**ACTUARIAL REVIEW OF THE**
**2018 ACTUARIAL VALUATION OF THE**
**FIREFIGHTERS' RETIREMENT SYSTEM**

**RESPONSE BY THE BOARD OF TRUSTEES OF THE**
**FIREFIGHTERS' RETIREMENT SYSTEM (FRS)**

**Executive Summary.** The LLA's actuary concluded that FRS' investment return assumption is outside the mainstream of 13 professional investment forecasting organizations and should be lowered. Here, both the LLA's actuary and FRS' actuary used reasonable methods and assumptions, and reached different but reasonable results. The fact that the actuaries reached different reasonable conclusions when faced with the same facts, does not diminish the validity or reliability of the FRS actuary's investment return assumption. The FRS actuary exercised the level of care and diligence that, in his professional judgment, was necessary to complete the assignment in an appropriate manner. The FRS actuary's methodology is consistent with the standards governing actuarial and accounting professionals. The FRS actuary took notice of a variety of sources and data supporting his conclusions and when compared to other pension plans, his judgment is shown to be consistent with his peers. The FRS actuary's 7.3% assumption, when weighed in the balance, is reasonable and comfortably in the mainstream. For these reasons, the recommendation made by the LLA's actuary should be respectfully declined.

These comments are submitted to the Public Retirement Systems' Actuarial Committee in response to the Actuarial Review published by the Office of the Louisiana Legislative Auditor (LLA). The Actuarial Review was limited to discussion of four subjects. This response is limited to the following observation and recommendation set forth therein:

> "The investment return assumption used in the board's 2018 funding valuation is 7.30% per year. This investment return assumption is also an outlier and outside the mainstream of 13 professional *investment forecasting organizations* obtained by the LLA's actuary."
>
> "We recommend the board lower its return assumption significantly more than its current policy of ramping down by 10 basis points each year. A significant reduction is needed in order to (a) bring it into the mainstream of professional forecasters and (b) produce a more appropriate representation of the system's costs and liabilities."

The actuarial profession recognizes that there may be significant differences in expected returns and standard deviations among investment advisors when determining a return assumption. There are standards of practice to provide guidelines where such differences exist. Actuarial Standard of Practice (ASOP) No. 1 is instructive. It states, in part:

> "2.10 *Reasonable* - In many instances, the ASOPs call for the actuary to take 'reasonable' steps, make 'reasonable' inquiries, select 'reasonable' assumptions or methods, or otherwise exercise professional judgment to produce a 'reasonable' result

> when rendering actuarial services. The intent is to call upon the actuary to exercise the level of care and diligence that, in the actuary's professional judgment, is necessary to complete the assignment in an appropriate manner.
>
> Because the actuarial practice commonly involves the estimation of uncertain events, there will often be a range of reasonable methods and assumptions, and two actuaries could follow a particular ASOP, both using reasonable methods and assumptions, and reach different but reasonable results." [1]

The question is this: Is the 7.3% investment return assumption used by the FRS actuary truly an outlier or, alternatively, did the FRS actuary in exercising his professional judgment use an equally reasonable method in arriving at the assumption? The FRS actuary states, in part:

> "[A]fter completion of our analysis of the valuation interest rate based upon the FRS target asset allocation and the updated capital market assumptions, we find that Board approved valuation interest rate planned for the June 30, 2018 actuarial valuation of 7.3% is within the reasonable range based upon a long-term assumed rate of return." [2]

The FRS actuary's methodology is clearly reasonable. He relied on the FRS target asset allocation. He also considered, among many other sources, the capital market assumptions included in a broad survey known as the Horizon report.[3] The 2018 Horizon report surveyed 34 different investment firms regarding their investment return expectations. The investment advisors surveyed based on a 20-year (long-term) horizon showed average expected returns ranging between 5.50% to 8.73%, representing the 25$^{th}$ and 75$^{th}$ percentile of respondents, respectively. The report indicated that the 20-year horizon may be more appropriate for evaluating the return assumptions for an ongoing plan with no projected solvency issues. The FRS assumed rate of 7.3% fits squarely within the range of those investment advisors surveyed by Horizon.

Governmental Accounting Standards Board (GASB) standards do not control the actuarial profession regarding funding analyses but, for purposes of gauging reasonableness, there is a statement that supports the FRS actuary's method of using a 20-year (long-term) horizon when calculating the investment return assumption. GASB Statement No. 67, ¶44, provides in part as follows:

> "The long-term expected rate of return should be based on the nature and mix of current and expected pension plan investments over a period representative of the expected length of time between (a) the point at which a plan member begins to provide service to the employer and (b) the point at which all benefits to the plan member have been paid." [4]

Another way to test the reasonableness of the FRS actuary's methodology is to compare his capital market expectations against that of investment advisors at-large (peer analysis). Here are excerpts of reports from investment advisory sources other than those surveyed by Horizon:

"The distribution of assumed rates of returns across the Public Pension plans nationally has also evolved. The percentage of plans with assumed rates at or above 8.0% has shrunk considerably while the vast majority of plans reside somewhere in the 7.0 to 7.5% range." [5]

A NASRA report showing the investment return assumption announced or in use as of February 2018 by 129 public pension plans across the country showed 30 plans with an assumption ≤ 7.0%, 12 plans with an assumption ≥ 8.0%. 87 plans ranged between the two, with 62 of those exceeding 7.3%. [6]

An NCPERS report states, in part, that "The 2017 Study shows the average discount rate of the 164 plans is 7.5%." [7]

This review of expectations shows that the FRS actuary's 7.3% assumption, when subjected to peer analysis, is reasonable and comfortably in the mainstream. For all the reasons stated above, the recommendation made by the LLA's actuary should be respectfully declined.

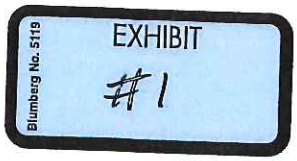
# # #

Submitted on behalf of the
FRS Board of Trustees

Steven S. Stockstill
FRS Executive Director
Date: February 20, 2019

**Endnotes-**

1. http://www.actuarialstandardsboard.org/glossary/reasonable/ (see attached Exhibit#1)
2. Email/Curran-Stockstill/09-14-18 (see attached Exhibit #2)
3. Survey of Capital Market Assumptions, 2018 Edition; Horizon Actuarial Services, LLC (see attached Exhibit#3)
4. GASB Standard No. 67 (see attached Exhibit #4)
5. New England Pension Consultants (NEPC) publication (see attached Exhibit #5)
6. National Association of State Retirement Administrators (see attached Exhibit #6)
7. National Conference on Public Employee Retirement Systems (see attached Exhibit #7)




http://www.actuarialstandardsboard.org/glossary/reasonable/

In many instances, the ASOPs call for the actuary to take "reasonable" steps, make "reasonable" inquiries, select "reasonable" assumptions or methods, or otherwise exercise professional judgment to produce a "reasonable" result when rendering actuarial services. The intent is to call upon the actuary to exercise the level of care and diligence that, in the actuary's professional judgment, is necessary to complete the assignment in an appropriate manner.

Because actuarial practice commonly involves the estimation of uncertain events, there will often be a range of reasonable methods and assumptions, and two actuaries could follow a particular ASOP, both using reasonable methods and assumptions, and reach different but reasonable results. (ASOP No. 1)

ASOP No. 1—March 2013

2.10 *Reasonable*—In many instances, the ASOPs call for the actuary to take "reasonable" steps, make "reasonable" inquiries, select "reasonable" assumptions or methods, or otherwise exercise professional judgment to produce a "reasonable" result when rendering actuarial services. The intent is to call upon the actuary to exercise the level of care and diligence that, in the actuary's professional judgment, is necessary to complete the assignment in an appropriate manner.

**Because actuarial practice commonly involves the estimation of uncertain events, there will often be a range of reasonable methods and assumptions, and two actuaries could follow a particular ASOP, both using reasonable methods and assumptions, and reach different but reasonable results.**

http://www.actuarialstandardsboard.org/profcounts/asop-no-1-and-professional-judgment/

ASOP NO. 1 AND PROFESSIONAL JUDGMENT
Home » ASOP No. 1 and Professional Judgment

By Maryellen Coggins, Chairperson, Actuarial Standards Board

Actuarial Standard of Practice (ASOP) No. 1, Introductory Actuarial Standard of Practice, tells us that "ASOPs provide the actuary with an analytical framework for exercising professional judgment." How should actuaries understand the relationship between professional judgment and the standards of practice that they are required to satisfy under the Code of Professional Conduct?

ASOP No. 1 does not define "professional judgment," but rather explains it by referring to what is needed to exercise it:

"Professional judgment—Actuaries bring to their assignments not only highly specialized training, but also the broader knowledge and understanding that come from experience."

In other words, the ASOPs provide a framework within which actuarial training and experience—resulting in actuarial expertise—enables the application of professional judgment when performing actuarial services. (It is worth noting that ASOP No. 1's description of professional judgment also connects important dots between the ASOPs and the U.S. Qualification Standards, which are grounded in basic education and experience, as well as continuing education.)

Professional judgment is not subordinate to standards of practice, but married to them to form a cohesive (and happy!) union. ASOP No. 1 clarifies that "while ... ASOPs are binding, they are not the only considerations that affect an actuary's work." Those "other considerations" include "the actuary's own professional judgment informed by the nature of the engagement." In other words, ASOPs are not substitutes for professional judgment. They are predicated upon its proper exercise.

ASOPs also do not give free rein to individual judgment (no matter how expert). Instead, ASOPs discipline the exercise of judgment. ASOPs, for example, "allow for the actuary to use professional judgment when selecting methods and assumptions, conducting an analysis, and reaching a conclusion," but within the parameters of what a particular ASOP requires an actuary to "consider, do, document, and disclose." The effect is not so much striking a balance between prescription and know-how as achieving synergy between disciplined process and qualified expertise so that the actuary can successfully provide actuarial services in a complex world of risk and uncertainty where "actuaries can reasonably reach different conclusions when faced with the same facts."

This analytical framework is reinforced throughout ASOP No. 1. Consider the following terms explained in ASOP No. 1 and used throughout the ASOPs. Each of these terms effectively sets a standard for the actuary and describes the role of judgment in meeting the standard:

**Materiality:** "An item ... is material if its omission or misstatement could influence a decision of an intended user. ... The actuary should evaluate materiality of the various aspects of the task using professional judgment."

**Reasonable:** The ASOPs may "call for the actuary to take 'reasonable' steps. ... The intent is to call upon the actuary to exercise the level of care and diligence that, in the actuary's professional judgment, is necessary to complete the assignment in an appropriate manner." Similar parallel constructions are included or the terms "practical/practicable" and "significance/significant."

Perhaps nowhere in ASOP No. 1 is the analytical framework for the exercise of judgment better highlighted than in the sections dealing with deviation from standards of practice. Where an ASOP uses the term "must," ASOP No. 1 says, "The ASB does not anticipate that the actuary will have any reasonable alternative but to follow a particular course of action." The word "should," by contrast "indicates what is normally the appropriate practice for an actuary to follow when rendering actuarial services."

Even where these terms are used in standards of practice, ASOP No. 1 recognizes that "situations may arise where the actuary applies professional judgment and concludes that complying with [a particular] practice would be inappropriate, given the nature of the assignment and the principal's needs." In such instances, ASOP No. 1 directs the actuary to comply with the disclosure requirements of ASOP No. 41, Actuarial Communications, which states that "[i]f, in the actuary's professional judgment, the actuary has deviated materially from the guidance set forth in an applicable ASOP ... the actuary can still comply with that ASOP by providing an appropriate statement in the actuarial communication with respect to

the nature, rationale, and effect of such deviation." The ASOPs trust the judgment of qualified actuaries even as they require reasoned explanations for deviations from the standards.

And doing so in the context of principle-based standards that define appropriate actuarial practice is appropriate. As former ASB Chairperson Bob Meilander wrote in 2013, "The ASB strives to assure that the ASOPs address those situations that require professional judgment, as that is what our profession is trained to do and should be able to do with excellence." ASOP No. 1 provides the analytical framework that pairs professional judgment with principle-based standards that actuaries can use to achieve such excellence in the provision of actuarial services.

