Meeting of the American Academy of Actuaries Multiemployer Plans Committee and Representatives from the Department of the Treasury, PBGC, and Department of Labor

February 23, 2018

Notes from Second Meeting to Discuss MPRA Application Process

On Feb. 23, 2018, the Multiemployer Plans Committee of the American Academy of Actuaries (the Committee) met with members of the U.S. Department of Treasury (Treasury), the Pension Benefit Guaranty Corporation (PBGC), and the Department of Labor (DOL). The discussion focused on applications by multiemployer pension plans in critical and declining status to suspend benefits or partition liabilities, as permitted under the Multiemployer Pension Reform Act of 2014 (MPRA). This document summarizes the key points that were discussed at the meeting, as well as certain follow-up discussions that occurred after the meeting.

This meeting supplements a meeting the Committee had with representatives from these regulatory agencies on this topic on Feb. 22, 2017. The notes for this second meeting are intended to supplement the notes from the first meeting, which can also be found on the Committee page on the Academy website.[1]

For convenience, these notes often refer to comments or questions made by "the Committee" or "members of the Committee." The opinions expressed by Committee members at the meeting, however, are those of individual meeting participants and do not necessarily represent the official statements or opinions of any board or committee of the American Academy of Actuaries, including the Actuarial Standards Board or the Actuarial Board for Counseling and Discipline or any other actuarial organization, nor do they necessarily express the opinions of their employers.

Also for convenience, these notes often refer to comments made by "Treasury" or "PBGC." These notes, however, merely reflect the Committee's understanding of the current views of the representatives from the government agencies; they do not represent official statements or positions of the agencies, and they should not be relied upon by any person for any purpose.

<u>Discussion Topics</u>

Below is a list of topics discussed at the Feb. 23, 2018, meeting. In general, the topics are listed in order of when they were discussed at the meeting.

1. Denials and Withdrawals to Date
2. Reasonableness of Actuarial Assumptions
3. Application Review Process
4. Pre-Application Conferences

[1] Multiemployer Plans Committee page: www.actuary.org/committees/dynamic/MULTIEMP

5. Revenue Procedure 2017-43
6. Non-Standard Mortality Assumptions
7. Resubmission Considerations
8. Investment Return Assumptions
9. PBGC Discussion Topics

In addition, this document includes notes from follow-up discussions with Treasury that occurred after the meeting on two topics:

1. Investment Return Assumptions
2. Survivorship Bias in Assumed New Entrants

Denials and Withdrawals to Date

As of the date of the meeting, five (5) applications to suspend benefits had been denied by Treasury, and another nine (9) had been withdrawn by the plan sponsor. Reasons for the denials and withdrawals include both actuarial assumptions Treasury deemed to be unreasonable or inappropriate, as well as non-actuarial factors. Treasury listed the factors as having contributed to denials and withdrawals to date, which are summarized in the table below. The factors denoted by an "x" applied in at least one application withdrawal.

Factors Contributing to Denials or Withdrawals of Applications to Suspend Benefits		
Factor	Denials	Withdrawals
Investment return assumptions		
– Assumption too optimistic	2	x
– Assumption too pessimistic	-	x
– Assumption did not adequately consider future possible changes in asset allocation	-	x
Mortality assumptions		
– Outdated mortality table	1	x
– Projected mortality improvement not reflected	1	-
– Standard table adjusted without credible experience	1	x
– Projected mortality improvement adjusted without justification	1	x
Other assumptions not consistent with plan experience		
– Distribution of ages for new entrants	1	x
– Take-up rate for joint and survivor annuities	2	x
– Retirement age for terminated vested participants	1	x
– Future covered employment levels (contribution base units)	1	x

Factors Contributing to Denials or Withdrawals of Applications to Suspend Benefits		
Factor	Denials	Withdrawals
Issues not related to actuarial assumptions		
– Prohibited benefit improvement	-	x
– Proposed benefit suspensions not equitably distributed	1	-
– Participant groups for proposed benefit suspensions not sufficiently identified	-	x
– Notices not understandable by average participants	1	-
– Notices did not properly identify participant groups	-	x
– Failed to obtain required partition from PBGC	1	x

Treasury emphasized it has not necessarily identified all possible factors that could contribute to a denial or a withdrawal of an application to suspend benefits. In other words, it is possible that a factor not initially identified when an application is denied or withdrawn may later contribute to a subsequent application being denied or withdrawn.

