MEETING

STATE OF CALIFORNIA

PUBLIC EMPLOYEES' RETIREMENT SYSTEM

BOARD OF ADMINISTRATION

INVESTMENT COMMITTEE

OPEN SESSION

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9:00 A.M.

JAMES F. PETERS, CSR
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A P P E A R A N C E S

COMMITTEE MEMBERS:

Mr. Rob Feckner, Chairperson

Ms. Theresa Taylor, Vice Chairperson

Ms. Margaret Brown

Mr. Henry Jones

Ms. Fiona Ma, also represented by Mr. Frank Ruffino

Ms. Lisa Middleton

Mr. David Miller

Ms. Eraina Ortega

Ms. Mona Pasquil Rogers

Mr. Jason Perez

Mr. Ramon Rubalcava

Ms. Betty Yee, represented by Ms. Lynn Paquin

STAFF:

Ms. Marcie Frost, Chief Executive Officer

Mr. Matt Jacobs, General Counsel

Dr. Ben Meng, Chief Investment Officer

Mr. Eric Baggesen, Managing Investment Director

Mr. Dan Bienvenue, Interim Chief Operating Investment Officer

Ms. Caitlin Jensen, Committee Secretary

Ms. Alison Li, Investment Manager

Ms. Arnita Paige, Chief, Pension Contracts and Prefunding Programs

A P P E A R A N C E S   C O N T I N U E D

STAFF:

Mr. Arnie Phillips, Interim Managing Investment Director

Ms. Christine Reese, Investment Manager

Ms. Anne Simpson, Investment Director

ALSO PRESENT:

Mr. Josh Austin, California Federation of Teachers, Educators for Migrant Justice

Mr. Jeff Bailey, CFA Institute

Dr. Cecil Canton, California Faculty Association

Mr. Vincent Cervasco, California Faculty Association

Mr. Allan Emkin, Pension Consulting Alliance

Ms. Joanne Fanucchi

Ms. Niesha Fritz, California Faculty Association

Mr. Dillon Gibbons, California Special Districts Association

Ms. Emily Claire Goldman, Educators for Migrant Justice

Dr. Tristan Josephson, California Faculty Association

Mr. Andrew Junkin, Wilshire Associates

Ms. Nancy Mancias, Code Pink

Ms. Linda Olvera, Freedom for Immigrants

Ms. Janeth Rodriguez, California Faculty Association

Dr. Melanie Saeck, Sacramento State University

Ms. Aimee Shreck, California Faculty Association

A P P E A R A N C E S   C O N T I N U E D

ALSO PRESENT:

Ms. Sara Theiss, Fossil Free California

Dr. Kevin Wehr, California Faculty Association

I N D E X

I N D E X   C O N T I N U E D

P R O C E E D I N G S

CHAIRPERSON FECKNER: Good morning, everybody. We'd like to have -- bring the Investment Committee meeting to order.

The first order of business will be to call the roll, please.

COMMITTEE SECRETARY JENSEN: Rob Feckner?

CHAIRPERSON FECKNER: Good morning.

COMMITTEE SECRETARY JENSEN: Theresa Taylor?

VICE CHAIRPERSON TAYLOR: Hi.

COMMITTEE SECRETARY JENSEN: Margaret Brown?

COMMITTEE MEMBER BROWN: Good morning.

COMMITTEE SECRETARY JENSEN: Dana Hollinger?

CHAIRPERSON FECKNER: Excused.

COMMITTEE SECRETARY JENSEN: Henry Jones?

COMMITTEE MEMBER JONES: Here.

COMMITTEE SECRETARY JENSEN: Fiona Ma represented by Frank Ruffino?

ACTING COMMITTEE MEMBER RUFFINO: Present.

COMMITTEE SECRETARY JENSEN: Lisa Middleton?

COMMITTEE MEMBER MIDDLETON: Present.

COMMITTEE SECRETARY JENSEN: David Miller?

COMMITTEE MEMBER MILLER: Here.

COMMITTEE SECRETARY JENSEN: Eraina Ortega?

COMMITTEE MEMBER ORTEGA: Here.

COMMITTEE SECRETARY JENSEN: Jason Perez?

COMMITTEE MEMBER PEREZ: Here.

COMMITTEE SECRETARY JENSEN: Mona Pasquil Rogers?

COMMITTEE MEMBER PASQUIL ROGERS: Here.

COMMITTEE SECRETARY JENSEN: Ramon Rubalcava?

COMMITTEE MEMBER RUBALCAVA: Here.

COMMITTEE SECRETARY JENSEN: Betty Yee represented by Lynn Paquin?

ACTING COMMITTEE MEMBER PAQUIN: Here.

CHAIRPERSON FECKNER: Thank you.

The next order of business wall be the approval of the June 17th timed agenda.

What's the pleasure of the Committee?

VICE CHAIRPERSON TAYLOR: Move approval.

CHAIRPERSON FECKNER: Moved by Taylor?

COMMITTEE MEMBER PASQUIL ROGERS: Second.

CHAIRPERSON FECKNER: Seconded by Pasquil Rogers.

Any discussion on the motion?

Seeing none.

All in favor say aye?

(Ayes.)

CHAIRPERSON FECKNER: Opposed, no?

Motion carries.

Item 3, Pledge of Allegiance. Ms. Taylor, would you please lead us in the Pledge.

VICE CHAIRPERSON TAYLOR: Certainly.

(Thereupon the Pledge of Allegiance was recited in unison.)

CHAIRPERSON FECKNER: Thank you.

Item 4, Executive Report. The Chief Investment Officer briefing. Mr. Meng.

CHIEF INVESTMENT OFFICER MENG: Good morning, Mr. Chair, members of the Investment Committee.

We have a busy agenda this morning. In addition to the usual standing monthly update reports, we have three items for you, two information items and one action item. The action item is Item 8, which is for the Affiliate Trust Asset Allocation Review for the California Employers Pension Prefunding Trust. And the two information items, the first one is Item 7, which is a continuation of the investment education workshop provided by the CFA Society.

And the other information item is Item number 9 on mitigating drawdowns. This is, as you recall, that last month as the first investment education workshop delivered by Mr. Jeff Bailey, there were two topics that generated some discussions among the Board members -- Committee members. These two topics are capital market assumptions, as well as the impacts of a market drawdown. So Item 9 was specifically prepared to address this two questions that you raised from last month discussion.

With that, that concludes my report.

CHAIRPERSON FECKNER: Thank you.

I have a question.

Ms. Middleton.

COMMITTEE MEMBER MIDDLETON: No, I did not.

CHAIRPERSON FECKNER: Oh, must have bumped it.

All right. Seeing no other requests. Thank you.

Agenda Item 5 is the action consent items.

What's the pleasure of the Board?

COMMITTEE MEMBER JONES: Move approval.

VICE CHAIRPERSON TAYLOR: Second.

CHAIRPERSON FECKNER: Moved by Jones, seconded by Taylor.

Any discussion on the motion?

Seeing none.

All in favor say aye?

(Ayes.)

CHAIRPERSON FECKNER: Opposed, no?

Motion carries.

Item 6, information consent items. I have no requests to move anything off.

That brings us to Agenda Item 7 about 27 minutes too early.

CHIEF INVESTMENT OFFICER MENG: Jeff does have a flight to catch later, so that's good.

CHAIRPERSON FECKNER: Can you do Item 8 in that period of time or do you want to move to number 9?

CHIEF INVESTMENT OFFICER MENG: We need number --

CHAIRPERSON FECKNER: It's time certain 9:30.

So we either have to get up and do a soft-shoe or we have to do one of those other items.

CHIEF INVESTMENT OFFICER MENG: How much time we have, 20 minutes?

CHAIRPERSON FECKNER: Twenty-five minutes.

VICE CHAIRPERSON TAYLOR: Twenty-five minutes.

CHIEF INVESTMENT OFFICER MENG: Twenty-five minutes. So let me take up Item number 9, please.

CHAIRPERSON FECKNER: Very good.

CHIEF INVESTMENT OFFICER MENG: So Item number 9, the slide, please.

(Thereupon an overhead presentation was presented as follows.)