(Featured in the August 2016 Actuarial Update.)

**Steven Stockstill**

**From:** GREG CURRAN [redacted]
**Sent:** Friday, September 14, 2018 8:52 PM
**To:** Steven Stockstill; Layne McKinney
**Cc:** EDMONSON, NICOLE [redacted]; Jim.Rizzo [redacted]
**Subject:** LLA Data Request
**Attachments:** M - 09142018 - Inflation Assumptions.pdf

Steven/Layne,

We have completed our analysis of the inflation assumption and valuation interest rate for the June 30, 2018 actuarial valuation for FRS. Attached is copy of our memo on the inflation assumption. Within this memo, we review the sources we reviewed in setting our long-term inflation assumption reasonable range. In addition, we have considered that NEPC's long-term inflation assumption is 2.75%. Given the reasonable range discussed within our memo on inflation and the assumption of your investment consultant, we expect to reduce the inflation assumption for the June 30, 2018 actuarial valuation to 2.7%. We further expect to reduce the inflation assumption to 2.5% as the system's valuation interest rate is reduced to 7% in accordance with the Board's planned reductions. We do not recommend immediately reflecting lower inflation expectations in the salary scale assumption since we are scheduled to perform an experience study in the next couple of years. We believe that such a change would be appropriate at the time we do our next experience study. By not moving to immediately incorporate the lower long-term inflation in our salary scale, we believe that the current salary scale would be slightly conservative but still appropriate. Should our next experience study find that expected salary increases are lower than past expectations, the reduction in salary scale will act to offset the cost increases due to further changes in the valuation interest rate.

Further, after completion of our analysis of the valuation interest rate based upon the FRS target asset allocation and the updated capital market assumptions, we find that Board approved valuation interest rate planned for the June 30, 2018 actuarial valuation of 7.3% is within the reasonable range based upon a long-term assumed rate of return. Therefore, we will not be recommending any change to the Board approved plan for reducing the rate.

Upon completion of the approved plan for the valuation interest rate, we intend to perform further review and provide a written recommendation to the Board with regard to whether or not we feel that further reduction is warranted. We, of course, will review the assumption each year to be sure that it remains within our range of reasonable assumptions for a portfolio positioned like FRS.

In answer to Item 7 of the FRS Data Request from the LLA, the attached memo and comments above should suffice for 7(a), my comments above should provide the LLA with an update related to 7(b) and the future investment return assumptions, and we have not recommended any other changes in assumption or methods since the June 30, 2017 actuarial valuation. We will speak with the Board about the timing of the next experience study over the course of the coming year.

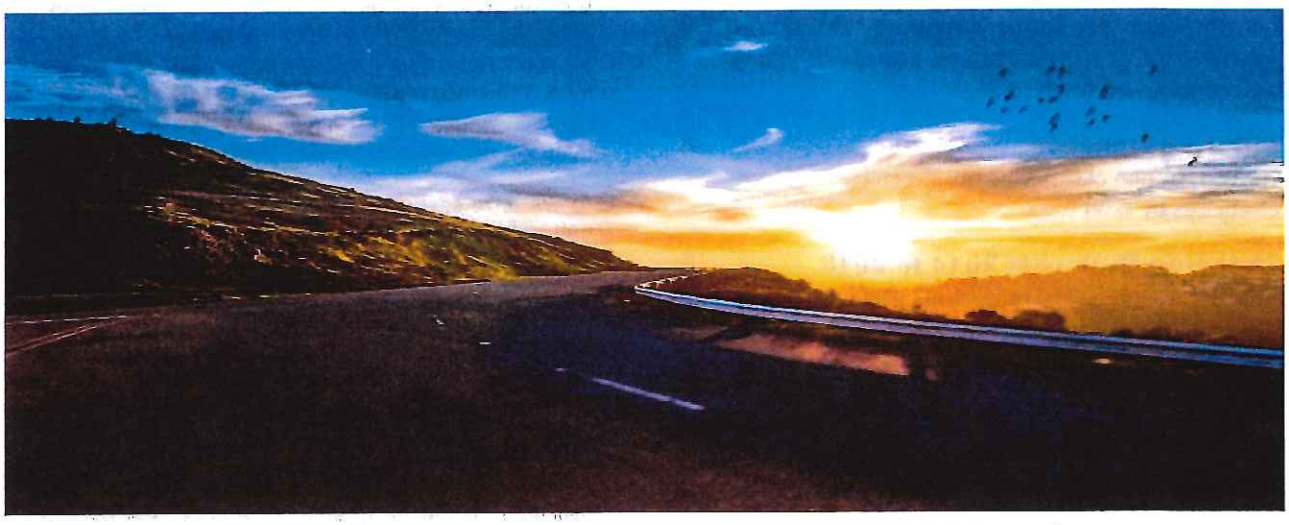
I have copied Nicole Edmonson and Jim Rizzo on this email since you asked that we provide this information to the LLA on your behalf. If you would like any additional information, please don't hesitate to ask. I have also instructed my staff to provide the LLA with the initial valuation data received by FRS in the next few days. We continue to perform our data analysis and upon completion of our data review, we will pass along our final data to the LLA for their use in running a 2018 valuation.

Greg Curran

Horizon
Actuarial Services, LLC

# Survey of Capital Market Assumptions

## 2018 Edition



Horizon Actuarial Services, LLC is proud to serve as the actuary to over 100 multiemployer defined benefit pension plans across the United States and across various industries. As actuary to these plans, we must develop assumptions regarding future investment returns on plan assets. We then use those assumptions as we determine the actuarial values of the benefits promised by these plans to their participants and beneficiaries, as well as to project plan funding and solvency levels years into the future.

At Horizon Actuarial, we are actuaries, not investment professionals. Therefore, when developing assumptions as to what returns a pension plan's assets might be expected to earn in the future, we look to our colleagues in the investment advisory community. Each year, as part of this survey, we ask different investment firms to provide their "capital market assumptions" – their expectations for future risk and returns for different asset classes in which pension plans commonly invest. The information gathered from this survey can help answer the common question: "Are my plan's investment return assumptions reasonable?"

There are many factors to consider when evaluating a plan's investment return assumptions, such as its asset allocation and the maturity of its participant population. Any of these factors can make the expected return for one plan very different from others. Therefore, this report does not opine on the reasonableness of any one plan's investment return assumptions. Nevertheless, we hope this report will be a useful resource for trustees, actuaries, and investment professionals alike.

***Horizon Actuarial sincerely thanks the 34 investment advisors who participated in this survey.***

Atlanta ▪ Cleveland ▪ Denver ▪ Irvine ▪ Los Angeles
Miami ▪ San Diego ▪ Washington, D.C.

 www.horizonactuarial.com Published: August 2018

# Survey of Capital Market Assumptions: 2018 Edition

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*Horizon Actuarial Services, LLC is an independent consulting firm specializing in providing actuarial and consulting services to multiemployer benefit plans. Horizon Actuarial does not provide investment, legal, or tax advice. Please consult with your investment advisor, legal counsel, or tax advisor for information specific to your plan's investment, legal, or tax implications.*

## Summary


Horizon Actuarial first conducted this survey in 2010, and it included 8 investment advisors. In 2012, we first published a report on the survey results, which included 17 advisors. The survey has expanded considerably over the past few years; this 2018 edition of the survey includes assumptions from 34 different investment firms.

In general, expected returns have declined in recent years. When we focus on the 22 advisors who participated in each of the last five surveys, we see that expected returns for equity and alternative investments generally decreased from 2014 to 2018. During the same period, expected returns for core fixed income and U.S. Treasuries have remained relatively flat. Expected volatilities for alternative investments have decreased in recent years, but have not changed significantly for other asset classes.

As we have seen in prior surveys, expected returns are noticeably lower over the short term than over the long term. This trend is apparent when we focus on the 13 advisors who provided assumptions for both the short term (up to 10 years) and long term (20 years or more). In fact, the difference between short-term and long-term expectations is more pronounced in this 2018 survey than it has been in any year since the survey began developing separate 10-year and 20-year expected returns in 2013.

For ongoing pension plans without solvency issues, we believe a horizon of 20 years or more is appropriate for evaluating the reasonableness of the long-term investment return assumption. A shorter horizon, such as 10 years, may be more appropriate for evaluating the return assumption for a plan that is more mature or has solvency issues. Even for plans with long-term investment horizons, it is important to understand the potential impact of lower expected returns over the short term. Therefore, this survey shows return expectations over horizons of both 10 years and 20 years.

For illustration, this report also constructs an asset allocation for a hypothetical multiemployer pension plan and uses the results from the survey to develop a range of reasonably expected returns for the plan. When compared to the 2017 edition of the survey, the expected returns for this 2018 edition were lower over 10-year and 20-year horizons by 23 and 16 basis points, respectively. These decreases were primarily driven by lower expected returns across most asset classes for many of the advisors who participated in both the 2017 survey and the 2018 survey.

If you have questions about how the results of this survey relate to your multiemployer plan, please contact your consultant at Horizon Actuarial or visit the "contact us" page on our website, www.horizonactuarial.com. For questions about the survey itself, please contact Ben Ablin at ben.ablin@horizonactuarial.com.

## Survey Participants

Exhibit 1 below lists the 34 investment advisors whose capital market assumptions are included in the 2018 survey. This report does not attribute specific assumptions to individual firms, which is a precondition of the survey.

Originally, this survey was exclusive to the multiemployer plan community; it included only assumptions from investment advisors to multiemployer pension plans. The survey has expanded over the years, and it now includes assumptions from investment advisors outside of the multiemployer plan community.

Of the 34 sets of capital market assumptions included in the 2018 edition of the survey, 27 were provided by investment advisors to multiemployer plans, 4 were obtained from published white papers, and 3 were provided by investment advisors who do not consult with multiemployer plans. A complete listing of the firms participating in the survey is provided below.

***Exhibit 1***

| 2018 Survey Participants | |
|---|---|
| *AJ Gallagher* | *Marquette Associates* |
| *Alan Biller* | *Meketa Investment Group* |
| *AndCo Consulting* | *Merrill Lynch Global Institutional Consulting* |
| *Aon Hewitt* | *Morgan Stanley Wealth Management* |
| *The Atlanta Consulting Group* | *New England Pension Consultants (NEPC)* |
| *Bank of New York Mellon** | *Pavilion Advisory Group* |
| *BlackRock** | *Pension Consulting Alliance* |
| *Callan Associates* | *PFM Asset Management, LLC* |
| *Cambridge Associates* | *RVK* |
| *CapTrust* | *Segal Marco Advisors* |
| *Ellwood Associates* | *SEI* |
| *Envestnet*** | *Sellwood Consulting* |
| *Goldman Sachs Asset Management* | *Summit Strategies Group* |
| *Graystone Consulting* | *UBS* |
| *Investment Performance Services, LLC (IPS)* | *Verus* |
| *Janney Montgomery Scott, LLC* | *Voya Investment Management** |
| *J.P. Morgan Asset Management** | *Willis Towers Watson*** |

* Assumptions obtained from published white paper
** Advisor from outside multiemployer community

## Investment Horizons

When evaluating the expected return assumption for an active, ongoing multiemployer pension plan, actuaries usually consider investment returns over a long-term investment horizon of 20 years or more. A shorter time horizon, say over the next 10 years, may be more appropriate when evaluating the return assumption for a mature plan, a plan that has high negative cash flows, or a plan that is projected to become insolvent.

It is also important to understand the sensitivity of plan funding to changes in future investment returns. For example, the actuary for an active, ongoing pension plan will typically set the plan's investment return assumption based on expectations over a long-term horizon. However, evaluating the sensitivity of funding results to short-term investment returns that are expected to be higher or lower than the long-term assumption also plays an integral role in the decision making process.

Survey participants were requested to provide their most recent capital market assumptions: expected returns for different asset classes, standard deviations (i.e., volatilities) for those expected returns, and a correlation matrix. The survey participants were also requested to indicate the investment horizon(s) to which their assumptions apply. If the participant develops separate assumptions for different time horizons, they were requested to provide each set of assumptions.

