings of equities, high-yield bonds, corporate bonds, or U.S. Treasury bonds.

In our projections of net position, one important factor is the determination of the amount of money we owe in today's dollars. Changes in interest rates have a big effect on this calculation — the higher the interest rate by which we calculate what we owe, the lower the present value of the obligations (liabilities) that are reported on our balance sheet. ME-PIMS models uncertainty in future changes to these interest rates.

Each year, PBGC analyzes insured multiemployer plans to identify those plans that might present claims against the insurance program. In general, if a terminated plan's assets are less than the present value of its liabilities, PBGC considers the plan a probable risk of requiring financial assistance in the future, as recorded in our financial statements. The primary driver for large losses to the multiemployer program is mass withdrawal of all sponsors from a given plan (these are captured in projected new claims).

To project future claims against the multiemployer program that are not in the current financial statements, ME-PIMS mimics the same type of analysis for future years. By "booking" probable plans in each year of the projection, ME-PIMS mimics PBGC's analysis of multiemployer plans in which employers continue to make regular contributions for covered work, to determine whether any of these ongoing plans are probable or possible claims against the insurance program.

In each projection year, ME-PIMS combines measures of chronic underfunding, poor cash flow, a falling contribution base, and a lack of money on hand to weather temporary income losses, into one measure of the likelihood that a plan will fail. In the projections, these plans become ME-PIMS liabilities that year.

No single underfunding number or range of numbers is sufficient to evaluate PBGC's exposure and expected claims over the next 10 years. Claims are sensitive to changes in interest rates and investment returns, overall economic conditions, contributions, changes in benefits, the performance of some particular industries, and bankruptcies. In the multiemployer program a large

number of claims from the actual and projected insolvencies of medium-sized plans, and a small number of similar claims from large plans, have characterized the Corporation's historical claims experience and are likely to affect PBGC's potential future claims experience as well.

ME-PIMS portrays future underfunding, as prescribed by current law, as a function of a variety of economic parameters. The model anticipates that individual plans have various probabilities of positive and negative experience, and that these probabilities can change significantly over time. The model also recognizes the uncertainty in key economic parameters (particularly interest rates and market returns). The model simulates the flows of claims that could develop under hundreds of combinations of economic parameters and extrapolations of plans' respective 10-year historical patterns.

A multiemployer plan can go through a "mass withdrawal," which happens when all employers stop participating in a plan at the same time. For each plan in each of the projection years, ME-PIMS calculates a probability of mass withdrawal. The size of the plans is one factor in the calculation, as are several ratios: assets to cash flow; assets to liabilities; active to inactive participants; current year to previous year contribution amount; and the funding-standard account balance to contributions. For each year, a random number is drawn and compared with the plan's probability of mass withdrawal — the result determines whether or not a mass withdrawal happens¹².

Data

ME-PIMS has a detailed database of 188 actual plans (including previously booked plans), which represent more than half of PBGC's insurance exposure in the multiemployer defined benefit system measured from the latest Form 5500 filings available. The database includes:

- plan demographics,
- plan benefit structure,
- asset values,
- liabilities, and
- actuarial assumptions.

In addition, ME-PIMS incorporates historical data of employer contribution levels and demographic trends (over the 10 prior years) to assist in modeling plan trends.

The ME-PIMS database contains pension plan information from Schedule MB of the Form 5500 (Annual Return/Report of Employee Benefit Plan) generally from the 2010 plan year. In addition, more recent data from any available reporting of plan status (endangered, seriously endangered, and critical), plus any multiemployer plans' reports regarding funding improvement plans (for endangered status plans) or rehabilitation plans (for critical status plans) have been incorporated into the modeling system.

¹² For example, assume the mass withdrawal probability for a plan is 5% and that the random numbers are drawn from an urn of balls numbered from 1 to 100, if the ball drawn is numbered 5 or less then the plan experiences a mass withdrawal. If the random number is greater than 5, the plan does not experience a mass withdrawal.