Reasonableness of Actuarial Assumptions

As in the first meeting, Treasury stressed the importance of selecting actuarial assumptions that are reasonable for the purpose of the measurement, which is a projection of plan solvency. Assumptions that may be reasonable for an actuarial valuation for funding or accounting purposes may not necessarily be reasonable for a solvency projection, and an assumption that may be immaterial for a valuation may have a material impact on making the necessary demonstrations in an application to suspend benefits.

Treasury discussed how it determines the materiality of assumptions. If Treasury believes a different assumption would be more appropriate, it may request that the plan applying for a suspension of benefits provide an alternate projection based on the different assumption.

The Committee noted how the results can be highly leveraged to relatively small changes in assumptions. This leveraged relationship is due to the very long-term nature of the projections and the relatively narrow threshold set by the regulations for demonstrating that the proposed suspensions enable the plan to avoid insolvency but do not “materially exceed the level necessary to avoid insolvency.” Treasury agreed with the observation.

Application Review Process

Responding to a question from the Committee, Treasury and PBGC explained that they attempt to identify the problematic issues and actuarial assumptions as part of their first review of an application. Treasury noted, however, that there is no guarantee that additional issues will not be uncovered after a second review.

PBGC, which provides technical support to Treasury, added that it sets out to do a very detailed review of the calculations and projections underlying each application. In this process, PBGC may identify issues and communicate them to the plan actuary. PBGC may also ask the plan actuary to make corrections and provide a revised demonstration to make sure the issues have been resolved.

If PBGC identifies a critical error in an application after only a high-level review, PBGC will discuss the error with Treasury. As a result of that discussion, a decision may occur that PBGC will not be able to continue with the review, which means that other problematic issues might not be identified. In such a situation, Treasury would notify the plan sponsor that the critical error was identified, as early as possible in the review process. Treasury and PBGC emphasized limited resources as the reason for this approach.

The Committee asked if there is a possibility for the plan sponsor to revise an application rather than withdrawing and resubmitting it, if Treasury or PBGC were to find a material defect. Treasury responded that, in general, it is not possible to revise an application to suspend benefits, due to the statutory requirements that the proposed suspension must be subject to public notice and comment and that notices must be provided to participants explaining the proposed suspension.

Treasury indicated there could be a possibility to allow an application to be supplemented without a withdrawal and resubmission in a situation in which the issues identified are immaterial. In that case, the revisions to the application would be posted for public review, and the application review would proceed. Treasury noted that, to date, it has not yet been presented with such a case.

The Committee noted that, as of the date of the meeting, only one (1) application has been approved on the first submission. The three (3) other applications that have been approved were after a withdrawal and new submission, and other applications have been withdrawn or denied without a subsequent application by the plan sponsor. The Committee noted that, anecdotally, current success ratio is a major deterrent to plan sponsors considering a suspension of benefits. Treasury noted the possibility that the success ratio will improve in the future, in part due to the open exchanges between the agencies and the Multiemployer Committee.

Pre-Application Conferences

In November 2017, Treasury first indicated its willingness to engage with plan sponsors to discuss possible applications to suspend benefits before the application is formally submitted. The Feb. 23, 2018, meeting was the first opportunity the Committee had to discuss with Treasury how these pre-application conferences might be conducted. Treasury reported that as of that date, it had conducted nine (9) pre-application conferences, with two (2) additional conferences scheduled.

The following are key points provided by Treasury regarding pre-application conferences:

- Interested plan sponsors should request a pre-application conference by emailing MPRAinfo@treasury.gov. In this email, the plan sponsor should provide the list of attendees who will be representing the plan and the issues to discuss.