CHIEF INVESTMENT OFFICER MENG: Mr. Chair and members of the Investment Committee, I just mentioned that this item was prepared to address your specific questions from last month's Investment education workshop. There were two questions raised back then: How do we formulate our capital market assumptions, meaning the expected returns, and why do we -- why do we say that the expect --

the returns for the next 10 years is less likely to be as good as the past 10 years? And then the second question, what caused the market drawdown and how damage -- how damaging a market drawdown can be, and more importantly, what can we do to prepare ourself for a market drawdown?

So these are the two questions.

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CHIEF INVESTMENT OFFICER MENG: First, how do we formulate capital market assumptions? How do we forecast future returns over major asset classes? Most people use a building block approach. So this approach each asset class is viewed by its ability to -- first to grow with inflation --

Okay. So I guess the animation is not working. Let me go back.

So the -- as you see, the bottom block, the first block, is inflation. So each asset class is viewed by its ability to grow with inflation, basically to preserve purchasing power. Then the second building block is to earn the risk-free rate. And normally people view U.S. treasury -- U.S. government bonds rate as the risk-free rate.

So these two blocks forms the foundation of the expected return of any major asset classes. And on top of that, then each asset class has different -- offers different risk premium, such as equity premium, liquidity premium, credit premium or spread premium, and emerging market premium.

So these are the -- normally, the building block approach. For example, for public equities, U.S. inflation, risk free, and plus equity premium. For private equity, U.S. inflation, risk-free rate again the two basic building blocks, plus equity premium, and then illiquidity premium, because private equity is less liquid than public equity.

So this approach offers a theoretical elegance. But in practice, it's difficult to estimate each component of it, as well as the correlation among them. So in practice, fortunately, we have a simple yet effective indicator for each of the two major asset classes in our the portfolio, which is the public equity and fixed income.

And as we know that in the long run valuation is the variable that matters the most in terms of the future return in the long -- in the seven to the ten year's period, the periods that we are looking at.

For the -- as I said, for the two largest asset classes, stock and bond, we have two very good empirical indicators to tell us what the future return is going to be -- look like.

For bond, yield to the worst, or yield to maturity is a very good indicator of future returns. And then for stock, the forward earning yield is a good indicator of future returns as well.

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CHIEF INVESTMENT OFFICER MENG: So this slide shows that, you know, how our capital market assumptions relative to our peers. This slide shows the six major asset classes. The orange bar shows a range of our global peers from the largest survey available, the Horizon Survey. I believe it service 34 of our global peers. What's their capital market assumption? What do they expect the return in the future? And -- for each major asset classes. And then the dots -- the white dots in the middle is where we are.

So the key takeaway on this slide is that our capital market assumptions is based on the range of the industry. And also important to note that our -- during the 2017 asset allocation -- asset liability management workshop, we formulate our expected return for the next 10 years. For the next 10 years, the portfolio expected return is 6.1 percent not 7 percent.

And from the 11 to the 60 years, our expected return is 6.3 -- I'm sorry, 8.3 percent. And if you take out of -- the administrative expense, and then average the first 10 years, plus from the 11th year to the 60 years, if you average them together, it turn out to be for the next 60 years our expected return is 7 percent. But for the next 10 years, our expected return is 6.1 percent, not 7 percent.

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CHIEF INVESTMENT OFFICER MENG: So this slide -- when we say our expected return for the next 10 years of the portfolio is 7 -- 6.1 percent, at least it's not a point estimate. It comes with a wide range of distribution around the 6.1 percent. The 6.1 percent is only the mean of the expected -- of the expected future return distribution. So this means that you see the range in the middle 6 to 8 percent. So with 6.1 percent expected return and 11.4 percent for expected volatility, we would expect that 68 percent of the times in the future our return will fall between 5.3 percent and 17.5 percent.

And 95 percent of the times that our future return will fall between 16.7 percent and 28.9 percent. And you can go for 99 percent of the time that our expected return falls between negative 28 percent and positive 40 percent.

So there are three takeaways on this slide. For one, again, our 6.1 percent is not a point estimate with a wide range, so that no -- what we highlight at this point is so that no one is alarmed by realized future returns are different from 6.1 percent or from 7 percent. It's never meant to be a point estimate.

The second point on this slide that you can see on the left side, we are more concerned with left side the probability of a large drawdown. So that would mean -- what we mean by drawdown. And as you will see in the later side, that drawdown could easily wipe out the returns -- good returns from a couple of years.

The third point is that the drawdown, the conventional risk management practice and framework tends to underestimate the probability, as well as the severity of the market drawdown. So that's the second part of the discussion this morning, the market drawdown.

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CHIEF INVESTMENT OFFICER MENG: So as I said in the previous slide that for the two largest asset class in our portfolio, global equity and fixed income, we have -- for each of them, we have a very good and simple indicator for the future returns. The X axis that I show you is U.S. treasury real rates since 1962. And as we said that for fixed income, for bonds, the yield is a pretty good indicator of a future return.

And the Y axis is earning yield of global equity, which is a good indicator for future return as well. As you can see that under the upper right-hand corner, where we have the happy face. So that one -- that was due in 1981 recession. And at that time, as you can see that back then, U.S. treasury offers real yield about 8 percent, nominal yield about 14 percent. And the equity earning, back then forward earning yield is about 8 percent as well. So these are real yield. And we put it together as a 60/40 portfolio. If you look at our portfolio today, it's not that different from 60/40 portfolio. When we say 60/40, it means 60 percent roughly in equity exposure, and 40 percent in bond exposure.

So currently, our portfolio in global equity is about 50 percent and private equity about 8 percent. So all add up the equity exposure about 60 percent. And then our bond exposure fixed income, about 27, 28 percent, plus the real estate. Now, we run our real estate portfolio as U.S. core real estate, so it behave similar to a bond.

So if you look at our portfolio together, we are not that different from a 60/40 portfolio. So for a 60/40 portfolio, in 1981, during that time when the happy face, the expected return is 14.7 percent, and our discount rate back then was only 8.5 percent. So the reason for the happy face is that back then the job was easier for the staff to deliver 8.5 percent, when the risk-free rate alone give you 14 percent already.

So the staff was happy and the members and beneficiaries and employers would be happy as well, because we could easily deliver that return.

But today's environment, if you look at the lower left-hand, so that's where today where we are. So if you're using the same methodology, today's nominal expected return going forward using 60/40 portfolio, only public asset only give us 4.3 percent. However, our assumed rate of the return is 7 percent. So there is a gap, about 3 percent gap already.

So the tail -- the headwind today is about 3 percent. Back in 1981, the tailwind is about 6 percent. So that's why we meant -- that's why we say the return for the next 10 years is less likely to be as good as the past 10 years.

CHAIRPERSON FECKNER: Mr. Meng, do you want to take questions as you go or wait till the end?

CHIEF INVESTMENT OFFICER MENG: I can take questions.

CHAIRPERSON FECKNER: Okay. We have one for you.

Ms. Brown.

COMMITTEE MEMBER BROWN: Thank you.

Can we go back to slide 3. Thank you.

CHIEF INVESTMENT OFFICER MENG: Oh, sorry.

COMMITTEE MEMBER BROWN: So in our Board packet, we don't have the year -- 11 to 60 years, 8.3 percent expected return. So what's going to make returns go up? So for the next 10 years, they're going to be 6.1 on average and then they're going to go for year 11 through 60 to 8.3 percent. So what do we expect to change in the market, assuming we don't change our asset mix?

CHIEF INVESTMENT OFFICER MENG: So what -- in this case, the 8.3 percent from 11 to 60 years is really a long-run average. So in the long run, if you look at this chart, we're assuming that we will move back to somewhere a more comfortable place, and then we can start earning 8 percent return.

But currently, because we are in the lower left-hand corner, the forward-looking return is lower than the long-run average.

COMMITTEE MEMBER BROWN: So we think that the Fed funds are going to change their rates on interest? I mean, what's going to get us to 8.3 percent? I'm just trying to figure out what -- I just came off of a week at Wharton on investment strategies, so I would love to talk to you about convexity and all other kinds of things. But why don't you just tell me what me think is going to happen in 11 to 60 to get us to that higher number?

CHIEF INVESTMENT OFFICER MENG: That probably is better to be addressed by our Actuary Office who formulate a long-run return.

COMMITTEE MEMBER BROWN: Okay. Well, you know, we can wait to answer that. It's not that simple. Like I thought it was gong to be a simple answer.