Methodology

PIMS simulates contributions, premiums, and underfunding for these plans using the minimum-funding and premium rules as required by ERISA (including legislative changes in PPA through MAP-21) and then extrapolates the results to the universe of multiemployer plans. Changes to funding rules following PPA (e.g., the Pension Relief Act of 2010) are reflected in the modeling.

ME-PIMS starts with PBGC's multiemployer net position (a \$5.2 billion deficit in the case of FY 2012) and data on the funded status of 161 plans that are weighted to represent the universe of PBGC-covered plans that are not current or probable claims for PBGC. The model produces results under 500 different simulations. The probability of any particular outcome is determined by dividing the number of simulations with that outcome by 500.

The nature of the multiemployer program and PBGC's established method for recognizing claims against the program require a long time horizon for examining potential claims. The near-term financial condition of one employer (or even several employers) usually does not determine the risk presented by a given multiemployer plan. Rather, projected claims result from underfunding in a plan that shows several characteristics of future deterioration. In ME-PIMS, those characteristics can worsen or improve in different scenarios under stochastic modeling.

ME-PIMS' projection of exposure to a multiemployer plan depends largely on the plan's financial status rather than that of the sponsoring companies. The amount of underfunding for each plan is based on the best available data, including annual Form 5500 filings and reports that multiemployer plans provide regarding their status under the funding rules (healthy, endangered, seriously endangered, or critical) and the associated filings that detail their respective plans to work out of an adverse status.

In the multiemployer program, PBGC recognizes probable liabilities for plans with the potential to present claims over a limited time horizon. Generally, claims are recognized when their financial condition is likely to deteriorate substantially within 10 years. ME-PIMS models these claims in future years by projecting, for each future year, a potential claim within the 10 years following that future year.

In the multiemployer program, there is little distinction between claims due to insolvency and probable liabilities, unlike under the single-employer program. In the single-employer program, a probable liability is generated when the condition of the sponsoring employer justifies such a claim. In the multiemployer program, a probable liability is generated when certain plan metrics are sufficiently problematic. Given a sufficiently problematic collection of plan metrics, and a cash-flow projection of insolvency, a plan is classified as probable, and is thus recognized as a PBGC liability.

PBGC's classification of claims against the multiemployer program depends both on the funded status of the plan and on several measures of the plan's health. These factors are then used in modeling cash flow requirements of the plan, to anticipate insolvency. Plan funding data (asset and liability amounts) for estimates were collected from Form 5500 filings for 2009, and 2010 (the most recent available for each plan). The Corporation adjusted this plan data from such sources as additional reporting from individual plans, and from data provided by plans or their service providers.

ME-PIMS projects PBGC's potential financial position by combining simulated claims with simulated paths for premiums, expenses, PBGC's investment returns, and changes in PBGC liability, that is, the present value of benefits and expenses payable pursuant to claims recognized by the PBGC.

Because multiemployer liabilities are usually recognized by PBGC several years before a plan becomes insolvent, a plan's financial condition can improve after it is first recognized, reducing PBGC's liability for that plan (i.e., the value of its claim) by delaying its projected date of insolvency and/or reducing the flow of assistance anticipated after insolvency. In some cases, insolvency is delayed beyond the 10-year threshold required for recognition, causing the plan to become unbooked reducing its claim value to zero. Conversely, a plan's condition can deteriorate further following the initial recognition.

ME-PIMS reflects any un-bookings as negative claims, which are taken into account in the mean and median claim amounts (i.e., the above amounts represent the value of booked minus un-booked future claims). However, financial improvements that are insufficient to cause claims to be un-booked are not reflected in the ME-PIMS claims values. As a result, the change in net position over the projection period may fall short of the present values of simulated premiums, expenses, and investment returns over the period.