- The pre-application conferences are intended to be informal in nature. Treasury may provide feedback on the selection of actuarial assumptions but will not approve any particular actuarial assumption or set of assumptions as reasonable.

- Treasury will not make a determination as to whether the proposed suspension is equitably distributed, as the determination may be affected by the public comments submitted on the application. Treasury will, however, provide guidance on how it will analyze an application for equitability and can help the plan identify the different categories or groups that may be affected if the plan sponsor designs its suspension to include a new uniform formula.

- Treasury will generally seek to include a PBGC representative on the call.

- Pre-application conferences are not intended to be a one-and-done process. Follow-up calls may be arranged.

Responding to a question by the Committee, Treasury emphasized that it cannot approve a particular actuarial assumption as reasonable during the pre-application conference, even if the plan sponsor demonstrates that the assumption is supported by recent experience. Actuarial assumptions used in an application must be individually reasonable as well as reasonable in the aggregate. Therefore, Treasury must review the entire application before making the determination that any individual assumption is reasonable.

Treasury also commented that demonstrating that proposed suspensions are equitably distributed is generally easier for an approach that applies the same percentage reduction to all affected participants, subject to statutory limitations. A more detailed analysis is needed from the plan when the design is more complicated; for example, if benefits are redetermined based on a new, uniform formula for all participants, when different formulas may have previously applied to different participant groups. In these cases, Treasury will provide guidance during pre-application conferences on how to identify the different categories or groups of participants that are affected under a structure that implements a uniform post-suspension formula.

Treasury also summarized some noteworthy points from pre-application conferences conducted to date:

- As indicated above, Treasury will not approve actuarial assumptions as reasonable during a pre-application conference.

- Treasury will not formally comment about whether a proposed suspension of benefits is equitably distributed.

- Treasury views the “clearly erroneous” standard under MPRA as applying only to whether the plan sponsor has exhausted “all reasonable measures” prior to submitting an application to suspend benefits.

- PBGC intends to provide guidance on how to calculate PBGC guaranteed benefits. (Subsequent to the Feb. 23, 2018, meeting, PBGC set up a general email address through which practitioners can contact PBGC for guidance on calculating guaranteed benefits: MPRA.Questions@PBGC.gov.)

- Treasury stated that MPRA does not mandate any length of time during which a plan must operate under an adopted rehabilitation plan or been in critical and declining status before submitting an application. A plan that is newly certified to be in critical and declining status may apply for a suspension of benefits as soon as practical.

- Treasury recommends that, if possible, plan sponsors submit applications to suspend benefits that are free from ancillary or contingent issues. For example, the review process for an application to suspend benefits would be complicated by a concurrent application to PBGC for an alternative withdrawal liability method or a request for a private letter ruling from Treasury.

- An important step in preparing an application to suspend benefits is to calculate PBGC guaranteed benefit levels for each individual participant. The calculation of PBGC-guaranteed benefits is based on a participant's credited service under the plan. Therefore, before applying for a suspension of benefits, the plan sponsor must gather the required credited service data for all participants, which may be challenging for participants and beneficiaries already in payment status.

Revenue Procedure 2017-43

Treasury discussed the final revenue procedure related to applications to suspend benefits, Rev. Proc. 2017-43, which was released in July 2017 and must be followed for applications submitted on or after Sept. 1, 2017. Treasury noted that the most important addition to these procedures versus those set forth in Rev. Proc. 2016-27 is Appendix B: "Information on Actuarial Assumptions and Methods." Treasury views the information required in Appendix B as necessary to enable Treasury to review the actuarial assumptions and methods included in an application to suspend benefits for reasonableness, in compliance with the actuarial standards of practice (ASOPs), promulgated by the Actuarial Standards Board of the American Academy of Actuaries.

Treasury encourages plan actuaries assisting in the preparation of an application to suspend benefits to closely follow the procedures set forth in Appendix B. In addition, Treasury highlighted certain actuarial items that are often under-reported or omitted from applications.

- *Projections of withdrawal liability payments*. These projections should consider the assumed rate of future withdrawals by participating employers and should include an appropriate adjustment for non-payment of current and future assessments.