CHIEF EXECUTIVE OFFICER FROST: Yeah. So Ben, I think she's asking so if we're assuming we're going to hit 7, but the CMA say 6.1, do we have any specific strategies that we think gets us closer to 7? So what are you thinking about that delta?

CHIEF INVESTMENT OFFICER MENG: Well, that's the question we think every day, every waking moment of the Investment Office. So that's not an answer that I can give you a simple answer. This will be an ongoing project for years to come.

COMMITTEE MEMBER BROWN: Great. Okay. Thank you.

CHIEF INVESTMENT OFFICER MENG: Thank you.

CHAIRPERSON FECKNER: Mr. Perez.

COMMITTEE MEMBER PEREZ: Ben -- Mr. Meng, sorry, you said if you take out the administrative costs. So I'm confused. Is -- are these return rates net?

CHIEF INVESTMENT OFFICER MENG: Yes. So the 7 percent for the long run, 6.1 percent for the next 10 years is net -- net of administrative expense.

COMMITTEE MEMBER PEREZ: Okay. And then the second thing is I appreciate the happy faces --

(Laughter.)

COMMITTEE MEMBER PEREZ: -- because that way I know which way to look.

Thanks.

(Laughter.)

CHIEF INVESTMENT OFFICER MENG: Let's all hope for that.

(Laughter.)

CHAIRPERSON FECKNER: Go ahead.

Oh, wait. One more. Mr. Jones.

COMMITTEE MEMBER JONES: Yeah. Thank you, Mr. Meng. My question goes to the impact of all of this. We have our discount rates and our expected returns. And if we don't achieve those returns, it flows through and affects our funded status.

CHIEF INVESTMENT OFFICER MENG: Yes.

COMMITTEE MEMBER JONES: And so -- and I think it's important to note that when we have a 7 percent discount rate, and we get 5, and we lose money, that let's say 2 percent drop, then it's going to take more than 2 percent to get us back to where we were --

CHIEF INVESTMENT OFFICER MENG: Correct. Correct.

COMMITTEE MEMBER JONES: -- because of the transaction where if you've got a dollar --

CHIEF INVESTMENT OFFICER MENG: Right.

COMMITTEE MEMBER JONES: -- and you lose 50 percent of that, you go to $0.50. And you go 50 percent up, you don't go back to a dollar, you go to $0.75.

CHIEF INVESTMENT OFFICER MENG: Correct. Correct.

COMMITTEE MEMBER JONES: So that it -- why it takes so long. What's this long period of time to regain that money that we lost, because we know it's not going to be in the same length of time, because you're now dealing with a lower base. So how does that play into your --

CHIEF INVESTMENT OFFICER MENG: So if you may, we have another other slide --

COMMITTEE MEMBER JONES: Okay.

CHIEF INVESTMENT OFFICER MENG: -- later just specifically to address that question.

COMMITTEE MEMBER JONES: Okay. Okay. Thank you.

CHAIRPERSON FECKNER: Ms. Taylor.

VICE CHAIRPERSON TAYLOR: Sure. And I just wanted to ask, so the -- as we were looking at your graph with your happy face and sad face, the nominal expected return back in 1981 was 14.7. There was a discount rate of 8.5 percent. Bonds were making more money. What's -- can you give us a little background just sort of for our folks on why that was?

CHIEF INVESTMENT OFFICER MENG: Yeah. So that was -- if you remember in the 70s and 80s with the hyper inflation, and that was Paul Volcker trying to fix -- to rein in inflation, so he raised interest rates very aggressively, and -- so -- which caused a recession.

When recession happens, the asset class tends to be cheaper. So that's why, during the recession time, the equity - you see they Y axis - offers very attractive return. And that gets to the points that I would like to discuss in the second half of this slide.

When the recession happens, when the crisis happens, first, let's make sure that we can pay all our bills, and on top of that make sure we can generate some liquidity, or dry powder, on -- so that we can deploy -- we can deploy and take advantage of the market dislocation during time of crisis.

VICE CHAIRPERSON TAYLOR: Excellent.

CHIEF INVESTMENT OFFICER MENG: So that what happens during the -- that was Paul Volcker raising interest rates cause the recession. And normally, when the recession happens, you lower interest rates. But the fact that he raised the interest rate to cause a recession, that was time interest rate was really high, 14 -- above 14 percent. And we were only trying to earn

8.5 percent, so it was much easier back then. You could have just, you know, by the government bonds, and -- you know, in absence of -- or reinvestment risk or the drawdown risk.

So you still -- even with the reinvestment risk, with 14 percent treasury yield, you're trying to earn 8.5 percent, which we would have come out in much better place.

VICE CHAIRPERSON TAYLOR: Which kind of leaves us in a situation now, because we're already at low interest rates. There isn't a lot --

CHIEF INVESTMENT OFFICER MENG: Correct. Yes.

VICE CHAIRPERSON TAYLOR: -- to do, if a downturn occurs.

CHIEF INVESTMENT OFFICER MENG: Exactly. Exactly.

VICE CHAIRPERSON TAYLOR: But I will also say, and I just -- I'm -- because this sounds all very scary for our members. I just want to say that we've been talking about this 6.1 percent return for the last couple of years, three years or so.

CHIEF INVESTMENT OFFICER MENG: Yes.

VICE CHAIRPERSON TAYLOR: So we're working our way out of it. And I also --

CHIEF INVESTMENT OFFICER MENG: I don't --

VICE CHAIRPERSON TAYLOR: -- want people to remember we've had good return years for the last few years. And I think it's important that we -- this is not an exact science.

CHIEF INVESTMENT OFFICER MENG: Exactly. Thank you.

CHAIRPERSON FECKNER: Ms. Middleton.

COMMITTEE MEMBER MIDDLETON: Yes. Thank you.

Looking ahead to the next 10 years, are you more concerned about inflation or deflation?

CHIEF INVESTMENT OFFICER MENG: I personally am more concerned about deflation. But there's a later -- I have a slide on that one as well.

COMMITTEE MEMBER MIDDLETON: All right.

CHIEF INVESTMENT OFFICER MENG: So where we are going from here today is really two extremes. One is the Australia scenario, the other one is the Japan scenario. So these are two extremes and probably we are somewhere in between.

COMMITTEE MEMBER MIDDLETON: Knowing the impact that taking the discount rate from 7 and a half percent to 7 had on municipalities across the state, seeing a 6.1 percent number is --

CHIEF INVESTMENT OFFICER MENG: Concerning.

COMMITTEE MEMBER MIDDLETON: I'm looking for the right word, and it's not coming. Scary is only the beginning.

CHIEF INVESTMENT OFFICER MENG: I guess my point is that don't -- no need to be scared, but we need to stay focused, focused on doing the right thing, the most effective, and impactful thing for the portfolio.

CHAIRPERSON FECKNER: Go ahead, Mr. Meng.

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CHIEF INVESTMENT OFFICER MENG: Okay. So the second topic of this agenda item, what is the market drawdown, what can drawdown do to us, and what can we do to prepare for a market drawdown. Simply put, there is no commonly accepted definition, what is the market drawdown? But we like this definition from Wikipedia. So putting it plainly, a drawdown is the pain period experienced by an investor between a peak and a subsequent valley of the stock return.

So we like this definition, because it also highlights the element of pain. It means that the drawdown and how long the markets stay low, the duration of the market drawdown. So we define market drawdown as a 20 percent market decline for a period of longer than three months.

So as you can see that since 1987, we have three such market drawdowns by our definition. And market drawdown tends to coincide with economic recession. You see the gray bar, that's economic recession, but it does not has to be always the same time. As you see, the 1987 market crash, the market drawdown that did not come with a recession. The recession came in 1990 and 1991 when the tech bubble burst. So that's what our definition of drawdown.

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CHIEF INVESTMENT OFFICER MENG: So why do we care about drawdown? So this goes back to Mr. Jones question a moment ago. If you look at the Pension Buck, the pension dollar, 59 percent of the benefits payments are from investment returns. And we manage the 59 percent. And if there is a drawdown -- a large drawdown in the $0.59 of the portfolio, it will negatively affect the $0.28 and $0.13, which is the employer and the employee contributions.

So we care about drawdown deeply, because we view this as a shared responsibility. And it is our responsibility to manage the $0.59 of the dollar as prudently as possible and to mitigate drawdown.

So we care about drawdown deeply. And we are vulnerable to drawdown. And I want to say something. We are vulnerable to drawdown by choice. Now, what do I mean by that we are vulnerable to drawdown by choice? Because there are no other options. This is the best option we have. So why do I say that?