In the 2018 edition of the survey, 21 advisors provided one set of assumptions: of those, 19 specified a time horizon of 10 years and 2 specified a time horizon of 10 to 15 years. The remaining 13 advisors provided assumptions over both shorter-term (5 to 10 years) and longer-term (20 years or more) horizons.

Exhibit 2 below summarizes the time horizons specified by each advisor, grouped by type.

***Exhibit 2***

**Investment Time Horizons**

| Advisor Type | (A) | (B) | (C) | Total |
|---|---|---|---|---|
| 10 Years | 14 | 3 | 2 | 19 |
| 10 to 15 Years | 1 | 1 | - | 2 |
| Both Short- and Long-Term | 12 | - | 1 | 13 |
| Total | 27 | 4 | 3 | 34 |

(A) Multiemployer plan investment advisor
(B) Published white paper
(C) Advisor from outside multiemployer community

## Short-Term vs. Long-Term

As noted in the previous section, survey participants provided expected returns over different time horizons. Given current market conditions, many investment advisors may expect returns for certain asset classes to be different in the short term versus over the long term.

For comparability, this survey groups expected returns into two time horizons: 10 years and 20 years. As pension plan actuaries, we often refer to the 10-year expected returns as "short-term" and the 20-year expected returns as "long-term." Note, however, that many investment firms consider 10-year expectations to be "long-term."

When comparing the expected returns for the 13 advisors who provided both short-term and long-term assumptions,[1] we see some interesting differences. See Exhibit 3 below. Expected returns are geometric and are generally considered to be indexed and net of fees.

***Exhibit 3***

**Average Expected Returns: Short-Term vs. Long-Term**
***Subset of 13 Survey Respondents***

| Asset Class | 10-Year Horizon | 20-Year Horizon | Difference |
|---|---|---|---|
| US Equity - Large Cap | 6.24% | 7.42% | 1.18% |
| US Equity - Small/Mid Cap | 6.97% | 8.18% | 1.21% |
| Non-US Equity - Developed | 7.05% | 7.71% | 0.66% |
| Non-US Equity - Emerging | 7.85% | 8.82% | 0.97% |
| US Corporate Bonds - Core | 3.59% | 4.46% | 0.87% |
| US Corporate Bonds - Long Dur. | 3.36% | 4.44% | 1.08% |
| US Corporate Bonds - High Yield | 4.81% | 5.82% | 1.01% |
| Non-US Debt - Developed | 2.19% | 3.22% | 1.03% |
| Non-US Debt - Emerging | 5.24% | 6.13% | 0.89% |
| US Treasuries (Cash Equivalents) | 2.51% | 3.05% | 0.54% |
| TIPS (Inflation-Protected) | 3.23% | 4.04% | 0.81% |
| Real Estate | 5.87% | 6.66% | 0.79% |
| Hedge Funds | 5.46% | 6.19% | 0.73% |
| Commodities | 4.73% | 4.92% | 0.19% |
| Infrastructure | 6.77% | 7.14% | 0.37% |
| Private Equity | 8.59% | 9.52% | 0.93% |
| Inflation | 2.41% | 2.47% | 0.06% |

*The 10-year and 20-year returns shown above are the averages for the 13 advisors who provided both short-term and long-term assumptions.*
*Expected returns are annualized (geometric).*

The consensus among these 13 advisors was that returns are expected to be lower in the short term compared to the long term. In general, the difference between long-term and short-term returns is more pronounced for US equity and fixed income investments.

As noted earlier, the results shown in Exhibit 3 are based on a subset of 13 advisors. If we include all 34 survey advisors, the short-term and long-term expected returns do not change dramatically. See Exhibit 4 below.

***Exhibit 4***

**Average Expected Returns: Short-Term vs. Long-Term**
***All Survey Respondents***

| Asset Class | 10-Year Horizon | 20-Year Horizon | Difference |
|---|---|---|---|
| US Equity - Large Cap | 6.07% | 7.42% | 1.35% |
| US Equity - Small/Mid Cap | 6.57% | 8.18% | 1.61% |
| Non-US Equity - Developed | 6.71% | 7.71% | 1.00% |
| Non-US Equity - Emerging | 7.64% | 8.82% | 1.18% |
| US Corporate Bonds - Core | 3.37% | 4.46% | 1.09% |
| US Corporate Bonds - Long Dur. | 3.32% | 4.44% | 1.12% |
| US Corporate Bonds - High Yield | 4.78% | 5.82% | 1.04% |
| Non-US Debt - Developed | 2.18% | 3.22% | 1.04% |
| Non-US Debt - Emerging | 5.00% | 6.13% | 1.13% |
| US Treasuries (Cash Equivalents) | 2.48% | 3.05% | 0.57% |
| TIPS (Inflation-Protected) | 2.88% | 4.04% | 1.16% |
| Real Estate | 5.90% | 6.66% | 0.76% |
| Hedge Funds | 4.96% | 6.19% | 1.23% |
| Commodities | 3.97% | 4.92% | 0.95% |
| Infrastructure | 6.56% | 7.14% | 0.58% |
| Private Equity | 8.33% | 9.52% | 1.19% |
| Inflation | 2.24% | 2.47% | 0.23% |

*10-year horizon results include all 34 survey respondents.*
*20-year horizon results include a subset of 13 survey respondents.*
*Expected returns are annualized (geometric).*

The 10-year expected returns shown above include assumptions from all 34 advisors, while the 20-year expected returns include assumptions from only the 13 advisors who provided longer-term assumptions.

While past editions of this survey have indicated lower expected returns over the short term than over the long term, the difference has increased in recent years for most asset classes. For example, the difference between short term expected returns and long term expected returns for large cap US equity based on the average assumptions from the 2018 survey is 135 basis points. For comparison, the difference was 88 basis points based on the average assumptions from the 2014 survey.

For this reason, it may be more important than ever for the actuary to evaluate the sensitivity of funding results to short-term investment returns that are expected to be lower than the long-term assumption.

[1] In cases where an advisor indicated a time horizon shorter than 10 years, the shorter-term expected returns were combined with the longer-term expected returns to achieve a 10-year horizon. Similarly, if an advisor indicated a time horizon longer than 20 years, the longer-term expected returns were combined with the shorter-term expected returns to achieve a 20-year horizon.

## Differing Opinions

Exhibit 5 below shows the distribution of expected returns and standard deviations (i.e., volatilities) for each asset class in the survey, as provided by the 34 individual advisors in the survey. Expected returns are geometric and apply to a 10-year investment horizon. Average assumptions from the 2018 survey are listed in brackets for each asset class. As noted earlier, returns are assumed to be indexed and net of fees.

Note that the exhibit below focuses on a 10-year horizon in order to include assumptions from all 34 advisors. See Exhibit 16 in the appendix to this report for the assumptions over a 20-year horizon, based on the 13 advisors who provided longer-term assumptions. Also note that the exhibit considers both expected returns and standard deviations. The ranges of expected returns by asset class can be found in the appendix as Exhibits 17 and 18.

The exhibit below shows that there are significant differences in expected returns and standard deviations among investment advisors. As the saying goes, "reasonable people may differ."

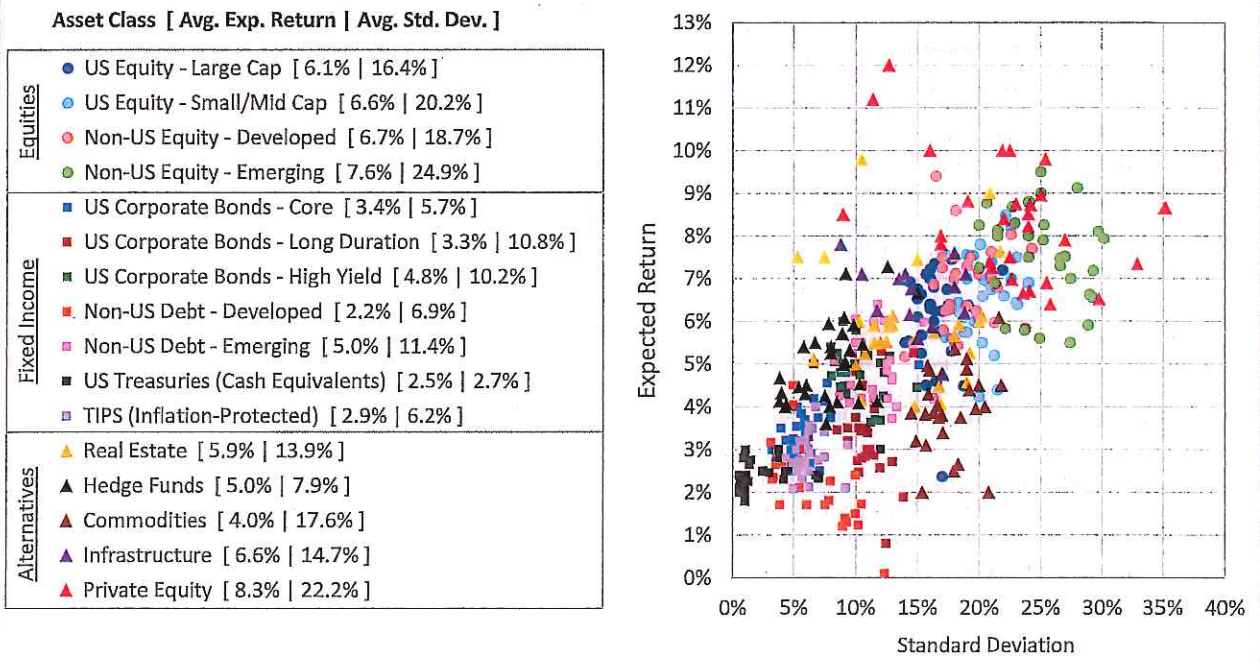
The differences in assumptions are more pronounced for alternative investments such as real estate, hedge funds, and private equity. A contributing factor may be differences in the underlying strategies different advisors apply to these alternative investments (for example, opportunistic versus defensive). To contrast, the differences in expected returns and volatilities are smaller for more traditional investments, such as US equity and US fixed income.

A summary of the average survey assumptions can be found in the appendix to this report as Exhibit 15. This summary includes expected returns, standard deviations, and a correlation matrix.

***Exhibit 5***

**2018 Survey: Distribution of Expected Returns and Standard Deviations**

10-Year Horizon | Geometric Returns



## Changing Outlooks: 2014 to 2018

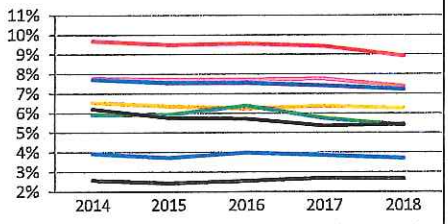
In recent years, there has been much discussion about whether it is reasonable to expect that future investment returns will be as high as they have been historically. Citing various reasons such as increased equity prices, tightening credit spreads, and continuing low interest rates, many advisors have lowered their expectations over the last five years, especially from 2017 to 2018.

Exhibit 6 below shows average expected returns for selected asset classes each year from 2014 to 2018. For consistency, this exhibit includes only the 22 advisors who participated in the survey in each of these years.

Note that the expected returns shown below are based on a 20-year horizon for advisors who provided longer-term assumptions and a 10-year horizon for others.[2] For that reason (as well as the fact that we include only a subset of advisors), the expected returns shown below are not directly comparable with those in other sections or previous surveys.

***Exhibit 6***

**Average Expected Returns: 2014 - 2018**




| | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|
| Private Equity | 9.7% | 9.5% | 9.6% | 9.4% | 8.9% |
| Non-US Eq. (Dev) | 7.8% | 7.7% | 7.7% | 7.8% | 7.4% |
| US Eq. (Large Cap) | 7.7% | 7.5% | 7.5% | 7.4% | 7.2% |
| Real Estate | 6.5% | 6.4% | 6.2% | 6.4% | 6.2% |
| US Bonds (HY) | 5.9% | 5.9% | 6.4% | 5.7% | 5.4% |
| Hedge Funds | 6.2% | 5.8% | 5.7% | 5.4% | 5.4% |
| US Bonds (Core) | 3.9% | 3.7% | 4.0% | 3.9% | 3.7% |
| US Treasuries | 2.6% | 2.4% | 2.5% | 2.7% | 2.7% |

Figures are average geometric returns for selected asset classes for the 22 advisors who participated in each of the surveys from 2014 through 2018.