- *Projection methodology or approximations*. The plan actuary should describe any approximations or data groupings used in projecting future benefit payments (for example, to improve processing time). Treasury and PBGC strongly discourage actuaries from making adjustments to output from the valuation software, but if such adjustments are necessary, they should be clearly documented and explained.

- *Possibility of changing asset allocations*. The plan actuary should consider the possibility for future liquidity issues to necessitate a future change in asset allocation. An explanation of rationale and approach would be required. This issue is especially important for plans with relatively large allocations to illiquid investments.

- *Contribution base units and employer withdrawals*. The plan actuary should explain the rationale for any assumptions related to the projection of future contribution base units including the effect of future employer withdrawals, drawing from historical plan experience as appropriate. Treasury noted that the projection of contribution base units for this purpose is not necessarily the same as the projection for purposes of the annual status certification.

- *Withdrawal liability payments*. In justifying a projection of future withdrawal liability payments, the plan actuary should describe recent (e.g., over the past five years) withdrawal liability assessments, including paid in full, currently being paid, and uncollectible.

    - Treasury noted there are many factors a plan actuary should consider when projecting future withdrawal liability payments, including the creditworthiness of potential future withdrawing employers and the number of employers comprising the remaining contribution base.

    - In some cases, additional information may be needed with respect to significant employers remaining in the plan. As an example, if a privately held employer represents a significant (perhaps even majority) portion of the contribution base, the plan should anticipate questions about the employer's financial status. Treasury and PBGC would be willing to sign nondisclosure agreements to obtain relevant information in these cases.

Treasury further emphasized that the selected actuarial assumptions must be *supportable*. Treasury offered anecdotes of situations when selected assumptions seemed problematic upon initial review and the actuary could not provide justification. On the other hand, an application stands a better chance of being approved if it includes thorough documentation of assumptions that may seem questionable at first glance.

<u>Non-Standard Mortality Assumptions</u>

Treasury indicated its expectation that most multiemployer plans applying for a suspension of benefits will use the standard "RP-2014" Mortality Tables with projected improvements under the current "Scale MP." Application of the scale beginning in 2006 is acceptable. Blue collar and disabled life adjustments to the RP-2014 tables may be appropriate, depending on the plan's participant population.

If a plan actuary wishes to make adjustments to the standard mortality tables based on actual plan experience, that experience must be credible. Treasury encourages plan actuaries to consider the recent guidance provided to single-employer plans on using substitute mortality tables, Rev. Proc 2017-55 and Treasury Regulation 1.430(h)(3)-2, when making adjustments to the published mortality tables.

The Committee expressed concern that the published RP-2014 Mortality Tables, even with blue collar adjustment, were developed with virtually no multiemployer plan experience.

Resubmission and Reapplication Considerations

Treasury discussed the extent to which the underlying data and calculations must be updated when an application is withdrawn and resubmitted. Specifically, when an application is withdrawn and the plan sponsor is considering resubmission, Treasury will request information from the plan regarding changes since the original submission. Changes of interest include asset value, participant census data, significant employers that have withdrawn or joined the plan, any changes in projected withdrawal liability payments, and any material events that occurred since the original application (such as a merger, plan design changes, etc.) Materiality in this case is defined as 5 percent of plan assets or liabilities.

Based on the information provided, Treasury will determine to what extent the underlying data and calculations from the original application must be updated in the resubmitted application.

Investment Return Assumptions

Treasury described the methodology it currently follows for evaluating the reasonableness of investment return assumptions using the results from the latest Survey of Capital Market Assumptions published by Horizon Actuarial Services LLC (the "Survey"). This analysis is based on the distribution of expected returns by Survey respondent, which in the 2017 edition of the Survey are shown in Exhibits 17 and 18.

Specifically:

- Treasury considers six (6) benchmark expected returns based on the plan's asset allocation. The first three benchmark returns construct a range of shorter-term investment returns, over a horizon of up to 10 years. The second three benchmark returns construct a range of longer-term investment returns, for a horizon of more than 10 years.