You first look at the top -- on the left, the top box, the underfunded status. So there are two main reasons. One, we -- our underfunded status. Currently, we have a funded status about 70 percent. And in order to close the funding gap, and at the same time maintain the affordability of the pension system to our employers and members, we have to take on risk in the portfolio to close the funding gap.

And then the other reason is, as I just showed you, that our assumed rate of return 7 percent. And the risk-free rate return today is 2.5 to -- 2.25 to 2.5 percent. So there is a gap of 4.5 percent right there. So in order to make up that difference, we have to take on risk. So because of our underfunded status, as well as our high assumed rate of return relative to risk-free rate, we have to take on more risk in the portfolio.

However, for a risky portfolio, that comes with a potential for larger drawdown. So that what I meant by we are vulnerable to drawdown by choice, because there are no other better choices. And we're potentially -- we are more vulnerable to a larger drawdown, because of the riskier portfolio.

What compounds the challenge is that the timing of the market drawdown is now predictable. So what do we do? So if there's one takeaway for the entire presentation today, I would like you to think about these two -- the last two points.

So in this case, what do we do? Drawdown is very impactful. We care about drawdown. And we're vulnerable to drawdown by our choice, and the timing of the drawdown is not predictable, then what do we do?

So first thing we do before the drawdown, we establish a plan. And then during the drawdown, make sure we stick to the plan. So that what we should do. And again, as I said, if there's one takeaway for this entire presentation, these were the points I will come back again later -- over again in the later part of the presentation.

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CHIEF INVESTMENT OFFICER MENG: So this is a real example -- recent example why we care about drawdown, again, back to Mr. Jones' question. So this is -- if you look, this is S&P 500 total return from October 2007 to March 2012. As you can see that from October 2007 to March 2009, where is the lowest point, S&P -- in that one half year's period, S&P 500 lost 50 percent. And to earn that 50 percent loss back for the next four or -- for the next three years from March 2009 to March 2012, the market had to earn 100 percent to -- just to make it back to where it -- where it was in October 2007.

So this is a asymmetrical return. You need 100 percent gain to make up a 50 percent loss. And that was Mr. Jones' point.

So for this four and a half years from October 2007 to March 2012, we lost opportunity to compound our asset at 7 and a half percent. Back then, our assumed rate of return was 7 and a half percent. So basically in the four and a half years' period, we made a long trip, but we lose opportunity to earn 7.5 percent. What make it even worse is that you look at the top line, the dotted red line -- the dashed line, that is our liability for the same time period. Liability never experienced a drawdown. That liability continued to grow.

So not only we lost opportunity to compound our asset at 7.5 percent, on the flip side, liability continued to grow. So the net result is our funding -- funded status decreased and contribution rate increased. So that's another reason why we care about drawdown deeply.

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CHIEF INVESTMENT OFFICER MENG: So now, I have concerned you enough with the negative impact of drawdown. What is really likelihood of a drawdown? So on average, the economic cycle I say about 10 years. So you have six or seven years in good time and then you have two to three years very bad time, so that's the drawdown time.

So let's say that on average that's the case in history. So that what we call unconditional probability of a drawdown for the next 12 months is about 15 percent. So this is unconditional probability means that you are not conditioned on anything. Your prayer of where we are on the economic cycle. However, if we believe that we are in late cycle, the conditional probability for drawdown in the next 12 months is much higher.

The recent estimates by New York -- New York Fed about 30 percent. And the latest estimate by San Francisco Fed is 44 percent of the drawdown in the next 12 months. And it is important to know that, you know, the estimate is based on history and backward looking, so it's only if history is any indication.

Going forward from here, as you hear from the news a lot is that, you know, we are becoming the longest economic recovery in the United States -- in the history of the United States. From here, going forward, as I said, that, you know, the outcome of our economic recovery has wide range of outcomes as well, but bounded by two extremes.

On the upper end of the extreme, the good end, you know, extreme is Australia, that it has experiencing economic recovery for close to 30 years, since 1990, 1991, and still counting. So that is the good end of the extreme.

On the bad end of the extreme is Japan. After out close to 30 years still has not fully recovered from its economic downturn in 1990 and 1991.

So you have these two extremes that what we see -- we haven't seen in the past 30 years. So this is the range of the outcome we're experiencing.

And, yes, it is true that, again, we are on our way to becoming the longest economic recovery on the U.S. -- in the U.S. history. And the -- when you hear that news, most people are implying that it's -- a drawdown is near. It's coming. But we also know that economic recovery does not have die of old age either.

So what's going to happen from here? We need to -- we always hope that our economic recovery can be as long or even longer than the one that Australia is experiencing. But we have to acknowledge that we are in uncharted territory. The reason is that if you look at in the past three recessions, in the 1991 -- 1990 and 1991, the Fed cut 5.75 percent to stimulate the economy. In the 2000, 2001 recession, the Fed cut 4.25 percent to stimulate the economy. And in the recent global financial crisis in 2008, the Fed cut 5 percent and then also engaging in a large amount of quantitative easing.

And according to estimate by Bloomberg, that would put the cut in the most recent global financial crisis in 2008 of 7.75 percent.

And one of the reasons I said that we're in uncharted territory now, currently the Fed rate is 2.25 2.5 percent. So basically, we don't have another 7.75 percent to cut to stimulate the economy should next drawdown, next crisis comes.

And the other thing is the quantitative easing. The capacity of quantitative easing is not unlimited. So when the next drawdown comes, monetary policy is less likely to be effective. So that what we mean that we are in uncharted territory.

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CHIEF INVESTMENT OFFICER MENG: So now I have concerned you enough about drawdown. What have we been doing to prepare ourself for the drawdown and what we continued to do to prepare ourself?

So what have -- what has our already been done to prepare for drawdown? So the first, we lower the discount rate from 7.5 percent to 7 percent. And second, we have a net asset allocation. This new asset allocation really started from the 2017 asset liability management workshop. And, at that time, this body, the Investment Committee, under the then -- the leadership back then, you adopted portfolio priority, you adopted mitigating equity market drawdown as the top portfolio priority.

And because of that decision by you directed the staff to review the major asset classes, global equity and fixed income, from the perspective of equity market drawdown the ability to mitigate equity market drawdown, and which led to the asset segment work.

Result going back in the details again, I'm very pleased to report to you that that work adopted by you, and, you know, encouraged by you for the staff to work on, has performed exactly as we expected during -- since it was implemented, which is to mitigate the drawdown of -- to mitigate the impact of a market -- of a market drawdown.

In addition to the new asset allocation, we also negotiated $6 billion capital injection from the State, we also shortened the amortization schedule from 30 years to 20 years. So all these actions together really put us in a better place in preparing ourselves for the next inevitable market drawdown.

Here, I also would like to highlight that this is a showcase of a partnership. This is -- we have achieved -- all this is really a partnership between you, the trustee, us, the staff, employers, employees, and policymakers. And we should continue to -- we should continue to foster that kind of partnership to bring the best for the system.

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CHIEF INVESTMENT OFFICER MENG: So what's -- so I just showed you what has been done, you know, between the trustee, between the staff and employer, employee, and policyholders. What else we are working on?

So in order to answer that question, it's important to see what could happen. What other awful things could happen during a market drawdown? So we list four of them.

The first thing is that we run out of money. When the market time drawdown comes, we cannot pay our bills. We cannot fulfill our obligations.

And the second one is we miss opportunity to take advantage of market dislocations. Remember, the happy face that I show you a moment ago during the 1981 recession, the reason happy face, because if you had the dry powder and the courage to deploy capital at that time, you could -- you would have earned higher return.

So in order to do that, you want to make sure that when the market drawdown comes, you have -- you do have the dry powder on hand.

So the first two things. So these are two awful things, either run out of money to pay bills or you just don't have money to take advantage of the new opportunities.

In order to mitigate this impact, we are developing a proactive and comprehensive liquidity management and action plan. So this plan is the ongoing project they're working on. This actually is the first project for the Investment Office. We know they will tell you that this is the first project -- very first project asked on my very first day when I return to CalPERS.

And currently, it's sponsored by MID Kevin Winter and led by a group of people from various departments at CalPERS such as Michael Krimm, Eric Baggesen. Dan Bienvenue is ensuring that all the resources are needed, because this is so important for us to be ready for the next market drawdown. And Eric Baggesen and his team is all involved -- fixed income team is all involved.