For this subset of advisors, average expected returns have decreased for every asset class except US Treasuries over the last five years. The sharpest declines from 2017 to 2018 were for the asset classes with the highest expected returns – private equity and non-US developed equity.

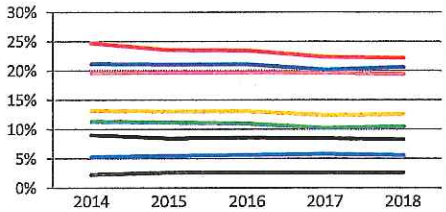
Other asset classes, such as large cap US equity, real estate, high-yield bonds, and hedge funds have seen more gradual declines over the course of the last five years.

Average expected returns asset classes with lower expected returns such as core fixed income and US Treasuries remained relatively flat from 2014 to 2018.

In addition to expected returns, it is also important to consider expected volatility of the returns, measured by standard deviations. Average standard deviations over the last five years are shown in Exhibit 7 below.

***Exhibit 7***

**Average Standard Deviations: 2014 - 2018**




| | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|
| Private Equity | 24.8% | 23.6% | 23.4% | 22.3% | 22.2% |
| Non-US Eq. (Dev) | 19.7% | 19.7% | 19.7% | 19.7% | 19.5% |
| US Eq. (Large Cap) | 21.2% | 21.1% | 21.1% | 20.1% | 20.6% |
| Real Estate | 13.2% | 13.1% | 13.1% | 12.4% | 12.6% |
| US Bonds (HY) | 11.4% | 11.2% | 11.0% | 10.3% | 10.5% |
| Hedge Funds | 9.0% | 8.5% | 8.6% | 8.4% | 8.3% |
| US Bonds (Core) | 5.3% | 5.5% | 5.6% | 5.8% | 5.6% |
| US Treasuries | 2.3% | 2.6% | 2.6% | 2.6% | 2.6% |

Figures are average standard deviations for selected asset classes for the 22 advisors who participated in each of the surveys from 2014 through 2018.

In general, average standard deviations have decreased from 2014 to 2018. This decrease may be related to the decrease in average expected returns over the same period as investments with lower expected returns are often less volatile than investments with higher expected returns. This trend of decreasing standard deviations is most apparent for private equity, but noticeable shifts have occurred for large cap US equities, real estate, and high-yield bonds as well.

On the contrary, average standard deviations have increased for investments whose returns are more closely tied to interest rates such as core US bonds and US Treasuries. This increase may indicate greater uncertainty about the timing of future changes in interest rates or the rate at which those rates are expected to change.

[2] Of the 13 survey advisors who provided both shorter-term and longer-term assumptions, 11 of them indicated no difference in the standard deviations of the expected returns over the short term versus the long term. For the other 2 advisors, the differences between short-term and long-term standard deviations were very minor.

## Evaluating the Return Assumption

Multiemployer pension plans are usually invested in a well-diversified mix of stocks, bonds, real estate, and alternative investments structured to meet the goals of the Trustees. This typically involves maximizing returns over the long term while minimizing return volatility.

The actuary of a multiemployer pension plan must evaluate the plan's asset allocation and, based on expectations of future returns, develop an assumption for what plan assets are projected to earn over the long term. This assumption is then used (along with others) to determine the actuarial present value of the benefits promised by the plan to its participants and beneficiaries.

The actuary will often rely on the future return expectations of the plan's investment advisor in developing the plan's investment return assumption. However, as noted earlier, different investment advisors often have widely differing opinions on what future returns will be. Therefore, it can be beneficial to keep in mind other advisors' expectations when setting the investment return assumption.

In the following exhibits, we will evaluate the investment return assumption for a hypothetical multiemployer pension plan. Exhibit 8 below shows the asset allocation for this hypothetical plan. The asset allocations are arbitrary, except for the fact that we made sure to include at least a small allocation to every asset class in the survey.

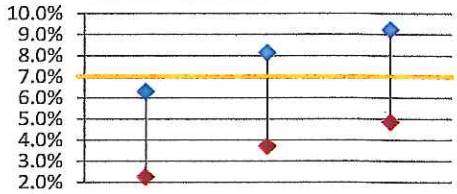
***Exhibit 8***

| Hypothetical Multiemployer Plan | |
|---|---|
| **Asset Class** | **Weight** |
| US Equity - Large Cap | 20.0% |
| US Equity - Small/Mid Cap | 10.0% |
| Non-US Equity - Developed | 7.5% |
| Non-US Equity - Emerging | 5.0% |
| US Corporate Bonds - Core | 7.5% |
| US Corporate Bonds - Long Duration | 2.5% |
| US Corporate Bonds - High Yield | 5.0% |
| Non-US Debt - Developed | 5.0% |
| Non-US Debt - Emerging | 2.5% |
| US Treasuries (Cash Equivalents) | 5.0% |
| TIPS (Inflation-Protected) | 5.0% |
| Real Estate | 10.0% |
| Hedge Funds | 5.0% |
| Commodities | 2.5% |
| Infrastructure | 2.5% |
| Private Equity | 5.0% |
| **TOTAL PORTFOLIO** | **100.0%** |

Exhibit 9 shows expected annualized (geometric) returns for the hypothetical plan over a 10-year horizon. These results may be appropriate for modeling sensitivities of future funding results to short-term investment returns, or for evaluating the return assumption for a plan with severely negative cash flows or solvency issues.

***Exhibit 9***

**Annualized Expected Returns**
Hypothetical Multiemployer Pension Fund
***10-Year Horizon***

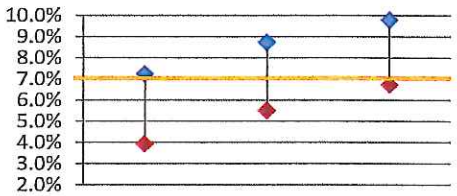



| | Conservative Advisor | Survey Average | Optimistic Advisor |
|---|---|---|---|
| ◆ 75th percentile | 6.32% | 8.16% | 9.25% |
| ◆ 25th percentile | 2.27% | 3.73% | 4.87% |
| *Probability of Meeting or Exceeding:* | | | |
| 7.50% per Year | 14.2% | 31.8% | 44.6% |
| 7.00% per Year | 18.3% | 37.4% | 50.7% |
| 6.50% per Year | 23.1% | 43.3% | 56.8% |

Exhibit 10 shows expected annualized (geometric) returns for the hypothetical plan over a 20-year horizon based on assumptions from the 13 advisors who provided longer-term assumptions. These results may be more appropriate for evaluating the return assumption for an ongoing plan with no projected solvency issues.

***Exhibit 10***

**Annualized Expected Returns**
Hypothetical Multiemployer Pension Fund
***20-Year Horizon***




| | Conservative Advisor | Survey Average | Optimistic Advisor |
|---|---|---|---|
| ◆ 75th percentile | 7.25% | 8.73% | 9.80% |
| ◆ 25th percentile | 3.92% | 5.50% | 6.73% |
| *Probability of Meeting or Exceeding:* | | | |
| 7.50% per Year | 21.9% | 43.7% | 63.1% |
| 7.00% per Year | 28.3% | 52.0% | 71.0% |
| 6.50% per Year | 35.6% | 60.2% | 78.0% |

## Evaluating the Return Assumption (cont)

It is important to keep in mind that the expected returns shown in Exhibits 9 and 10 apply only to the hypothetical asset allocation shown in Exhibit 8. The expected returns will be different – perhaps significantly – for different asset allocations.

Exhibit 13 in the appendix to this report shows more detail regarding the derivation of the expected returns for this hypothetical pension plan.

The following are points to consider when reviewing the results in Exhibits 9 and 10:

Range of Reasonable Assumptions: When setting the investment return assumption for pension valuations, actuaries traditionally constructed a range of reasonable assumptions and then selected a best-estimate point within that range. Actuaries would often consider the reasonable range to be the middle 50 percent of possible results, bounded by the 25th and 75th percentiles.

The applicable actuarial standards of practice were updated in 2013, and the new standards de-emphasize use of the reasonable range when setting the investment return assumption. Nevertheless, considering this range remains instructive; it may be difficult for an actuary to justify an assumption outside of this range.

Based on the average assumptions in this 2018 survey, the middle 50 percent range for this hypothetical pension plan is very wide: 5.50% to 8.73% over the next 20 years. Note that the range is even wider for a 10-year horizon: 3.73% to 8.16%. This is due to the fact that, while returns may be volatile from one year to the next, deviations will be lower when returns are annualized (in other words, smoothed out) over longer horizons.

Probability of Meeting/Exceeding the Benchmark: For example, say that the actuary for this hypothetical pension plan expects its investment returns to be 7.00% per year, represented by the gold lines in Exhibits 9 and 10. Based on the average assumptions in this 2018 survey, there is a 52.0% probability the plan will meet or beat its 7.00% benchmark on an annualized basis over a 20-year period. The probability is lower, 37.4%, that the plan will meet or beat its benchmark over the next 10 years.

Also note that over a 20-year period, the probability that the annualized investment return will exceed 7.50% (arbitrarily, 50 basis points above the benchmark return) is 43.7%. The probability that the annualized return will exceed 6.50% (50 basis points below the benchmark) is 60.2%. These probabilities are a bit lower when focusing on a 10-year horizon rather than a 20-year horizon.

Optimistic and Conservative Assumptions: As previously noted, different investment advisors may have widely varying future capital market expectations. Therefore, it may also be interesting to consider the range of expected returns based on the assumptions provided by the most conservative and most optimistic advisors in the survey.

For this hypothetical asset allocation, the assumptions from the most conservative advisor indicate that the probability of beating the 7.00% benchmark assumption over the next 20 years is 28.3%. Using assumptions from the most optimistic advisor results in a probability of 71.0%. Again, reasonable people may differ.

Limitations: The following are some important limiting factors to keep in mind when reviewing these results. In most cases, adjustments made to account for these limitations tended to slightly lower the expected returns in the survey, for the sake of conservatism.

- The asset classes in this survey do not always align perfectly with the asset classes provided by the investment advisors. Adjustments were made to standardize the different asset classes provided.
- Many of the advisors develop their future assumptions based on investment horizons of no more than 10 years, and returns are generally expected to be lower in the short term. The typical multiemployer pension plan will have an investment horizon that is much longer than 10 years.
- The return expectations are based on indexed returns. In other words, they do not reflect any additional returns that may be earned due to active asset managers outperforming the market ("alpha"), net of investment expenses.
- The return expectations do not adjust for plan size. Specifically, they do not take into account the fact that certain investment opportunities are more readily available to larger plans, as well as the fact that larger plans may often receive more favorable investment fee arrangements than smaller plans.
- The ranges of expected annualized returns were constructed using basic, often simplified, formulas and methodologies. More sophisticated investment models – which may consider various economic scenarios, non-normal distributions, etc. – could produce significantly different results.

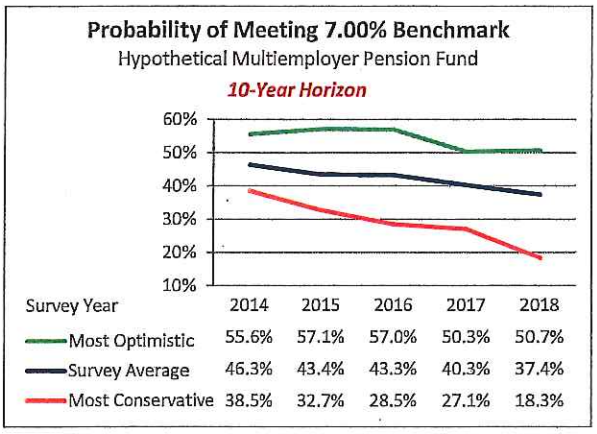
Use of the Survey: This survey is not intended to be a substitute for the expectations of individual portfolio managers, advisors, or actuaries performing their own independent analyses. The actuarial standards of practice provide for various methods of selecting the investment return assumption. This survey is intended to be used in conjunction with these methods, with appropriate weighting of various resources based on the plan actuary's professional judgment.