- The lower end of each range is based on the 25^{th} percentile expected returns by Survey respondent for each asset class in the Survey, and the upper end of each range is based on the 75^{th} percentile expected returns by Survey respondent. The midpoint of each range is based on the average assumptions from the Survey for each asset class. All expected returns are geometric. Treasury acknowledged that the 25^{th} or 75^{th} percentile returns for each asset class are not necessarily attributable to the same investment firm, and that this methodology effectively excludes expected returns for half of the Survey respondents.

- Treasury then determines the dollar-weighted average returns based on the plan actuary's selected investment return assumptions and compares them to the ranges constructed from the Survey assumptions for the plan's asset allocation.

It is important to note that the 25^{th}- and 75^{th}-percentile returns described refer to varying expectations across the different Survey respondents, not the volatility of investment returns.

Treasury indicated that while it does not employ a bright-line test in reviewing a plan's investment return assumption for reasonableness, it will likely place additional scrutiny on an assumption if it is near or outside of the endpoints of the constructed ranges using the 25^{th}- and 75^{th}-percentile expected returns by Survey respondent.

Treasury also noted that these ranges are merely a starting point for its review of the plan actuary's selected investment return assumptions. As it continues its review, Treasury may focus more narrowly on expected returns based on the Survey average assumptions, or perhaps the median respondent assumptions from Exhibits 17 and 18. Treasury also encourages plan actuaries to pay particular attention to the dollar-weighted expected returns, especially in the first 10 years of the projection.

Several Committee members expressed concern over the methodology. In particular, it was noted how reputable investment firms may develop significantly different return expectations. Just because one return expectation is higher or lower than the next does not make any one set of assumptions reasonable or unreasonable.

Other Committee members raised concerns over timing: Even long-term return expectations can be sensitive to timing—for example, the current market data on which the assumptions are developed. Furthermore, the assumptions from the Survey may be out of date, given the manner in which the Survey collects data.

Finally, while some Committee members were encouraged by the use of ranges—as opposed to specific return expectations with no flexibility—others expressed concern over the narrowness of the ranges constructed in the methodology. Particularly, a range based on 25^{th}-percentile and 75^{th}-percentile expected returns excludes 50 percent of the respondents in the Survey.

Responding to a question from the Committee, Treasury confirmed that it considers the short-term return expectations from the Survey to apply for the first 10 years of a projection (the select period) and the long-term return expectations to apply beginning in year 11 (the ultimate period). In other words, the methodology does not "back into" ultimate period returns to adjust for the fact that the select period returns are lower. Some Committee members expressed concern that this simplified approach is overly conservative and may understate longer-term return expectations. Treasury noted, however, that it generally allows for more flexibility in the longer-term return expectations.

The Committee said it would follow up with Treasury by providing sample calculations to verify the methodology it currently uses to evaluate investment return assumptions.

<u>PBGC Discussion Topics</u>

At the end of the meeting, PBGC led a discussion on various topics of interest, based on its review of applications to suspend benefits submitted to date.

- *Avoiding approximations*. PBGC encourages plan actuaries to avoid using shortcuts when modeling proposed suspensions of benefits. While interpolations, averages, or approximations may be used when designing the suspension with the plan sponsor, the final actuarial projections included in the application submitted to Treasury for approval should reflect the actual proposed suspension. Any adjustments to the valuation software output should be documented and supportable—a rerun is preferable.

- *Programming benefits*. PBGC encourages plan actuaries to construct test-life examples of how participant benefits would be affected by the proposed suspension *at each possible decrement age*, not just at the normal retirement age. Dual formulas present special challenges. PBGC also encourages plan actuaries to pay special attention to post-normal retirement benefits. For example, additional benefit accruals after normal retirement increase the participant's PBGC guaranteed benefit, but actuarial "late retirement" increases on the already-accrued benefit do not. PBGC noted that it is working on providing guidance on these technical issues.