The ME-PIMS model is not predictive. As is the case with all PIMS-based reporting (single-employer or multiemployer), our analysis is not a prediction or a forecast but rather provides a range of possible outcomes generated by 500 random economic scenarios. It is important to analyze any PIMS results beyond the mean and median values. Careful attention should also be given to so-called tail results, as the recent financial turmoil has compelled policy makers to do.

Projections of claims against the insurance program are made stochastically. Claims against the pension insurance program are modeled by simulating the occurrence of insolvency, or mass withdrawal with insolvency anticipated within 10 years, for any given plan. To anticipate insolvency, the model projects future cash flows that would be experienced by a plan under various scenarios. For mass withdrawal, the model reflects the relationship among various factors (the ratio of active to inactive participants, the ratio of assets to benefit payments, and the period of time over which the funding standard account is available to ameliorate contribution requirements). For each period, the model assigns a random change in each of these variables to each plan, correlated with changes in the economy. The simulated financial health variables determine the probability either of insolvency or of mass withdrawal for that year.

In ME-PIMS, a sample of actual plans represents the universe of multiemployer plans. The ME-PIMS sample is divided into five tiers, grouped by plan size (based on vested liabilities). In each tier of the sample plans, the individual plans are weighted by the factor for that tier, where the factor is the total vested liability for *all* multiemployer plans in that tier divided by the total vested liability for the *sample* plans in that tier. If a plan is projected to present a claim in ME-PIMS, the claim against the multiemployer program is the claim for that plan multiplied by the factor for that plans' tier. In the tier for the largest multiemployer plans, ten out of the eleven largest plans are in the ME-PIMS sample. In lower tiers, a progressively smaller proportion of multiemployer plans are in the sample. The factors for the tiers range from 1.06 for the tier of largest plans, to 18.09 for the plans in the tier of smallest plans.

The model assumes that plan contributions follow plan-specific 10-year historical patterns of contribution increases, within parameters established to restrain unlikely patterns of increase or decrease. The model runs 500 economic scenarios (varying interest rates and equity returns). ME-PIMS then extrapolates the results of these simulations to the universe of insured multiemployer plans.

Assumptions

All of the following variables are stochastically projected:

- Interest rates, stock returns, and related variables (e.g., inflation, wage growth, and multiplier increases in flat-dollar plans). These variables are determined by interest rates in ME-PIMS.
- Asset returns. Plan asset returns are based on a study of historic asset returns among large plans. Using the financial rates directly modeled in PIMS (stock market returns, long-term Treasury bond returns and yields), the study estimated mixtures of those rates to best fit the historic returns of each plan in the study. PIMS projects annual plan returns using the following weighting based on the average of the estimated rate mixtures, 48 percent stock market returns, 23 percent long-term Treasury bond returns, 30 percent long-term Treasury bond yield and a -2.5 basis points additive adjustment. Future plans for PIMS include modeling of additional asset class returns allowing PIMS to use the investment allocation information sponsors now report as part of the annual Form 5500 filings.
- Plan demographics. Starting with plans' population data from the Form 5500, the number of active participants for each plan varies according to that plan's actuarial assumptions regarding retirement, disability, and termination of employment. Age and service also vary over time due to hiring assumptions that are determined separately in each scenario of the projection. Hiring patterns vary with stochastic projections, the general assumption is that a plan's historical trend continues, and hiring occurs (or not) to bring the active population up to the continued trend as needed after plan decrements (retirement, termination of employment, disability) take place. ME-PIMS does not currently assume industry-specific or collective-bargaining employment trends. The numbers, ages, and benefits of retired and terminated vested participants vary depending on mortality, separation, and retirement assumptions.
- Benefit-level and employer-contribution increases. These vary annually during the projection period with some correlation to modeled economic conditions in each future year.
- Probability of mass withdrawal. This probability is generated using each plan's:
 - ratio of active to inactive populations,
 - ratio of assets to benefit payments and expenses,
 - ratio of the funding standard account to the decrease in that funding standard account, and
 - plan size.