## Comparison with Prior Surveys

Exhibits 6 and 7 showed how expected returns and standard deviations for certain asset classes have changed over the past few years. Similarly, Exhibits 11 and 12 below show how return expectations for the hypothetical multiemployer pension plan whose asset allocation is shown in Exhibit 8 have changed from 2014 to 2018.

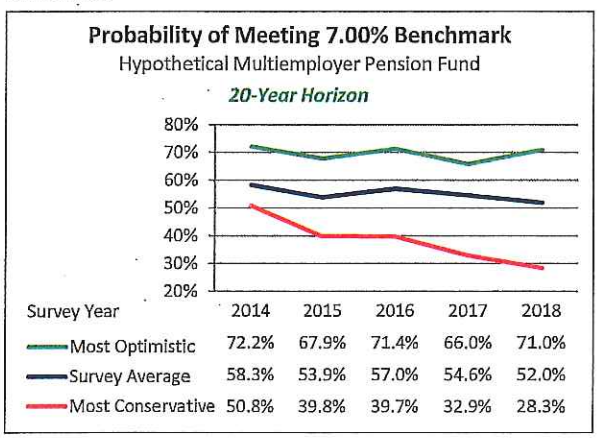
Both exhibits show the probabilities that the hypothetical pension plan will meet or exceed its 7.00% benchmark return on an annualized basis over the given time horizon. Exhibit 11 focuses on expected returns over a 10-year period, and Exhibit 12 focuses on expected returns over a 20-year period. Probabilities are shown for the survey average for each year from 2014 through 2018. For comparison, probabilities are also shown for the most conservative and optimistic advisors in each survey.

***Exhibit 11***




| Survey Year | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|
| Most Optimistic | 55.6% | 57.1% | 57.0% | 50.3% | 50.7% |
| Survey Average | 46.3% | 43.4% | 43.3% | 40.3% | 37.4% |
| Most Conservative | 38.5% | 32.7% | 28.5% | 27.1% | 18.3% |

***Exhibit 12***




| Survey Year | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|
| Most Optimistic | 72.2% | 67.9% | 71.4% | 66.0% | 71.0% |
| Survey Average | 58.3% | 53.9% | 57.0% | 54.6% | 52.0% |
| Most Conservative | 50.8% | 39.8% | 39.7% | 32.9% | 28.3% |

As shown in Exhibits 11 and 12, the probabilities that this hypothetical pension plan would meet or beat a benchmark return of 7.00% have generally decreased from 2014 to 2018. The decrease is more pronounced when considering a 10-year horizon versus a 20-year horizon.

For example:

- Based on the average assumptions from the 2018 survey, the probability of this hypothetical plan meeting or exceeding an annualized return of 7.00% over the next 10 years is 37.4%. For comparison, the probability was considerably higher (46.3%) five years ago when the 2014 survey was conducted.

- Based on the average assumptions from the 2018 survey, the probability of this hypothetical plan meeting or exceeding an annualized return of 7.00% over the next 20 years is 52.0%. While the probability was higher (58.3%) based on the average assumptions from 2014, the decrease over time for longer-term expectations is less pronounced than it has been for shorter-term expectations.

Other points of note when comparing the results from the 2018 survey to those from prior years:

- The results for the most conservative advisor in each survey from 2014 through 2018 have changed more dramatically than the results for the survey average and the most optimistic advisors. Based on the assumptions of the most conservative advisor in the 2014 survey, the probability of this hypothetical plan meeting or exceeding its 7.00% benchmark over the next 20 years was 38.5%. This can be compared to a probability of only 18.3% for the most conservative advisor in the 2018 survey.

- The results for the most optimistic advisor in each survey have generally remained more stable over the past five years, though there was a significant decrease in the probability of meeting the 7.00% benchmark over a 10-year horizon from 2016 to 2017. Nevertheless, the probability of meeting the 7.00% benchmark over a 10-year horizon based on the most optimistic advisor in the 2017 and 2018 surveys is still greater than 50%.

- Note that the most conservative and most optimistic advisors are not necessarily the same from year to year.

## Glossary

The following are basic definitions of some of the investment terminology used in this report.

*Expected Return*

The *expected return* is the amount, as a percentage of assets, that an investment is expected to earn over a period of time. Expected returns presented in this survey are generally assumed to be indexed and net of fees.

*Arithmetic vs. Geometric Returns*

The *arithmetic* return is the average return in any one year; in other words, it has a one-year investment horizon. A *geometric* return is the annualized return over a multi-year period. In general, when evaluating expected returns over multi-year horizons, it is more appropriate to focus on geometric returns. However, arithmetic returns are also important. For example, the expected return of a portfolio is calculated as the weighted average of arithmetic returns, not geometric returns.

This survey focuses on geometric returns. Many advisors provide both arithmetic and geometric expected returns. For advisors who provided expected returns only on an arithmetic basis, we converted them to geometric returns for consistency. The following formula was used in making this conversion.

$$E[R_G] = ((1 + E[R_A])^2 - VAR[R])^{1/2} - 1$$

In this formula, $E[R_G]$ is the expected geometric return, $E[R_A]$ is the expected arithmetic return, and VAR[R] is the variance of the expected annual return.

*Standard Deviation*

The *standard deviation* is a measure of the expected volatility in the returns. Generally, the standard deviation expresses how much returns may vary in any one year. Assuming that returns are "normally distributed," there is about a 68% probability that the actual return for a given year will fall within one standard deviation (higher or lower) of the expected return. There is about a 95% probability that the actual return will fall within two standard deviations of the expected return.

*Correlation*

An important aspect of capital market assumptions is the degree to which the returns for two different asset classes move in tandem with one another: this is their *correlation*. For example, if two asset classes are perfectly correlated, their correlation coefficient will be 1.00; in other words, if one asset class has a return of X% in a given market environment, then the other asset class is expected to also have a return of X%. A portfolio becomes better diversified as its asset classes have lower (or even negative) correlations with each other.

## Methodology

The following is a high-level description of the methodology used in compiling the survey results.

*Standardized Asset Classes*

Not all investment advisors use the same asset classes when developing their capital market assumptions. Some are very specific (more asset classes), while others keep things relatively simple (fewer asset classes).

We exercised judgment in classifying each advisor's capital market assumptions into a standard set of asset classes. In the event that an advisor did not provide assumptions for a given asset class, the average assumptions from the other advisors was used when developing expected returns for that advisor.

*Investment Horizons*

This survey considers "short-term" expected returns to apply to a 10-year investment horizon, and "long-term" expected returns to apply to a 20-year horizon.

In this 2018 edition of the survey, 23 of the 34 advisors provided only short-term assumptions, indicating a horizon of no more than 10 years. Included in this group are 2 advisors who provided assumptions over a horizon of 10 to 15 years.

All 13 advisors who provided long-term assumptions over horizons of 20 years or more also provided short-term assumptions. In cases where such an advisor indicated a horizon shorter than 10 years, the shorter-term expected returns were combined with the longer-term expected returns to achieve a 10-year horizon. If an advisor indicated a time horizon longer than 20 years, the longer-term expected returns were combined with the shorter-term expected returns to achieve a 20-year horizon.

*No Adjustment for Alpha*

No adjustment was made to reflect the possible value added by an active investment manager outperforming market returns (earning "alpha").

*Normally-Distributed Returns*

This survey assumes that investment returns will be normally distributed according to the capital market assumptions provided. The survey also assumes that the investment return in one year does not affect the investment return in the following year.

*Equal Weighting*

Each advisor was given equal weight in developing the average assumptions for the survey, regardless of factors such as total assets under advisement, number of clients in common with Horizon Actuarial, etc.

*Exhibit 13*

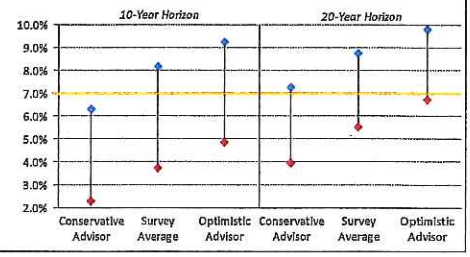
The following exhibit evaluates the investment return assumption for a hypothetical multiemployer pension plan. It reflects the same hypothetical asset allocation as shown in Exhibit 8, and it provides more detail than Exhibits 9 and 10. Note that the most conservative and optimistic advisors for the 10-year horizon are not necessarily the same as the most conservative and optimistic advisors for the 20-year horizon. This hypothetical pension plan has a benchmark return of 7.00% per year, which is indicated by the gold line in the exhibit below.

**Hypothetical Multiemployer Plan**
**2018 Survey of Capital Market Assumptions**

| Asset Class | Portfolio Weight | Average Survey Assumptions: 10-Year Horizon | 20-Year Horizon | Standard Deviation |
|---|---|---|---|---|
| US Equity - Large Cap | 20.0% | 6.07% | 7.42% | 16.39% |
| US Equity - Small/Mid Cap | 10.0% | 6.57% | 8.18% | 20.20% |
| Non-US Equity - Developed | 7.5% | 6.71% | 7.71% | 18.67% |
| Non-US Equity - Emerging | 5.0% | 7.64% | 8.82% | 24.89% |
| US Corporate Bonds - Core | 7.5% | 3.37% | 4.46% | 5.71% |
| US Corporate Bonds - Long Duration | 2.5% | 3.32% | 4.44% | 10.83% |
| US Corporate Bonds - High Yield | 5.0% | 4.78% | 5.82% | 10.24% |
| Non-US Debt - Developed | 5.0% | 2.18% | 3.22% | 6.86% |
| Non-US Debt - Emerging | 2.5% | 5.00% | 6.13% | 11.43% |
| US Treasuries (Cash Equivalents) | 5.0% | 2.48% | 3.05% | 2.74% |
| TIPS (Inflation-Protected) | 5.0% | 2.88% | 4.04% | 6.25% |
| Real Estate | 10.0% | 5.90% | 6.66% | 13.86% |
| Hedge Funds | 5.0% | 4.96% | 6.19% | 7.87% |
| Commodities | 2.5% | 3.97% | 4.92% | 17.60% |
| Infrastructure | 2.5% | 6.56% | 7.14% | 14.74% |
| Private Equity | 5.0% | 8.33% | 9.52% | 22.16% |
| Inflation | N/A | 2.24% | 2.47% | 1.76% |
| TOTAL PORTFOLIO | 100.0% | *Expected returns are geometric.* | | |

| | 10-Year Horizon: Conservative Advisor | Survey Average | Optimistic Advisor | 20-Year Horizon: Conservative Advisor | Survey Average | Optimistic Advisor |
|---|---|---|---|---|---|---|
| *Expected Returns* | | | | | | |
| Average Annual Return (Arithmetic) | 4.72% | 6.45% | 7.55% | 6.16% | 7.65% | 8.74% |
| Annualized Return (Geometric) | 4.29% | 5.95% | 7.06% | 5.59% | 7.12% | 8.26% |
| Annual Volatility (Standard Deviation) | 9.48% | 10.38% | 10.27% | 11.03% | 10.72% | 10.19% |
| *Range of Expected Annualized Returns* | | | | | | |
| ◆ 75th Percentile | 6.32% | 8.16% | 9.25% | 7.25% | 8.73% | 9.80% |
| ◆ 25th Percentile | 2.27% | 3.73% | 4.87% | 3.92% | 5.50% | 6.73% |
| *Probabilities of Exceeding Certain Returns* | | | | | | |
| 7.50% per Year, Annualized | 14.2% | 31.8% | 44.6% | 21.9% | 43.7% | 63.1% |
| 7.00% per Year, Annualized | 18.3% | 37.4% | 50.7% | 28.3% | 52.0% | 71.0% |
| 6.50% per Year, Annualized | 23.1% | 43.3% | 56.8% | 35.6% | 60.2% | 78.0% |

*Ranges of Expected Annualized Returns*




*Considerations and Limitations*

- Allocations may be approximated if certain asset classes are not included in the survey.
- Many investment advisors provided only shorter-term assumptions (10 years or less).
- Assumptions are based on indexed returns and do not reflect anticipated alpha.
- Assumptions do not reflect investment opportunities or fee considerations available to larger funds.