- *Facilitated mergers*. PBGC noted that finalizing regulations on mergers and transfers is a high priority. So far, PBGC has engaged in informal conversations with plan sponsors interested in facilitated mergers, but there have not yet been any formal applications. PBGC noted the ongoing issues with interpreting the "non-impairment" requirement, which constrains the financial assistance PBGC may provide to a partition or to facilitate a merger to the extent it would impair its existing financial obligations. (The non-impairment requirement is discussed in more detail below.)

- *Mergers coordinated with benefit suspensions.* The Committee inquired whether there had been any change or clarification in the agencies' position on what happens when a smaller plan in critical and declining status uses a suspension of benefits to make itself a more attractive merger partner to a larger, healthy plan. Treasury confirmed that its view remains the same: The current statute requires the suspended benefits under any plan to be reinstated if they are not necessary for the plan to remain solvent, regardless of any prior merger. In Treasury's opinion, the statute would need to be changed for the suspensions to remain in effect in such a situation.

- *Two-pool withdrawal liability methods.* PBGC reported that it is regularly evaluating requests for alternative withdrawal liability methods involving two pools. PBGC will perform an in-depth review when a plan sponsor has requested approval of a method that allows an existing employer to settle its withdrawal liability in the old pool and transition to the new pool (often referred to as "jumping"). An application for a method that permits jumping will undergo far greater scrutiny than one that prohibits jumping. PBGC may request detailed cash flow projections under different scenarios when reviewing an application for a method that permits jumping.

- *Solvency requirements for mergers and transfers.* PBGC commented on its interpretation of the solvency requirements that apply to mergers and transfers involving multiemployer pension plans. The general rule is that a proposed transaction may be approved if it can be demonstrated that the plan or plans are "reasonably expected to remain solvent" after the transaction. Alternatively, a proposed transaction involving a plan in critical and declining status may be approved if it can be demonstrated that the transaction would materially extend the time until insolvency occurs for the plan(s) in critical and declining status and would not be adverse to any of the stakeholders. The Committee complimented the PBGC's practicality and prudence in reaching this interpretation.

- *Identifying participants to be partitioned*. PBGC clarified that a plan sponsor applying for a partition is not required to identify the specific participants to be included in the partition (i.e., in the successor plan) prior to submitting the application. Rather, if the plan sponsor has determined that benefits must be suspended to the maximum extent permitted under law, PBGC can work with the plan sponsor to determine the exact portion of benefit liability to be partitioned as part of the application review process. The plan sponsor must identify the specific participants in the successor plan, however, prior to the approval of any partition application; the specific participants can be identified during the review of the application.

- *"Non-impairment" requirement.* PBGC views financial assistance provided to a partition or to facilitate a merger as not violating the non-impairment requirement if it does not materially advance the projected insolvency date for PBGC's multiemployer program. This concept is discussed on the PBGC website. In most cases, "materially advance" means not more than a few days. Whether a proposed transaction involving financial assistance from PBGC can satisfy the non-impairment requirement is highly sensitive to the facts and circumstances of the case. For example, PBGC may consider granting financial assistance to a transaction that would provide a substantial overall benefit to affected participants and PBGC's long-term liabilities in the multiemployer program, even if it resulted in a non *de minimis* advancement of the program's projected insolvency date. Satisfaction of the requirement is generally a determination the plan will not be able to make on its own.

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Follow-Up Discussions

<u>Investment Return Assumptions</u>

As a follow-up to the Feb. 23, 2018, meeting, the Committee attempted to replicate the methodology described by Treasury and PBGC to evaluate investment return assumptions used in applications to suspend benefits under MPRA. Currently, the methodology relies upon the assumptions from the 2017 edition of the Survey of Capital Market Assumptions by Horizon Actuarial Services LLC (the "Survey"). For illustration, the Committee performed its calculations based on the hypothetical asset allocation shown in the Survey. *See the attachment to these notes for details.*

The following table summarizes the results of the Committee's analysis for this hypothetical asset allocation. Under the methodology used by Treasury, a plan with this asset allocation would have a median geometric expected return of 6.2 percent for the first 10 years based on the Survey average assumptions. Based on the 25th- and 75th-percentile expected returns by Survey respondent, the range of expected returns for the first 10 years would be 5.6 to 6.8 percent.