Two of the most important variables in the stochastic simulations are stock returns and interest rates. Stock returns are independent from one period to the next. To determine a simulated sequence of stock returns, the model randomly draws returns from a distribution that reflects historical experience going back to 1926. Unlike stock returns, interest rates are correlated over time. With the model, the Treasury yield for a given period is expected to be equal to the yield for the prior period, plus or minus some random amount. The random draws affecting the bond yields and stock returns are correlated according to an estimate derived from the period 1973-2007.

The following assumptions are also used in ME-PIMS projections:

- Mortality. For purposes of determining plans' mortality experience during each year of the projection period: the RP2000 mortality table set back one year, projected with Scale AA to that year. For purposes of projecting plan population in valuing projected liabilities: the RP2000 mortality table set back one year, projected with scale AA to the year of valuation plus 10 years.

- **Contribution Level/Credit Balances.** The credit balance is increased each year by the valuation interest rate and decreased by the amount by which modeled contributions are below the minimum required. ME-PIMS modeling of employer contributions reflects that most employers make contributions at a level above the minimum required, though this is not always true. There is some interaction between the classic minimum required contribution and the contributions required in light of Recovery Schedules.
- **Benefit Improvements.** For flat-dollar plans, benefit multipliers are assumed to increase annually by the rate at which they have increased over the 10 years previous to the year for which the Form 5500 provides data. Most multiemployer plans have flat-dollar formulas, though there is a trend towards formulas that are based on a percentage of total contributions attributable to each participant. ME-PIMS models both flat-dollar and percent-of-contributions benefit formulas. In plans where the benefit formula is not a flat-dollar or percent-of-contributions schedule, a translation to such a formula is made and the plan is modeled as a flat-dollar plan.
- **Benefit improvement restriction.** ME-PIMS assumes that due to restrictions on benefit increases (they cannot take place in bargaining agreements unless contributions will immediately fund such an increase under PPA) plans will not increase benefits.
- **Benefit accrual restriction.** ME-PIMS models benefit reductions that arise in recovery schedules under endangered and critical plan statuses. These restrictions are modeled in ME-PIMS for endangered and critical plans as appropriate under the respective rules for such plans. For plans that include benefit freezes in their recovery schedules, those freezes are modeled as continuing indefinitely.
- **PBGC Premiums.** ME-PIMS models premiums based on the rate under current law with projected rates increasing under the indexing provisions in current law. There is no allowance in premium projections for write-offs of interest penalties and premiums.
- **PBGC's Assets.** All assets in the multiemployer program are, by law, placed in revolving funds that are invested in US Treasury securities. Asset returns in ME-PIMS are bound by the modeling of US Treasury returns in future years. This modeling incorporates random fluctuations within certain bounds to simulate variation over time.
- **Discounting Future Contributions/Claims.** When ME-PIMS discounts future amounts, the discount factor is a single interest factor derived from the "select" and "ultimate" factors described in the 2012 financial statements. Those factors are based on a survey of prices that the private-sector annuity market would charge at present, to pay a given amount in the future.

Sample Statistics from FY 2012 Runs in ME-PIMS

The following tables show some output statistics from runs of the ME-PIMS model for the FY 2012 Exposure Report. These statistics are specific to the model runs for this report, but show general examples from running the FY 2012 Exposure Report economic assumptions and plans' data through the stochastic process.

Table 1

Arithmetic Means, Standard Deviations and Correlations of Key Financial Market Values			
FY 2012 Multiemployer Model Runs (across 2013-2022 for 500 economic scenarios)			
	Long-Term Treasury Yield	Return on 30-year Treasury Bonds	Stock Market Return
Mean	3.0%	3.0%	8.2%
Standard Deviation	0.9%	6.8%	20.6%

Correlations:			
• Long-Term Treasury Yield	1.00	-0.29	-0.11
• Return on 30-year Treasury Bonds		1.00	0.23
• Stock Market Return			1.00