*SOURCE: Horizon Actuarial 2018 Survey of Capital Market Assumptions*

*Expected returns over a 10-year horizon include all 34 survey participants.*

*Expected returns over a 20-year horizon are based a subset of 13 survey participants who provided longer-term assumptions.*

*Exhibit 14*

The following exhibit shows the distribution of expected annualized returns and annual standard deviations for the same hypothetical asset allocation that is shown in Exhibit 13. The expected annualized return and annual standard deviation of the hypothetical asset allocation are shown separately for each advisor who participated in the survey. Individual advisors are grouped by type and investment horizon, and the survey average assumptions are shown in red. The exhibit shows that there are a wide variety of investment return assumptions that could be considered to be reasonable for any given asset allocation.

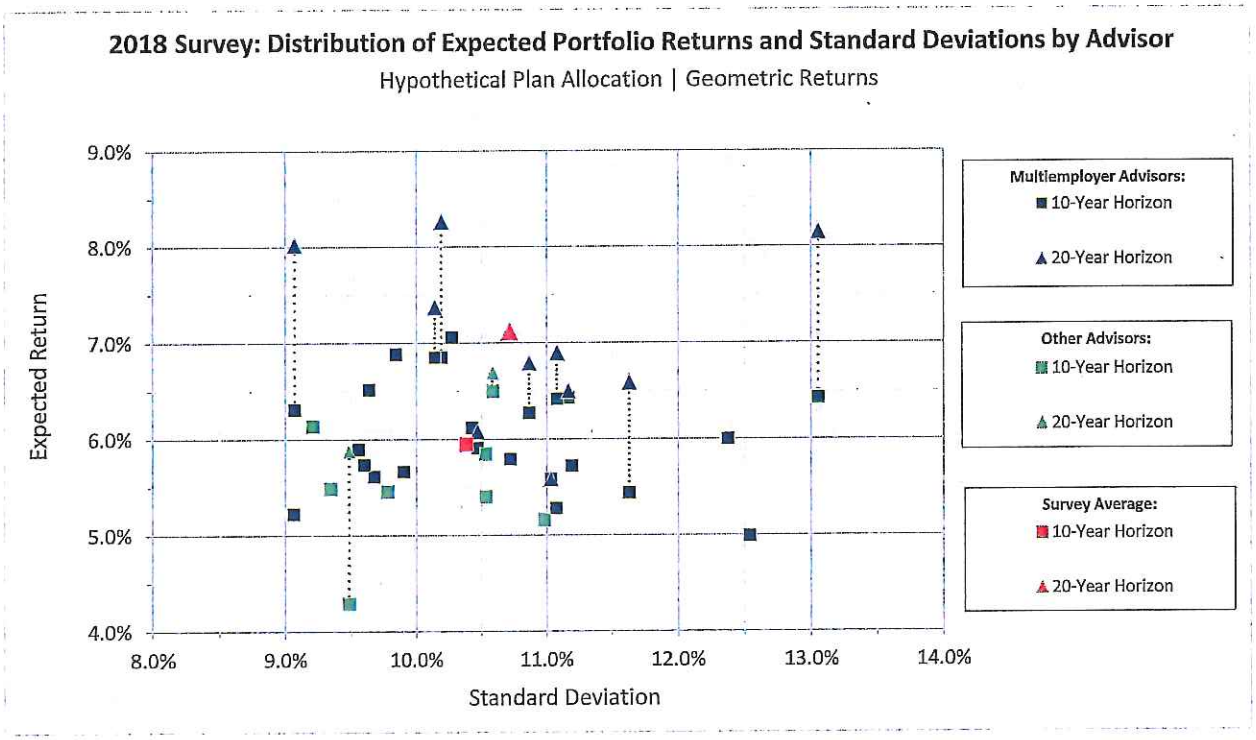


*Exhibit 15*

The following exhibit provides the average capital market assumptions for all 34 investment advisors in the 2018 survey. Each of the 34 advisors was given equal weight in determining the average assumptions. For reference, expected returns are shown over 10-year and 20-year horizons. Expected returns are also provided on both an arithmetic basis (one-year average) and geometric basis (multi-year annualized). The standard deviations (volatilities) and correlations apply to both arithmetic and geometric expected returns.

**Horizon Actuarial 2018 Survey of Capital Market Assumptions**

**Average Survey Assumptions**

| | | *Expected Returns* | | | | |
|---|---|---|---|---|---|---|
| | | 10-Year Horizon | | 20-Year Horizon | | Standard |
| | Asset Class | Arith. | Geom. | Arith. | Geom. | Deviation |
| 1 | US Equity - Large Cap | 7.34% | 6.07% | 8.73% | 7.42% | 16.39% |
| 2 | US Equity - Small/Mid Cap | 8.49% | 6.57% | 10.13% | 8.18% | 20.20% |
| 3 | Non-US Equity - Developed | 8.36% | 6.71% | 9.46% | 7.71% | 18.67% |
| 4 | Non-US Equity - Emerging | 10.52% | 7.64% | 11.94% | 8.82% | 24.89% |
| 5 | US Corporate Bonds - Core | 3.54% | 3.37% | 4.63% | 4.46% | 5.71% |
| 6 | US Corporate Bonds - Long Duration | 3.90% | 3.32% | 5.14% | 4.44% | 10.83% |
| 7 | US Corporate Bonds - High Yield | 5.29% | 4.78% | 6.44% | 5.82% | 10.24% |
| 8 | Non-US Debt - Developed | 2.37% | 2.18% | 3.56% | 3.22% | 6.86% |
| 9 | Non-US Debt - Emerging | 5.63% | 5.00% | 6.85% | 6.13% | 11.43% |
| 10 | US Treasuries (Cash Equivalents) | 2.55% | 2.48% | 3.10% | 3.05% | 2.74% |
| 11 | TIPS (Inflation-Protected) | 3.08% | 2.88% | 4.26% | 4.04% | 6.25% |
| 12 | Real Estate | 6.89% | 5.90% | 7.67% | 6.66% | 13.86% |
| 13 | Hedge Funds | 5.29% | 4.96% | 6.61% | 6.19% | 7.87% |
| 14 | Commodities | 5.46% | 3.97% | 6.47% | 4.92% | 17.60% |
| 15 | Infrastructure | 7.61% | 6.56% | 8.24% | 7.14% | 14.74% |
| 16 | Private Equity | 10.72% | 8.33% | 12.17% | 9.52% | 22.16% |
| | Inflation | 2.24% | 2.24% | 2.48% | 2.47% | 1.76% |

*Correlation Matrix*

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.00 | | | | | | | | | | | | | | | |
| 2 | 0.89 | 1.00 | | | | | | | | | | | | | | |
| 3 | 0.84 | 0.76 | 1.00 | | | | | | | | | | | | | |
| 4 | 0.72 | 0.67 | 0.79 | 1.00 | | | | | | | | | | | | |
| 5 | 0.12 | 0.07 | 0.14 | 0.14 | 1.00 | | | | | | | | | | | |
| 6 | 0.11 | 0.05 | 0.13 | 0.10 | 0.83 | 1.00 | | | | | | | | | | |
| 7 | 0.61 | 0.60 | 0.60 | 0.62 | 0.36 | 0.26 | 1.00 | | | | | | | | | |
| 8 | 0.17 | 0.11 | 0.30 | 0.24 | 0.55 | 0.55 | 0.24 | 1.00 | | | | | | | | |
| 9 | 0.54 | 0.49 | 0.58 | 0.66 | 0.44 | 0.37 | 0.59 | 0.41 | 1.00 | | | | | | | |
| 10 | (0.10) | (0.12) | (0.09) | (0.07) | 0.33 | 0.28 | (0.03) | 0.26 | 0.06 | 1.00 | | | | | | |
| 11 | 0.05 | 0.01 | 0.10 | 0.16 | 0.68 | 0.57 | 0.31 | 0.52 | 0.40 | 0.33 | 1.00 | | | | | |
| 12 | 0.44 | 0.41 | 0.40 | 0.33 | 0.10 | 0.11 | 0.30 | 0.09 | 0.24 | 0.03 | 0.10 | 1.00 | | | | |
| 13 | 0.66 | 0.64 | 0.68 | 0.67 | 0.14 | 0.06 | 0.58 | 0.15 | 0.48 | (0.07) | 0.13 | 0.35 | 1.00 | | | |
| 14 | 0.31 | 0.29 | 0.39 | 0.43 | 0.10 | 0.03 | 0.35 | 0.22 | 0.34 | 0.02 | 0.26 | 0.24 | 0.42 | 1.00 | | |
| 15 | 0.54 | 0.49 | 0.53 | 0.47 | 0.20 | 0.21 | 0.41 | 0.33 | 0.43 | (0.08) | 0.18 | 0.31 | 0.41 | 0.29 | 1.00 | |
| 16 | 0.73 | 0.69 | 0.70 | 0.61 | 0.03 | 0.03 | 0.48 | 0.10 | 0.40 | (0.08) | 0.04 | 0.39 | 0.60 | 0.30 | 0.39 | 1.00 |

*Expected returns over a 10-year horizon include all 34 survey participants.*

*Expected returns over a 20-year horizon are based a subset of 13 survey participants who provided long-term assumptions.*

***Exhibit 16***

Earlier in this report, Exhibit 5 showed the distribution of expected returns and standard deviations over an investment horizon of 10 years. The exhibit below shows the same distribution, but for a horizon of 20 years. Note that while Exhibit 5 included assumptions for all 34 advisors in the survey, the exhibit below includes only assumptions for the 13 advisors who provided longer-term assumptions (horizons of 20 years or more).

## 2018 Survey: Distribution of Expected Returns and Standard Deviations

20-Year Horizon | Geometric Returns

**Asset Class [ Avg. Exp. Return | Avg. Std. Dev. ]**

| | |
|---|---|
| Equities | US Equity - Large Cap [ 7.4% \| 16.7% ] |
| | US Equity - Small/Mid Cap [ 8.2% \| 20.5% ] |
| | Non-US Equity - Developed [ 7.7% \| 19.5% ] |
| | Non-US Equity - Emerging [ 8.8% \| 26.0% ] |
| Fixed Income | US Corporate Bonds - Core [ 4.5% \| 5.8% ] |
| | US Corporate Bonds - Long Duration [ 4.4% \| 12.0% ] |
| | US Corporate Bonds - High Yield [ 5.8% \| 11.2% ] |
| | Non-US Debt - Developed [ 3.2% \| 7.8% ] |
| | Non-US Debt - Emerging [ 6.1% \| 12.3% ] |
| | US Treasuries (Cash Equivalents) [ 3.0% \| 2.4% ] |
| | TIPS (Inflation-Protected) [ 4.0% \| 6.7% ] |
| Alternatives | Real Estate [ 6.7% \| 14.4% ] |
| | Hedge Funds [ 6.2% \| 9.0% ] |
| | Commodities [ 4.9% \| 17.9% ] |
| | Infrastructure [ 7.1% \| 15.4% ] |
| | Private Equity [ 9.5% \| 23.9% ] |

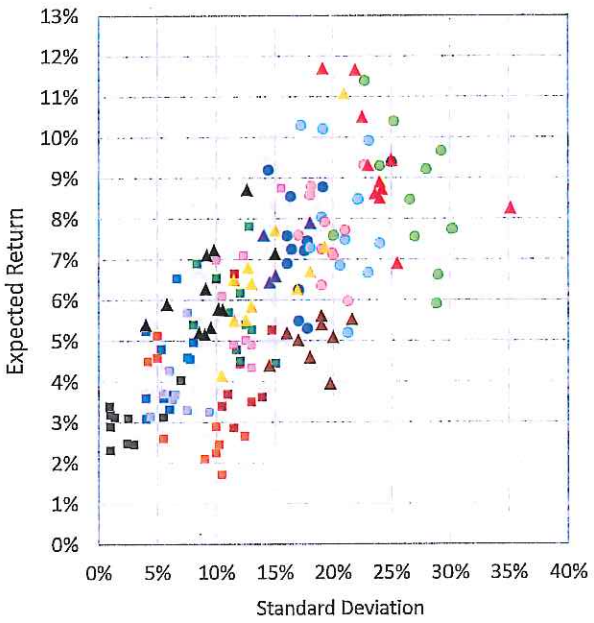


*Exhibit 17*

The exhibit below shows the ranges of expected annual returns for different asset classes over a 10-year investment horizon. The ranges shown below include assumptions for all the 34 advisors in the 2018 survey. Expected returns shown below are annualized (geometric).