The last two awful things could happen in drawdown is that we cannot maintain our risk profiles. When the market drawdown comes, we panic. We can't maintain our desired risk profile in the portfolio, and the last thing is we panic. You know, we sell assets that crystallize loss.

So the last two -- we can mitigate the impact of the last two by having strong policy and guidelines. So these are two -- these are to make sure that we stick to the plan when the crisis comes.

To deal with the first two, we need to develop a plan. And to deal with the last two, we need to stick to the plan when the crisis comes.

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CHIEF INVESTMENT OFFICER MENG: So what else can we do? So as I said, that our preparation, we develop an action plan of what to do, and equally important, what not to do. And we implement a centralized liquidity and leverage management. So this part I started already even before I came back. And again, this is led by Eric Baggesen and his team and the entire Investment Office. So we're making progress on this important project already.

Then we also implement a more real-time monitor and scenario analysis. So that's part of the project that I'm personally very deeply involved with. We also -- after we review all these, we may need to update some of our investment policies to allow for faster response, because most of our investment policies and guidelines are designed for normal times, not for the crisis times.

So that's our preparation, and then plus, your partnership. So what I mean by your partnership that we work together, we develop a plan together, so we -- we'll all be part of the plan. And then when the crisis comes, we all support the plan during the drawdown.

So with our planning preparation and your partnership, we have a strong defense against a market drawdown. But it's very important to note that with all these actions, we can only mitigate the impact of drawdown. We are not going to eliminate completely the impact of drawdown.

CHAIRPERSON FECKNER: Before you go forward, I have a question. But, Ms. Frost, do we need to start our workshop now or can we wait a little bit longer? We're about 10 minutes past.

CHIEF EXECUTIVE OFFICER FROST: Yes, let's take a pause in Mr. Meng's presentation and start the CFA Institute.

CHAIRPERSON FECKNER: Very good. Thank you.

Thank you, Mr. Meng.

So that brings us back to Agenda Item 7, the Asset Class Overview.

Who's going to introduce this?

(Thereupon an overhead presentation was Presented as follows.)

INVESTMENT DIRECTOR SIMPSON: Good morning.

CHAIRPERSON FECKNER: Good morning.

INVESTMENT DIRECTOR SIMPSON: Thank you very much for your patience. We're just getting organized there to make sure that Jeff could make his flight, because he's coming from here to going off on a three-week vacation with his -- with his --

CHAIRPERSON FECKNER: Oh, good for you.

INVESTMENT DIRECTOR SIMPSON: -- with his partner. So we're just delighted that we can join us again.

So let me just briefly introduce Jeff. For those of you who remember, he joined us last month to kick-off the first of our new series of Board education workshops. And we're thrilled in this to be able to partner with the CFA Institute. That's the Chartered Financial Analyst Institute, and also the Council of Institutional Investors. And it's very nice to have Amy Borrus, the Deputy Executive Director here with us as well for CII.

If I could just borrow the clicker for a moment, Ben, and as you'll -- you're in clicking mode still.

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INVESTMENT DIRECTOR SIMPSON: So just a brief recap on what we're doing today. This second workshop forms part of a series of education, which has come out of the Board's self-evaluation process that you went through last year, facilitated by the National Association of Corporate Directors. And several Board workstreams were formed, and Ms. Rogers and Ms. Taylor have been in the lead on the workstream around Board education.

The second important point is that the Board as a whole sets delegations for each of the committees. And that's a fancy word for saying what does each committee have as its responsibilities? And let me go to this as well.

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INVESTMENT DIRECTOR SIMPSON: The CalPERS Pension Buck. I think Ben just explained eloquently why we care about the success of the Investment Office is because the fiduciary duty that the Board has in overseeing the assets of this system on behalf of members, protecting that by understanding risk and protecting members' interests by doing the best job we can, as Ben says, to do the right thing in the right way, and stick to our plans is very important.

But in that, the partnership with the Board is fundamental. So this education process is really to help us all understand the responsibilities of the Board, the committees, staff, the consultants, because in that partnership, we're going to be able to do the best job we can for our members.

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INVESTMENT DIRECTOR SIMPSON: So a quick reminder on what the Board's delegation to this Committee includes. Top of the list is strategic asset allocation. And the degree to which the asset allocation is successful really will determine whether you, as a fund of any size, manage to achieve your objectives. The asset allocation is the single most important decision that you will oversee as the Board.

So in terms of building out the curriculum for the Investment Committee with the Board workstream in the lead here, has been to say, well, the first part of the curriculum, which we completed last -- last Board meeting, is to look at the fundamentals of risk and return. That's really the equation that underpins everything that we need to do for protecting our members.

Then what we're doing starting today is having a session on each of the four main asset classes, fixed income today. We'll then turn to public markets with global equity. Then we'll be looking at real assets, and then private equity. And then the final session will be to bring it all together in a workshop on asset allocation.

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INVESTMENT DIRECTOR SIMPSON: So it is my pleasure now to hand over again to Jeff, who has this wonderful introduction, which I absolutely love, bonds are not boring. I feel we should be wearing that on a t-shirt. I don't know if Arnie would like to bring that forwards for our global fixed income team. But bonds are not boring. They do play a vital part in CalPERS achievement of its investment objectives.

And again, it's very much our pleasure to have Jeff Bailey with us. As you know, he's not only a trustee, so he understands the mighty responsibilities that each of you assume when you join a board, but he's also got tremendous experience in the public sector, as you know, working for the Board of Minnesota, and he was a CFO for many years for a very successful corporation, Target.

So -- and also, Jeff, you serve on the Board of the CFA Institute itself, which is a great public service to everyone.

So with that, let me hand the clicker to Jeff and we'll take you through the second workshop in our series.

Thanks, Jeff.

MR. BAILEY: Thanks, Anne.

I should do a brief correction. I was never the CFO of Target. I'm Chief Operate -- Investment Office, not the CFO.

INVESTMENT DIRECTOR SIMPSON: Oh.

MR. BAILEY: My old boss, the CFO would be outraged if I tried to claim his position.

(Laughter.)

MR. BAILEY: So I'll leave it that way. But it's a pleasure to be back. I enjoyed our meeting last time. And I'm hoping we can have the same sort of interaction that we did the last time as well. I thought the questions you had were excellent, and please keep them coming as we move along here. And Anne and Ben will kick me under the table if I end up getting wound up and don't give you time to ask those questions. So please feel free to do so at any time.

If you remember last time, we covered risk and return basics. And that was a very wide ranging set of topics. And we had a lot of discussion on issues across the spectrum. Today, we're going to be on a much more focused topic, and that's fixed income investing.

And we're going to look at this asset class from the trustee's perspective. And I think that's important. I've found in my experience as a trustee on boards, and foundations, and in pension funds that the issue of fixed income investing is maybe one of the most confusing, because I think people on the -- trustees on those boards have a hard time understanding the role of fixed income in their -- in their investment programs. It's not immediately obvious.

So as we go through this discussion today, I want to emphasize, I'm not trying to turn you into portfolio managers. You shouldn't be portfolio managers. As trustees, that's not your role. You're setting Investment Policy for the organization. So understanding the role of fixed income is different than understanding all of the very intricate nuances of fixed income securities. But understanding what fixed income can do in your portfolio and what it can't do, I think is really the focus for today.

And before I launch into talking about bonds are not boring, which I absolutely believe, let me give just a real quick technical disclaimer. I'm frequently going to flip back and forth between referring to fixed income securities and bonds. I think it's important to understand that if you're going to be very technical about it, bonds are really a subclass of fixed income securities.

I mean, there's all sorts of different types of fixed income securities. And bonds are maybe the most important subclass of those. But I think it doesn't do any violence to the discussion to use them synonymously. In fact, I think practitioners a lot of times do. They'll just say bonds when they really mean this broad class of fixed income securities.

But if you get into a highly technical cocktail party discussion, you do have to understand that there are -- are fixed income securities that aren't bonds. I mean, you can think of CDs at a bank for instance. That's a fixed income security. I wouldn't call it a bond. But there's lots of other examples that. So as long as we know that going forward, I'm going to flip back and forth between referring to fixed income and bounds and move on from there.