The same plan would have a median geometric expected return of 7.3 percent after the first 10 years, based on the Survey average assumptions. Based on the 25th- and 75th-percentile expected returns by Survey respondent, the range of expected returns after the first 10 years would be 6.5 to 8.0 percent.

For simplicity, the expected returns described above are rounded to the nearest 0.1 percent.

Geometric Expected Returns: Hypothetical Asset Allocation		
Time Horizon	Short-Term: Up to 10 Years	Long-Term: After First 10 Years
Upper End of Range: 75^{th} Percentile	6.8%	8.0%
Midpoint: Survey Average	6.2%	7.3%
Lower End of Range: 25^{th} Percentile	5.6%	6.5%

In an email exchange, Treasury reviewed and confirmed the expected returns shown in the table above. More detail on these calculations can be found as an attachment to these notes.

A common interpretation is that longer-term expected returns apply for the entire time horizon, starting with the first year. Therefore, if a select and ultimate return assumption is constructed, the ultimate returns would be adjusted upward to account for the lower expected returns for the select period. For example, focusing on the average returns in the table above, and assuming a projection period of 30 years, we would expect:

- Total period, years 1-30 = annualized returns of 7.3%
- Select period, years 1-10 = annualized returns of 6.2%
- Ultimate period, years 11-30 = annualized returns of 7.85%, where

$$7.85\% = [(1.073)^{30} \text{ x } (1.062)^{-10}]^{(1/20)} - 1$$

As described earlier, the methodology used by Treasury does not adjust the ultimate period expected returns as shown above. Instead, the ultimate period returns are simply assumed to be equal to the long-term returns. Therefore, under the Treasury methodology, the overall expected returns are lower than under the interpretation shown above. Consider the following example, which similarly focuses on the average returns and uses a projection period of 30 years.

- Total period, years 1-30 = annualized returns of 6.93%, where

$$6.93\% = [(1.062)^{10} \text{ x } (1.073)^{20}]^{(1/30)} - 1$$

- Select period, years 1-10 = annualized returns of 6.2%
- Ultimate period, years 11-30 = annualized returns of 7.3%

In subsequent conversations between certain members of the Committee and Treasury, Treasury emphasized that the ranges constructed in its methodology are not fixed. Therefore, if a plan actuary has selected an investment return assumption that falls slightly outside of the range, Treasury would not necessarily determine the assumption to be unreasonable if the plan actuary could provide strong evidence and rationale supporting the assumption.

Survivorship Bias in Assumed New Entrants

Outside of the meeting, Treasury requested that the Committee update its summary from the Feb. 22, 2017, meeting, specifically with regard to the development of the assumption related to the distribution of ages for new entrants. The following discussion replaces the discussion from the 2017 notes:

- *New entrant ages.* When performing an open group projection, actuaries are strongly encouraged to develop a distribution of ages for new active participants based on plan experience. Use of a single age for this purpose is overly simplified and not appropriate. Experience should avoid survivor bias. An entry age assumption based on the age at entry of active participants that remain in the plan during the most recent plan year may not be an appropriate measure of new hire populations over time, because the current population may exhibit survivorship bias. Older new hires may generate much earlier cash outflows, which can materially affect the cash outflows of the plan.

Attachment

The following exhibit shows illustrative calculations of expected returns for a hypothetical asset allocation, based on the results of the 2017 edition of the Survey of Capital Market Assumptions published by Horizon Actuarial Services LLC. See the Survey report for more information, including the applicable correlation matrix and description of methodologies.