To illustrate the distribution of expected returns, the exhibit shows the range of the middle 50 percent of results: the range between the 25th and 75th percentiles. It also shows the median expected return for each asset class: the 50th percentile. Note that the expected returns for the *median* advisor shown below are not the same as the *average* expected returns shown elsewhere in the report. In most cases, however, the differences between median and average expected returns are relatively small.

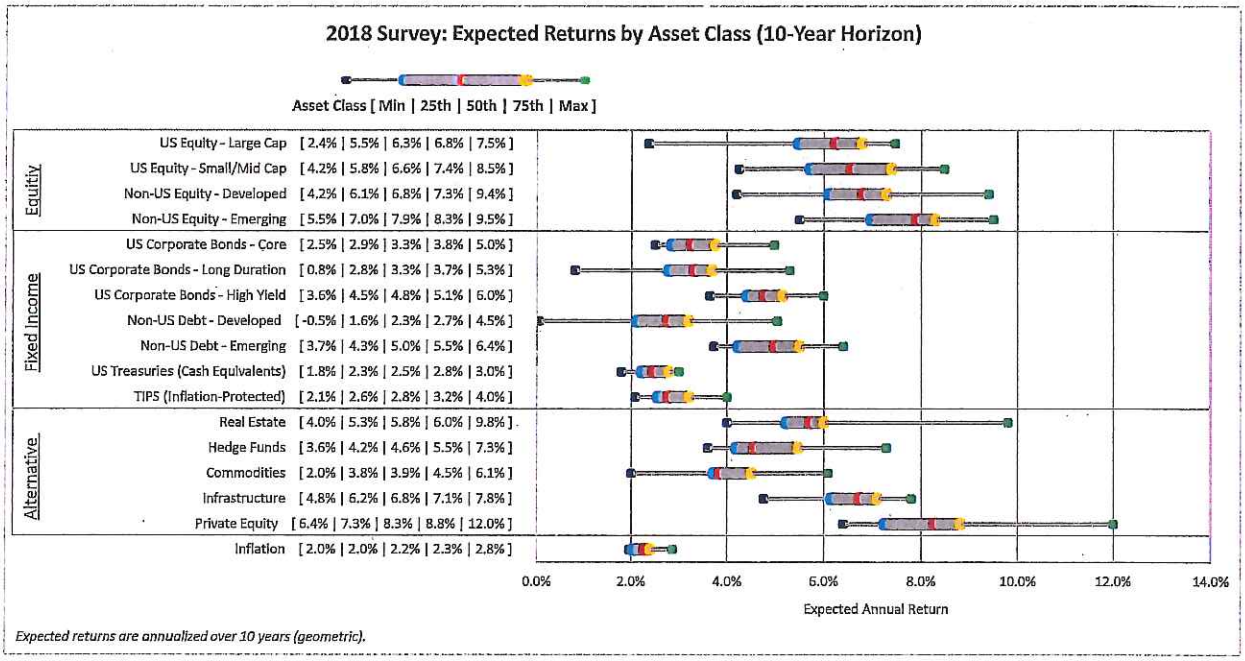
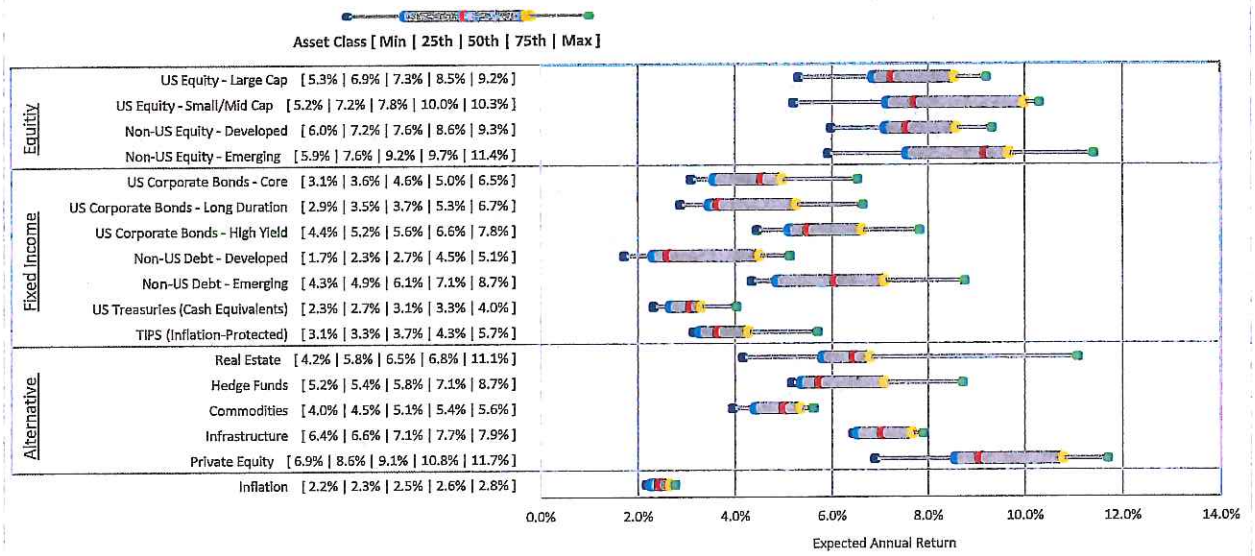


***Exhibit 18***

The exhibit below shows the ranges of expected annual returns for different asset classes over a 20-year investment horizon. The ranges shown below are based on the assumptions for 13 advisors who provided longer-term assumptions (horizons of 20 years or more). Expected returns shown below are annualized (geometric). Note that the ranges of expected returns are somewhat narrower when the investment horizon is longer.

To illustrate the distribution of expected returns, the exhibit shows the range of the middle 50 percent of results: the range between the 25th and 75th percentiles. It also shows the median expected return for each asset class: the 50th percentile. Note that the expected returns for the *median* advisor shown below are not the same as the *average* expected returns shown elsewhere in the report. In most cases, however, the differences between median and average expected returns are relatively small.

**2018 Survey: Expected Returns by Asset Class (20-Year Horizon)**




*Expected returns are annualized over 20 years (geometric), based on a subset of 13 advisors who provided longer term assumptions.*

NO. 327-B | JUNE 2012

# Governmental Accounting Standards Series

## Statement No. 67 of the Governmental Accounting Standards Board

## Financial Reporting for Pension Plans

an amendment of GASB Statement No. 25


GOVERNMENTAL ACCOUNTING STANDARDS BOARD
OF THE FINANCIAL ACCOUNTING FOUNDATION

be modified based on consideration of subsequent events. For this purpose, the basis for the average (for example, percentage of covered payroll contributed or percentage of actuarially determined contributions made) should be a matter of professional judgment.

43. If the evaluations required by paragraph 41 can be made with sufficient reliability without a separate projection of cash flows into and out of the pension plan, alternative methods may be applied in making the evaluations.

### *Calculating the discount rate*

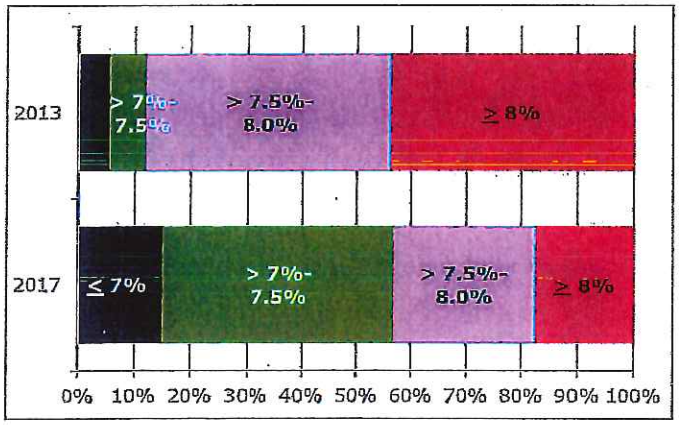
44. For each future period, if the amount of the pension plan's fiduciary net position is projected to be greater than or equal to the benefit payments that are projected to be made in that period and pension plan assets up to that point are expected to be invested using a strategy to achieve the long-term expected rate of return, the actuarial present value of benefit payments projected to be made in the period should be determined using the long-term expected rate of return on those investments. The long-term expected rate of return should be based on the nature and mix of current and expected pension plan investments over a period representative of the expected length of time between (a) the point at which a plan member begins to provide service to the employer and (b) the point at which all benefits to the plan member have been paid. For this purpose, the long-term expected rate of return should be determined net of pension plan investment expense but without reduction for pension plan administrative expense. The municipal bond rate discussed in paragraph 40 should be used to calculate the actuarial present value of all other benefit payments.

45. For purposes of this Statement, the discount rate is the single rate of return that, when applied to all projected benefit payments, results in an actuarial present value of projected benefit payments equal to the total of the actuarial present values determined in conformity with paragraph 44.

## TRENDS IN ASSUMED RATE OF RETURN

Over the past several years, most U.S. Public Funds have debated, discussed, and in most cases, decreased their assumed rate of return. As of Feb. 2018, the average assumed rate of return has declined considerably to 7.4%. Needless to say there is a trend developing.

What's driving it? Most investors consider valuations, inflation, and yield as the building blocks of forward looking return expectations. With valuations across most asset classes either fairly priced or overvalued, inflation remaining meager, and global yields near all time lows, there is a challenging backdrop for forward looking return expectations. As such, many Pension plans have reevaluated their assumed rate of returns and/or the asset allocation to help support their current rate.




The distribution of assumed rates of returns across Public Pension plans nationally has also evolved. The percentage of plans with assumed rates at or above 8.0% has shrunk considerably while the vast majority of plans reside somewhere in the 7.0 to 7.5% range. Many often ask, do we see this trend continuing in the future? The answer is complicated. Yes – we believe Pension plans will continue to reevaluate their assumed rates and potentially move them lower. However, we've already seen a sizeable shift with many plans already making such a move. As such, many of these plans may decide to simply stay at their newly lowered rates which may act as a speed bump in the downhill ride of assumed rates.