So let me just introduce this idea here in a very conceptual way. As I said, bonds aren't boring. I firmly believe that. Used in the right way for different funds, they have a very important role to play. And that -- the role of bonds in a -- for an investment program changes quite a bit moving from mission, to mission, to mission for different types of funds. If you go to a large endowment fund, some -- at some of the universities, you may find that they have extremely low allocations to bonds.

We can have a debate over whether that's a good idea or not, but it's a fact, that they might have single digit sort of allocations to bonds in their portfolio.

On the other hand, if you move to a corporation that was fully funded, it had closed down its pension plan to new entrants, it's quite possible that you see virtually 100 percent allocation to bonds.

And then, of course, you find pension plans across the country that are open to new member and as most public funds are. They'll have significant bond allocations in their portfolio. But similar between that very low allocation and very high allocation. It really depends upon the mission of the pension fund. And we'll talk a little bit about how that mission affects that allocation to fixed income in the portfolio.

Bonds are not boring, but they're definitely misunderstood. And I think that's one of the goals today is to try to clear up some of those misconceptions about bonds.

They aren't boring in the sense that they can have quite a bit of volatility in the portfolio, especially if you have bonds that have a very long maturity, in other words, the end date of the bond is quite a ways out. You can -- on an annual basis, you can have a lot of volatility in the returns in the portfolio. That doesn't mean they're a bad investment or that they're an exceedingly risky investment, but they do have that sort volatility.

I think more important is the fact that bonds have this very low -- high quality bonds have this very low correlation with equities, and we're going to talk a bit more about that.

I think trustees in a very intuitive way understand why they have equities in a portfolio. So in other words, they recognize equities -- risk assets we'll call private -- private equity and public equity these sort of risk assets. They understand why they have the most -- them in the portfolio. They're meant to drive returns to earn that large chunk of the pension -- of the CalPERS Pension Buck, for instance, and they realize that putting those in the portfolio has a -- serves that purpose, even though that they're fairly volatile.

The high correlation that stocks have with the economy is what causes stocks to be risky. In other words, we talked about this last time, the idea that when the economy is doing poorly, because stocks represent ownership in corporations, and corporations' outcomes are a function of how the economy is doing, stocks are likely to do poorly in an environment where the economy is poor.

Vice versa, when the economy is doing well, stocks are going to do well. And that's just a compensated payoff for the fact that it's inconvenient, to say the least, to have stocks do poorly in a poor economic environment. That's the time when you have the least flexibility to make additional contributions to the investment program, when it's most expensive to you to have a poor performance.

So what owner -- investors in stocks expect to get paid in normal environments, they expect to get paid a premium for owning that particular type of investment. It's less -- if you think about fixed income -- high quality fixed income, it's the opposite side of the coin. So high quality fixed income, U.S. treasury is going to payoff regardless of the fact of whether it's a poor economic environment or not.

And as a result, there isn't that premium it's attached to owning fixed income and securities. And so as a result, you get relatively low expected returns compared to equities. And that makes them somewhat problematic for portfolios, because those low expected returns don't drive the performance of the portfolio the way that equities do.

So its understanding that that element is there that I think is confusing for trustees. Because again, they see the reason why they have equities in the portfolio. They're less clear why they want to have fixed income securities in the portfolio.

There are ways to incorporate bonds in a portfolio I refer to as risk-budgeting strategies that combined with other asset classes can create portfolios with really very attractive risk return profiles. But it's not something that's immediately obvious to most trustees, so...

In spite of the low -- in spite of the low expected returns on portfolios, and the fact that if -- as interest rates change, the returns on bonds can either go up or go down, bonds have again this key element that no other asset class really has, and that's this dependable low correlation with equities. And that is a valuable feature. And it's that that we're going -- that feature that we're going to talk about a fair amount today and why bonds end up getting into portfolios so soften.

So with that, I'd -- again, stop me if you have questions as we move along.

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MR. BAILEY: Let me start with just a few fundamental fixed income concepts. And I'm going to take you down a list of what I consider to be probably the seven most important. There are plenty of other fundamental concepts related to fixed income, but I view these as exceptionally important.

First of all, let's just start with the basic understanding, bonds represent an obligation of an issuer to make specified payments to the owner of the bond at specified times in the future.

So we think of interest payments on a periodic basis. We think of principal payments. Equities, as you know, don't have any promises to pay. That's residual ownership in a corporation. If the corporation does well and you've paid off all the financing of the corporation, the shareholders have what's left over. And so there's a lot of upside in that sort of situation.

Bonds don't have a lot of upside, high quality bonds. I mean, I think there's a, you know, saying among bond investors. You know, the best thing that can happen is you get paid. So you get your interest payments, you get your principal payments and you move along.

And that's -- the promise payments are those interest payments and the return of principal for most bonds. Now, some bonds just make interest payments and principal payments, but other bonds may only make a principal payment. You know, zero coupon bonds are a classic example of that, where you buy the bond and it just makes one payment at the end of the life.

And there are a whole host of different variations on those sort of interest payments. Mortgages make monthly payments. Corporate bonds tend to make semi-annual payments. The variety of different types of payments is seemingly infinite. But the important point is that there are these promises to make specified payments at different points in time.

Something that we'll talk about a fair amount today is that bond prices are inversely related to interest rates. We'll get into that in a little greater detail. But basically, the notion is if current rates -- if interest rates rise, that makes bonds that have -- that are paying the current -- let's say bonds were currently 5 percent and interest rates rose to 7 percent. The 5 percent bond just looks less attractive.

And for reasons we'll talk about here in just a minute a little bit of the math, but the notion of interest rates rising just makes my current owner -- my current interest rates less attractive. So the bond price is going to go down.

Flip side. If interest rates decline, the current interest rate I have on the bond looks attractive, and that means that that bond price is going to go up. So this inverse relationship is fundamental to bond -- all bonds experience that sort of relationship.

Fourth, the longer is the maturity of the bond, the more sensitive is its price to changes in interest rates. We won't go into that math here. That's a little bit more complex than we want to get in our examples, but it's -- if you think of a 30-year treasury bond. Its price is much more sensitive than a one-year treasury note -- or treasury bill.

There -- and as you extend out the life of the particular bond, for the most part, it's going to become more sensitive to changes in interest rates, its price that. So that's something to bear in mind as well.

Number 5, bonds with longer maturities typically yield more than shorter maturity bonds. And again, we're going to drill down into this just a little bit more. But this is this idea of what's called an upward sloping yield curve that a bond -- a 30-year bond typically yields more than a 10-year bond. And the 10-year bond typically yields more than a 1-year bond.

There are all sorts of examples where that doesn't hold true. It's not some sort of fundamental law of finance that that has to occur, but it is typically the case that longer maturities yield more than shorter maturities.

Number 6, lower quality bonds yield more than higher quality bonds almost invariably. We refer to this as a credit spread. And again, we'll drill down into this just to -- we'll drill down into this further. But the general notion, of course, is that bonds with lower quality have a greater chance of default. And I want to higher interest payment for that, the risk that I may not get paid by the issuer.

And then lastly, number 7, and I think this is important to bear in mind, bonds are just simply more complex financial instruments than common stocks. And it's sometimes hard for non-investment people to grasp that.

Companies themselves are complex, and that makes stocks interesting. But for the -- with some notable exceptions, a stock of company A is the same as a stock of company B. it operates in the same legal structure.

And bonds, on the other hand, are incredibly diverse, I mean, in terms of the maturities, the subordination of payments, the different types of coupon payments, the collateral that backs them up, embedded options.

I mean, tease are all extremely complex sort of issues. And not only that, but one company can issue many different types of bonds. And so bonds themselves are, as I say, complex financial instruments. And in trying to understand the bond market, it's -- it pays to understand that complexity.

CHAIRPERSON FECKNER: I have a question, Mr. Bailey, from Mr. Jones.

MR. BAILEY: Sure.

COMMITTEE MEMBER JONES: Thank you, Mr. Chair.

Yeah, Mr. Bailey, on the item 5, bond with longer maturity typically -- I notice you say typically --

MR. BAILEY: That's important, yes.

COMMITTEE MEMBER JONES: -- yield more than the shorter term. And so my question is, is that currently the gap -- the yield curve is closing. In some cases, it's actually inverted. So what's going on in the market to cause that inversion on these long-term versus short-term bond yields?