Table 2

Arithmetic Means and Standard Deviations of Market Rates Derived From Projected Long-Term Treasury Yields in FY 2012 Multiemployer Model Runs			
	Long-Term Corporate Rate	Inflation Rate	Wage, Salary and Flat Benefit Growth Rate
Mean	4.1%	2.6%	4.4%
Standard Deviation	0.9%	0.9%	0.9%

Table 3

Miscellaneous Data from FY 2012 Multiemployer Model Runs		
	Mean	Standard Deviation
Projected Plan Returns	5.4%	10.3%
Annual Probability of Plans' Projected Mass Withdrawal	2.2%	7.4%
Annual Probability of Plans' Projected Insolvency	0.1%	0.1%

Possible Future Refinements to the ME-PIMS Model

As noted in the disclaimer at the beginning of this Report, we expect to continue to modify and improve ME-PIMS in the future. For example, we plan to incorporate into ME-PIMS information on plans' actual responses to PPA, to replace some of our early assumptions that accompanied the passage of PPA. This will affect the projection of employer contribution and

employment levels, the hierarchy of steps taken in funding improvement and rehabilitation plans, and the occurrence of projected mass withdrawals in multiemployer plans. In addition, we plan to make necessary refinements in the modeling of cash flows and the sampling of plans currently “booked” as PBGC liabilities.

Expected claims under the multiemployer program depend on two things. One is the amount of underfunding in the pension plans that PBGC insures (i.e., exposure). The other is the likelihood that a plan will fail, or become insolvent, either in the course of ongoing operations or following a mass withdrawal.

A plan becomes insolvent when it does not have enough assets to pay PBGC guaranteed benefits as they become due. A single-employer plan has one sponsor for which financial information is often available and whose financial condition can be assessed and modeled. By contrast, among multiemployer plans, even the identity of *any* individual employers that participate in particular multiemployer plans has only recently become available. Others remain unknown. So at present, ME-PIMS does not model the financial conditions of individual employers (or industries) in multiemployer plans. As we analyze the newly available information on individual employers, we will consider whether to incorporate this information into the model.

Limitations in Modeling Future Uncertain Events

Readers should interpret the results from this modeling with caution and with an understanding of the model’s limitations. Results are sensitive to model design decisions such as equation specifications, degrees of interdependence among variables, and historical periods used for the estimates. The modeling depends on historic estimates of the behaviors (volatilities, correlations, central tendencies, etc.) of the model’s variables and does not reflect uncertainties about the future that might not be evident from historic data. The real range of future outcomes can be more uncertain if different modeling assumptions are applied.

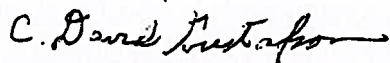
Statement of Actuarial Opinion

This actuarial evaluation has been prepared in accordance with generally accepted actuarial principles and practices and, subject to the disclaimer on page two of this report, to the best of my knowledge, fairly reflects the possible distribution of projected outcomes relative to the operations and status of the Corporation's single-employer and multiemployer plan insurance programs as of September 30, 2012.

In preparing this evaluation, I have relied upon information provided to me regarding plan and participant data, plan sponsor financial information, historic asset yield and bankruptcy information and other matters. I have checked this information for reasonableness as appropriate based on the purpose of the evaluation; the responsibility for the information rests with the preparers of the original source data.

Subject to the disclaimer on page two of this report, in my opinion, (1) The techniques and methodology used are generally acceptable within the actuarial profession; (2) The assumptions used are appropriate for the purposes of this report; and (3) The resulting evaluation represents a reasonable estimate of the possible distribution of projected outcomes relative to the operations and status of these programs.

I, C. David Gustafson, am the Chief Policy Actuary of PBGC. I am a Member of the American Academy of Actuaries, a Fellow of the Conference of Actuaries and an Enrolled Actuary. I meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained in this report.



C. David Gustafson

Chief Policy Actuary, PBGC

Member, American Academy of Actuaries