## Appendix A: Investment Return Assumption by Plan

(Figures reflect the nominal assumption in use, or announced for use, as of February 2018[1])

| Plan | Rate (%) |
|---|---|
| Alabama ERS | 7.75 |
| Alabama Teachers | 7.75 |
| Alaska PERS | 8.0 |
| Alaska Teachers | 8.0 |
| Arizona Public Safety Personnel | 7.40 |
| Arizona SRS | 7.50 |
| Arkansas PERS | 7.15 |
| Arkansas State Highway ERS | 8.0 |
| Arkansas Teachers | 7.50 |
| California PERF[2] | 7.375 |
| California Teachers[3] | 7.25 |
| Chicago Teachers | 7.75 |
| City of Austin ERS | 7.50 |
| Colorado Affiliated Local | 7.50 |
| Colorado Fire & Police Statewide | 7.50 |
| Colorado Municipal | 7.25 |
| Colorado School | 7.25 |
| Colorado State | 7.25 |
| Connecticut SERS | 6.90 |
| Connecticut Teachers | 8.0 |
| Contra Costa County | 7.25 |
| DC Police & Fire | 6.50 |
| DC Teachers | 6.50 |
| Delaware State Employees | 7.0 |
| Denver Employees | 7.75 |
| Denver Public Schools | 7.25 |
| Duluth Teachers | 8.0 |
| Fairfax County Schools | 7.50 |
| Florida RS | 7.50 |
| Georgia ERS | 7.50 |
| Georgia Teachers | 7.50 |
| Hawaii ERS | 7.0 |
| Houston Firefighters | 7.0 |
| Idaho PERS | 7.0 |
| Illinois Municipal | 7.50 |
| Illinois SERS | 7.25 |
| Illinois Teachers | 7.0 |
| Illinois Universities | 7.25 |
| Indiana PERF | 6.75 |
| Indiana Teachers | 6.75 |
| Iowa PERS | 7.0 |
| Kansas PERS | 7.75 |
| Kentucky County | 6.25 |
| Kentucky ERS[4] | 5.25 |
| Kentucky Teachers | 7.50 |
| Los Angeles County ERS | 7.50 |
| Louisiana Parochial Employees | 7.0 |
| Louisiana SERS[5] | 7.70 |
| Louisiana Teachers[5] | 7.70 |
| Maine Local | 6.875 |
| Maine State and Teacher | 6.875 |
| Maryland PERS[6] | 7.50 |
| Maryland Teachers[6] | 7.50 |
| Massachusetts SERS | 7.50 |
| Massachusetts Teachers | 7.50 |
| Michigan Municipal | 7.75 |
| Michigan Public Schools[7] | 7.05 |
| Michigan SERS | 7.0 |
| Minnesota PERF | 8.0 |
| Minnesota State Employees | 8.0 |
| Minnesota Teachers[8] | 8.50 |
| Mississippi PERS | 7.75 |
| Missouri DOT and Highway Patrol | 7.75 |
| Missouri Local | 7.25 |
| Missouri PEERS | 7.60 |
| Missouri State Employees | 7.65 |
| Missouri Teachers | 7.60 |
| Montana PERS | 7.65 |
| Montana Teachers | 7.75 |
| Nebraska Schools | 7.50 |
| Nevada Police Officer and Firefighter | 7.50 |
| Nevada Regular Employees | 7.50 |
| New Hampshire Retirement System | 7.25 |
| New Jersey PERS[9] | 7.50 |
| New Jersey Police & Fire[9] | 7.50 |
| New Jersey Teachers[9] | 7.50 |
| New Mexico PERA[10] | 7.51 |
| New Mexico Teachers | 7.25 |
| New York City ERS | 7.0 |
| New York City Teachers | 7.0 |
| New York State Teachers | 7.25 |
| North Carolina Local Government | 7.20 |
| North Carolina Teachers and State Employees | 7.20 |
| North Dakota PERS | 7.75 |
| North Dakota Teachers | 7.75 |
| NY State & Local ERS | 7.0 |
| NY State & Local Police & Fire | 7.0 |
| Ohio PERS | 7.50 |
| Ohio Police & Fire | 8.0 |
| Ohio School Employees | 7.50 |

| | |
|---|---|
| Ohio Teachers | 7.45 |
| Oklahoma PERS | 7.0 |
| Oklahoma Teachers | 7.50 |
| Orange County ERS | 7.0 |
| Oregon PERS | 7.20 |
| Pennsylvania School Employees | 7.25 |
| Pennsylvania State ERS | 7.25 |
| Phoenix ERS | 7.50 |
| Rhode Island ERS | 7.0 |
| Rhode Island Municipal | 7.0 |
| San Diego County | 7.25 |
| San Francisco City & County | 7.46 |
| South Carolina Police | 7.25 |
| South Carolina RS | 7.25 |
| South Dakota RS | 6.50 |
| St. Louis School Employees | 7.50 |
| St. Paul Teachers | 8.0 |
| Texas County & District | 8.0 |
| Texas ERS | 7.50 |
| Texas LECOS | 7.50 |
| Texas Municipal | 6.75 |

| | |
|---|---|
| Texas Teachers | 8.0 |
| Tennessee Political Subdivisions | 7.25 |
| Tennessee State and Teachers | 7.25 |
| Utah Noncontributory | 6.95 |
| Vermont State Employees | 7.50 |
| Vermont Teachers | 7.50 |
| Virginia Retirement System | 7.0 |
| Washington LEOFF Plan 1[11] | 7.70 |
| Washington LEOFF Plan 2[12] | 7.50 |
| Washington PERS 1[11] | 7.70 |
| Washington PERS 2/3[11] | 7.70 |
| Washington School Employees Plan 2/3[11] | 7.70 |
| Washington Teachers Plan 1[11] | 7.70 |
| Washington Teachers Plan 2/3[11] | 7.70 |
| West Virginia PERS | 7.50 |
| West Virginia Teachers | 7.50 |
| Wisconsin Retirement System | 7.20 |
| Wyoming Public Employees | 7.0 |

1. This list of nominal investment return assumptions is updated at www.nasra.org/latestreturnassumptions
2. CalPERS is reducing its investment return assumption from 7.50 percent to 7.0 percent over three years. In February 2017 the CalPERS Board adopted a risk mitigation policy, effective beginning FY 2021, that calls for a reduction in the system's investment return assumption commensurate with the pension fund achieving a specified level of investment return. Details are available online: https://www.calpers.ca.gov/docs/board-agendas/201702/financeadmin/item-9a-02.pdf.
3. CalSTRS is reducing its investment return assumption from 7.50 percent to 7.0 percent over two years.
4. The Kentucky ERS is composed of two plans: Hazardous and Non-Hazardous. The rate shown applies to the plan's Non-Hazardous plan, which accounts for more than 90 percent of the Kentucky ERS plan liabilities. The investment return assumption used for the Hazardous plan is 6.25 percent.
5. The Louisiana State Employees' Retirement System and Teachers' Retirement System are reducing their discount rate from 7.75 percent to 7.50 percent by 2021 in annual increments of 0.05 percent. The discount rate used to determine the FY 2018/2019 funding requirement is 7.65%, which is net of gain-sharing. The investment return assumption differs from the discount rate because of the effective cost of providing potential future ad hoc postretirement benefit increases, or gain-sharing. The investment return assumption, which includes gain-sharing, is reducing incrementally to 7.50% by 2021.
6. The assumed rate of return for the Maryland Public Employees' Retirement System and Teachers Retirement Systems is scheduled to decrease to 7.45 percent beginning July 1, 2018.
7. The Michigan Public School Employees' Retirement System administers three plans: a defined benefit plan and two hybrid plans (Pension Plus and Pension Plus 2). The rate shown applies to the defined benefit plan. The investment return assumption used for the Pension Plus plan is 7.0 percent, and 6.0 percent for Pension Plus 2.
8. Legislation approved by the Minnesota Legislature in 2016 would have reduced the return assumption of the Teachers' Retirement Association to 8.0 percent, but was vetoed by the governor for reasons extraneous to the assumption.
9. The assumed rate of return for the New Jersey PERS, Police & Fire, and Teachers plans is scheduled to decrease to 7.3 percent for FY 21 and FY 22, and to 7.0 percent effective FY 23.
10. Reflects a weighted average rate based on 7.25 percent for FY17-26 and 7.75 percent thereafter.
11. For all Washington State plans except LEOFF Plan 2, the assumed rate of return is scheduled to decrease to 7.5 percent for the 2019-21 biennium.
12. The assumed rate of return for the Washington LEOFF Plan 2 is scheduled to decrease to 7.4 percent for the 2019-2021 biennium.

National Conference on
**Public Employee Retirement Systems**
*The Voice for Public Pensions*

August 31, 2018

Submitted via email to: kubackik@michigan.gov

The Honorable Nick Khouri
State Treasurer
State of Michigan
Department of Treasury
Lansing, MI 48909

Re: Comments on Public Act 202: Selection of the Uniform Assumptions

Dear Treasurer Khouri:

The National Conference on Public Employee Retirement Systems (NCPERS) is the largest trade association for public sector pension funds, representing approximately 500 funds throughout the United States and Canada. It is a unique non-profit network of public pension trustees, administrators, elected officials, and investment, actuarial and legal professionals who collectively manage more than $3.7 trillion in pension assets. Founded in 1941, NCPERS is the principal trade association working to promote and protect pensions by focusing on advocacy, research and education for the benefit of public sector pension stakeholders.

Of the 500 funds, we are proud to count 35 Michigan public pensions as NCPERS members. NCPERS is pleased to submit comments to the draft actuarial assumptions for pension and retiree health plans.

While we have concerns in a few areas, we will limit this comment letter to focus specifically on the proposed discount rate of 7 percent and the proposed mortality table.

Regarding the proposed discount rate, NCPERS has grave concerns about this proposal for two reasons.

- First, the uniform assumptions draft states that "[the 7 percent discount rate] reflects the 50th percentile of expected investment returns using the average asset allocation amongst most major pension systems". The document sites the Public Plans Database at publicplansdata.org as the source for this figure. However, the draft calculation is not correct. When you calculate the average discount rate of all the plans in the Public Plans Database the average is 7.5 percent.



NCPERS • 444 North Capitol Street NW, Suite 630, Washington, DC 20001 • 202.624.1456 • fax 202.624.1439 • info@NCPERS.org • www.ncpers.org

Our calculations is validated by our annual Public Retirement Systems Study (https://www.ncpers.org/surveys). The 2017 NCPERS Public Retirement Systems Study includes responses from 164 state and local government pension funds with more than 15.5 million active and retired members and assets exceeding $1.77 trillion in actuarial assets and $1.80 trillion in market assets. The majority – 62 percent – were local pension funds, while 38 percent were state-wide pension funds. The 2017 Study shows the average discount rate of the 164 plans is 7.5 percent.

The 50 basis points difference between the proposal and the actual 50th percentile in both the NCPERS Public Retirement Systems Study and the Public Plans Database is significant and needed to corrected.

- Second, and possibly most importantly, NCPERS believes that the discount assumption must be a reasonable narrow range, not an absolute number. According to the U.S. Census Bureau, there are 147 public retirement systems in Michigan and each one is unique and different from its brethren. The one-size-fits-all approach does not acknowledge the differences among the 147 funds and is likely to cause considerable difficulties of many.

Therefore, NCPERS suggests a narrow range of reasonable economic assumptions to allow for the differences in investment policy, asset allocation and AUM. For the near-term economic and financial environment, we think investment return assumption range of 7.25 to 7.75 percent is reasonable.

Regarding the proposed mortality table, NCPERS has grave concerns about this proposal because requiring the 2017 improvement table is unrealistic as many Michigan plans may not warrant that scale and/or are in the midst of an experience schedule cycle.

As such, NCPERS recommends instead that the plans be permitted to rely on the most recent experience study for the demographic assumptions. By doing this, plans are relying on the actual demographics such as mortality, disability, retirement age, etc. The ASOPs require that the actuaries sign off on the assumptions as being a reasonable representation of actual and expected experience. This should be a reliable proxy for the individual experience of the plans with actuary sign-off.

We appreciate the opportunity to provide comments on uniform assumptions draft. Should you have any questions please let us know at your convenience. Thank you.

Sincerely,

Hank H. Kim, Esq.
Executive Director & Counsel

# PUBLIC RETIREMENT SYSTEMS' ACTUARIAL COMMITTEE

Post Office Box 94183
Baton Rouge, LA 70804

Telephone: (225) 342-8827
Email: sret@legis.la.gov

**NOTICE OF MEETING**
Monday, February 25, 2019
9:00 A.M.
Senate Committee Room A

**AGENDA**

I. CALL TO ORDER

II. ROLL CALL

III. APPROVAL OF MINUTES

JANUARY 9, 2019

IV. PUBLIC COMMENT

V. DISCUSSION ITEM

Discussion and approval of 2018, annual actuarial valuations and the required contributions and dedication of revenues contained therein for the following State Retirement Systems

(1) Clerks of Court Retirement System
(2) District Attorneys' Retirement System
(3) Firefighters' Retirement System
(4) Municipal Employees' Retirement System
(5) Municipal Police Employees' Retirement System
(6) Registrar of Voters Employees' Retirement System
(7) Sheriffs' Pension and Relief Fund

VI. CONSIDERATION OF ANY OTHER MATTERS THAT MAY COME BEFORE THE COMMITTEE

VII. ADJOURNMENT

Barrow Peacock
Senator Barrow Peacock, Chairman mc