MR. BAILEY: Well, Mr. Jones, there is a lot of discussion of that. And I don't claim to be a financial market forecaster. I mean, I think most of the discussion you're referring to is this idea that the yield curve, which was -- and we'll see an example of this in just a few minutes -- was steeply upward sloping four or five years ago is now basically flat, where short maturity bonds yield essentially the same as long maturity bonds.

You know, there's different arguments about why Fed actions might drive some of that, what market expectations are? You know, all bond yields are a function, on the shortened, of the Fed and its open market operation, and on the long end are all sorts of supply and demand decisions on the part of issuers, and purchasers, and inflation expectations, and economic outlooks.

It would be -- it would be wrong for me to try to give you a definitive explanation of that. No one I know of knows the definitive ex a definitive explanation of that.

CHIEF INVESTMENT OFFICER MENG: Yeah. If I may just add to that. Typically, it's upward sloping. When the flight however inverted, that's what sometimes people say that's an indicator of the next recession.

So, on average, when that happens, 6 months to 18 months after the curve inverted, that's the next recession. And this time around, we first the curve inverted in March 2019. And a moment ago, we mention that New York Fed and San Francisco Fed have both forecast the probability of the next -- of a drawdown in the next 12 months, one is 30 percent, one is 44 percent. But they both use the indicator of the curve is it inverted or not?

MR. BAILEY: I'm glad that Dan threw himself on that forecasting grenade, because I don't actually want --

(Laughter.)

MR. BAILEY: -- want to get anywhere near that.

CHIEF INVESTMENT OFFICER MENG: That's why I have not mentioned our own forecast. I use New York Fed and San Francisco Fed.

(Laughter.)

MR. BAILEY: I mean, it's exceedingly interesting. There's no doubt about it. And It's true to correlation in the past has been that in flat yield curves or inverted yield curves have been associated with recessions, but -- you know, the yield curve has been pretty flat for well over a year now and nothing has happened. So it's really hard to say. It's an interesting question for sure.

CHAIRPERSON FECKNER: Go ahead.

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MR. BAILEY: All right. Let me go back to this -- several of the fundamental concepts we talked about. First of all, this idea that bond prices are inversely related to interest rates and that longer maturity bonds are more sensitive to changes in interest rates. And this graph illustrates that. This is a very simple bond. It makes annual coupon payments. And I have a 10-year bond and a 1-year bond.

And essentially, what we're showing here is the idea that as the yield on these bonds increases, the price declines. The price is on the vertical axis, the yield is on the horizontal axis.

And the simplest explanation I could give for something like that would just be an example. Let's say that I promise to pay you next year $100, and the current interest rates were 5 percent. So the question is how much would you pay me today for that promise to get $100 a year from now at 5 percent?

Well, I could take $95 roughly, and put that into a savings account at 5 percent and have $100 a year from now. Okay. So I might pay you $100 -- or $95 for that promise to get $100 a year from now. Now, let's say that interest rates went up to 7 percent, what would you pay for that promise?

Well, I could take $93 and put that into a savings account and have $100 a year from now, roughly $93. And so I would only pay $93 for that promise. That promise is a bond. And so interest rates went up, the price of that bond goes down. I mean, that's the very simple math behind it. And it works under all conditions. Interest rates increase, bond prices go down.

And so the sensitivity is important to understand too. You can see the goal line is that 10-year bond. The 1-year bond is the gray line. It just simply is the case. And again, we'd have to go a little deeper in the math than I care to, that the 10-year bond is going to move it to a greater degree for that one percentage point change in interest rates.

And so the longer is the maturity of bonds in -- are bonds in your portfolio, the more sensitive they're going to be to changes in interests rates they'll always be inverse related to interest rates bond prices. But the longer the maturity, the more sensitive is going to be that bond to changes in interest rates.

It's probably a good moment to just note too about bond pricing. It's probably more art than science. So -- and it's important to understand the bond market itself is what's referred to as an over-the-counter market or a dealer market. There isn't a New York Stock Exchange of bonds for the most part. There are some small organized exchanges that don't matter particularly much. For the most part, it's a dealer market. When you want to buy a bond, you have to call up the dealer and get the price, and then -- and hope the dealer has the right inventory for you and make the purchase.

The treasury bond market is exceedingly deep and liquid. And the prices that you see quoted for treasury bonds are usually very firm. That really isn't necessarily the case for even the -- for corporate bonds that -- of even large companies. Many bonds just don't trade that frequently. They tend not to be extremely liquid. And the bid-ask sprayed is the referred to the difference between what you could buy it for and what you could sell it for. Sometimes those spreads can be surprisingly wide.

And because bonds don't necessarily trade frequently, a lot of times the prices are actually that you see in your portfolio are estimated prices. Now, the systems that they use to estimate those prices are actually pretty robust. But still, it's -- when you think about bond pricing, it's not the same as when you think about stock pricing. On your -- on my iPhone, I can sit there and look at prices of all sorts of stocks. And I have a pretty good idea ay any given moment what the price of Target corporation is.

On the other hand, I don't have on my iPhone the price of any particular bond outside of treasury bonds. And so as a result, you really don't know till you actually try to buy or sell the bond what the price for that bond is. But that's just a brief aside. It's not critical for what we'll be talking about today.

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MR. BAILEY: Mr. Jones, the yield curve, this slide is getting back to your question. And again, it's an extent one. You can see in 2013, this is the yield curve. It was very upward sloping. And maybe I should step back just a second. The yield curve is the yield maturity on bonds of various maturities. And it's important, you have to have everything else be the -- be the same. So in other words, the quality of the bond has to be constant. And that's why people usually, when they talk about the yield curve, practitioners will refer to the treasury yield curve, because we know that the treasury bonds are all of equal quality. So that's typically how it's expressed.

But you can see in 2013, the treasury yield curve was very steeply sloped. Short-term interest rates were bordering zero. While on the other hand, the long bond was at -- the 30-year bond was out at 4 percent.

Then fast forward to the end of March and really effectively today, you can see that the yield curve has shifted down a little bit today versus March. But it's essentially the same sort of pattern, where the short maturity treasuries are yielding almost the same as the long maturity treasuries. And that's referred to as a flat yield curve. Every once in a while the yield curve will actually tip the other way, where short treasuries will old yield long treasuries.

And almost always a steeply sloped yield curve has -- inverted yield curve has been associated with a recession. Flat yield curve it's a little less clear on the relationship between the two. But we're in interesting times, let's put it that way, in the bond market.

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MR. BAILEY: The other side of this is credit spreads. Again, everything being the same, lower quality bonds are going to outyield higher -- higher -- excuse me. Lower quality bonds are going to outyield higher quality bonds. The difference between two bonds of different qualities is referred to as -- is a credit spread. And most of the time, you'll credit spreads expressed relative to treasuries.

Again, treasuries are a great benchmark to compare things to. And so when we think about the reward for owning lower quality bonds, we usually compare the yield on a bond to the treasuries.

The bond market somewhat arbitrarily distinguishes between investment grade bonds and high-yield bonds. And I'm sure you've seen these terms before. Investment grade bonds are rated -- if we're looking at the S&P scale, they're rated AAA down to BBB. And then high-yield bonds are any bond that's rated below BBB. And there's a range of different types of high-yield bonds.

Again, S&P or Moody's is trying to estimate the default possibilities for those bonds. So bonds that are more likely to default are going to get lower ratings than bonds that are less likely to default.

Investment grade bonds, this AAA to BBB, usually yield, in excess of treasuries, somewhere around 125 to 150, 1.25 to 1.5 percentage points higher than treasuries of similar maturities on the longer end here.

High yield, it can be incredibly volatile. As you can see on this graph, the gray areas are periods of recession -- recent recession. So you can see the dot-com bubble in the early 2000s and The Great Recession around 2008, and you can see that these yields credit spreads spike significantly in that period of time. And that's, of course, because investors, at that point, have a flight to quality there. They don't want to own these bonds. They sell the bonds and that member -- interest rates are rising, so bond prices are going down. These are periods of time when investors are fleeing and moving towards higher quality, treasuries oftentimes.

So you see these big spikes in credit spreads. And the interesting point, again, Mr. Jones, to your question, I think credit spreads right now are not particularly wide. And so if you look at investment grade spreads, historically, they aren't -- haven't really moved out a lot.