Example: Ranges of Expected Returns for Hypothetical Asset Allocation

	Asset Class	Weight	Shorter-Term Horizon: Up to 10 Years						Longer-Term Horizon: After First 10 Years						Standard Deviation
			Arithmetic			*Geometric*			*Arithmetic*			*Geometric*			
			Lower	Midpoint	Upper	Lower	Midpoint	Upper	Lower	Midpoint	Upper	Lower	Midpoint	Upper	
1	US Equity - Large Cap	20.0%	7.2%	7.8%	8.5%	5.9%	6.5%	7.2%	8.5%	9.1%	10.1%	7.2%	7.8%	8.8%	16.6%
2	US Equity - Small/Mid Cap	10.0%	8.2%	8.8%	9.6%	6.3%	6.9%	7.7%	8.8%	10.3%	11.8%	6.9%	8.4%	10.0%	20.2%
3	Non-US Equity - Developed	7.5%	8.2%	8.7%	9.0%	6.5%	7.0%	7.4%	8.8%	9.4%	10.2%	7.2%	7.6%	8.6%	18.9%
4	Non-US Equity - Emerging	5.0%	10.2%	11.0%	11.8%	7.2%	8.0%	8.9%	10.5%	11.8%	12.9%	7.5%	8.7%	10.0%	25.4%
5	US Corporate Bonds - Core	7.5%	2.9%	3.4%	3.8%	2.8%	3.2%	3.7%	3.9%	4.6%	5.0%	3.8%	4.4%	4.9%	5.5%
6	US Corporate Bonds - Long Duration	2.5%	3.6%	4.2%	4.5%	3.1%	3.6%	4.0%	4.5%	5.4%	5.9%	4.0%	4.8%	5.4%	10.4%
7	US Corporate Bonds - High Yield	5.0%	5.0%	5.6%	6.1%	4.5%	5.1%	5.6%	6.2%	6.8%	7.3%	5.7%	6.2%	6.8%	10.6%
8	Non-US Debt - Developed	5.0%	2.0%	2.5%	3.1%	1.7%	2.2%	2.8%	2.8%	3.7%	4.8%	2.5%	3.5%	4.5%	7.4%
9	Non-US Debt - Emerging	2.5%	5.5%	6.0%	6.5%	4.8%	5.3%	5.8%	6.3%	7.0%	7.2%	5.6%	6.2%	6.5%	11.8%
10	US Treasuries (Cash Equivalents)	5.0%	2.1%	2.3%	2.6%	2.1%	2.3%	2.6%	2.9%	3.3%	3.4%	2.9%	3.2%	3.4%	3.0%
11	TIPS (Inflation-Protected)	5.0%	2.8%	3.1%	3.5%	2.6%	2.9%	3.3%	3.6%	4.2%	4.7%	3.4%	4.0%	4.5%	6.3%
12	Real Estate	10.0%	6.5%	7.3%	7.7%	5.5%	6.2%	6.7%	6.9%	7.8%	8.0%	5.9%	6.7%	7.0%	14.5%
13	Hedge Funds	5.0%	4.8%	5.3%	5.8%	4.5%	4.9%	5.5%	5.8%	6.3%	7.1%	5.5%	6.0%	6.8%	8.0%
14	Commodities	2.5%	5.1%	5.6%	6.2%	3.6%	4.1%	4.7%	6.3%	6.5%	6.8%	4.8%	5.0%	5.3%	17.9%
15	Infrastructure	2.5%	7.3%	7.7%	8.1%	6.3%	6.7%	7.1%	7.8%	8.3%	8.5%	6.8%	7.1%	7.5%	14.6%
16	Private Equity	5.0%	10.2%	11.3%	12.2%	8.0%	9.0%	10.0%	11.4%	12.6%	13.4%	9.2%	10.1%	11.3%	22.0%
	Total Portfolio	**100.0%**	**6.1%**	**6.7%**	**7.3%**	**5.6%**	**6.2%**	**6.8%**	**7.0%**	**7.8%**	**8.5%**	**6.5%**	**7.3%**	**8.0%**	**10.5%**

Results are based on the 2017 edition of the Survey of Capital Market Assumptions by Horizon Actuarial Services, LLC. See the Horizon Survey report for more information.
The lower ends of the ranges are based on 25th percentile expected returns for each asset class; the upper ends of the ranges are based on 75th percentile expected returns for each asset class.
Total portfolio returns must be constructed based on arithmetic returns for each asset class. Therefore, in some cases, geometric returns for each asset class must be converted to arithmetic returns.