So if you think of the bond market as trying to forecast the economy, and you said, well, a flat yield curve or an inverted yield curve is a sign of future economic troubles, that may be true. It's also the case that the credit spreads aren't widening out, which would also be something that you'd expect the bond market to be reflecting if it was worried about the future economy. So it's an interesting conundrum for individuals looking at the bond market and trying to use it as a forecasting tool. Very difficult.

Questions?

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MR. BAILEY: All right. We shift gears just a little bit. And I want to talk about different types of bonds. So this list does not do justice, let me be clear, to all the great variety of bonds that are out there, but it will get us started.

At the top, quite appropriately are U.S. treasury bonds. This is the bedrock of fixed income investing. The idea of -- the U.S. treasury bonds are the gold standard of fixed income investing I don't think is an overstatement. There's no probability of default, unless Congress decides to voluntarily default on its debt.

The government always has the option to print money, if it really wanted to. And so there -- since it pays in dollars and the government owns the printing press, it ultimately could payoff in dollars if it had to. So the idea that treasury bonds could default is really a very small probability, if any probability at all.

There are two types of treasury bonds. One is nominal bonds. So the idea that -- the interest rate is just expressed in current terms. So currently U.S. long treasuries are yielding somewhere around 2.5 percent or so. Those yields are expressed in current dollars in a sense. There's no adjustment for inflation that goes on.

There is a class of U.S. Treasury bonds called Treasury Inflation Protected Securities, TIPS is the term, where the interest payments and the principal payment at the end of the bond's life are actually adjusted for inflation. So that protects completely against movements in the Consumer Price Index, if you're a bondholder.

Those are a relatively small segment of the treasury universe. Most treasury bonds are actually nominal bonds with a tiny portion issued in inflation protected terms.

Other countries also have inflation-protected bonds. They don't call them TIPS, but a wide number of countries actually issue those sorts of bonds. But again, nominal bonds are the more common form of bonds.

Government agencies also issue bonds. So the United States government has different agencies. And these various units will issue their own debt. The government's promise to repay is more or less secure. I think in -- many years ago, it was kind of a hypothetical. In 2009, it became real when Freddie Mac and Fannie Mae ran into financial difficulties, and the government essentially didn't step it.

It was a -- it was a severe crisis for government agency issues. So they -- those organizations are -- they have been reconstituted. But the issue of government agency debt is always a question will the government actually back it up the way it does with U.S. treasuries where the full faith and credit of the United States stands behind those particular bonds.

CHAIRPERSON FECKNER: We have a question, Mr. Bailey.

Mr. Jones.

MR. BAILEY: Yes, please.

COMMITTEE MEMBER JONES: Yeah. Thank you. Yeah. On the inflation protected, TIPS bonds --

MR. BAILEY: Yes.

COMMITTEE MEMBER JONES: -- earlier Ben was talking about the possibility what happens if there's a deflation? And so these TIPS are -- do they have floor during a deflationary period and do -- are we always protected with the principal?

MR. BAILEY: That's actually an interesting question. They only have a floor when they're newly issued. In other words, if you have a bond -- a TIPS bond that has a large accretion of inflation to it, it can go backwards. So the floor is ultimately the par value. But the par value is in nominal terms. So if you started out at 100 and you had several years worth of inflation built into the ultimate principal value of the bond, and all of a sudden we had a year -- multiple years of significant deflation, you could actually move backwards till you got to 100, so --

COMMITTEE MEMBER JONES: But the principal would be protected.

MR. BAILEY: The principal itself would be protected. But that's in nominal terms.

COMMITTEE MEMBER JONES: Right. Right.

MR. BAILEY: So that's -- it's an interesting hypothetical. And in periods of time when -- it seems like ages ago, but in 2009 and so forth, when -- that was actually something that people that owned -- investors that owned TIPS actually paid attention to. They'd buy on-the-run TIPS, because they actually didn't want to buy TIPS that were -- had a big inflation accretion built into them.

CHIEF INVESTMENT OFFICER MENG: Just to add, the principal floor protection I believe only exists in the United States inflation-protected securities. The inflation-protected securities in other countries do not have the principal floor. So if you do get into deflation scenario in other countries, the other type of inflation-protected security, you could lose the principal, if you have deflation.

COMMITTEE MEMBER JONES: So my question then, do we have any TIPS in other countries?

CHIEF INVESTMENT OFFICER MENG: Linker, this is the UK. And there are some other countries. I believe Australia has it.

MR. BAILEY: Australia.

CHIEF INVESTMENT OFFICER MENG: Japan.

MR. BAILEY: Japan, Canada.

CHIEF INVESTMENT OFFICER MENG: Yeah, Japan, Canada.

COMMITTEE MEMBER JONES: No. Do we? Do we?

CHIEF INVESTMENT OFFICER MENG: Oh, do we own any? International, that's -- give me a second.

Arnie, please.

INTERIM CHIEF OPERATING INVESTMENT OFFICER BIENVENUE: We do currently, although in fairly small amount. And that's one of the things we're going to be discussing in closed session.

COMMITTEE MEMBER JONES: Okay. Thank you.

CHIEF INVESTMENT OFFICER MENG: Right.

CHAIRPERSON FECKNER: Okay. Mr. Bailey.

MR. BAILEY: Next on the list, I placed municipal bonds. Municipal bonds obviously are issued by State and Local units of government. I put them in more for completeness than anything else, because the vast majority of them are tax exempt. They typically don't show up in pension portfolios. There are taxable municipal bonds that's sometimes do find their way into pension portfolios, but it's not very common.

Corporate bonds are issued by private businesses. Entities of varying quality. And so we can see -- we talked about investment-grade bonds and high-yield bonds. There are a amazing variety of types of corporate bonds outstanding.

I put down mortgage-backed securities. They're the most prominent of a broader type of fixed income investment, referred to asset-backed securities. Basically, the idea is homeowners will borrow from banks and banks will issue mortgages. And then there are entities -- typically, the federal government these days is the only organization doing that, that will gather in these home mortgages and package them up into pools of mortgages.

And then those pools, they -- they issue securities related to those pools. And the owners of the securities get a pro rata share of the monthly mortgage payments, and ultimately the principal payments. And there are a set of rules that determine the various prepayment and repayment risks that go along with those particular mortgages.

But the idea -- the important idea is that the --

we're taking a whole bunch of underlying fixed income securities, these home mortgages, and packaging them up into a pool, and then selling pieces of the pool to investors.

It's an amazingly efficient process, the securitization process. And despite the problems that subprime mortgages ran into in The Great Recession, it's a very effective way to provide liquidity for the mortgage market, and is very helpful for homeowners. So it's a valuable piece of the fixed income universe. And pension funds have found them to be useful investments in their portfolios.

Lastly, on the list, but -- and again, I want to be -- emphasize that this is -- this is not an all-inclusive list, but I listed non-U.S. securities. Governments and corporates, I think Americans tend to lose track of this, but America has, by far, the deepest corporate bond market in the world. Most countries actually finance their corporations through bank loans. So the vast majority of non-U.S. bonds are usually some sort of government type securities.

And those can be issued in U.S. dollars, in which case there's no currency risk for investors in the U.S. or they might be issued in local currency, in which case then the investor has to decide whether to hedge that currency risk or not.

So again, I think the point I want to make here is there's an incredibly broad risk -- range of types of fixed income securities that a pension fund could be owning.

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MR. BAILEY: Fixed income investing risk. I have this long list here. And this isn't meant to imply that somehow bonds are dangerous investments or anything like that. I think it goes back to my notion that bonds aren't boring. There's a lot of things --

(Laughter.)

MR. BAILEY: -- that impact the value of a bond. And even high quality bonds are subject to all sorts of interesting portfolio risk. And I won't go down the entire list here. They're exceedingly interesting if your a portfolio manager. For a trustee, I think the two most important risks are the interest rate risk and the credit risk.

The interest rate risk we've already referred to, because we've talked about the idea that bond prices are inversely related to interest rates. So if you own a portfolio of bonds, you run the risk that interest rates might rise. That's going to drive down the current value of your investments in that bond -- in those bonds.

Credit risk, again, we've discussed that. This is this idea of default and the idea of the credit spread. But the idea that an issuer might not repay, or at least repay on time, the interest and principal that was promised is something that outside of the U.S. treasury market any bond investor incurs. So it pays to understand how much interest rate risk and how much credit risk is built into the portfolio.

The other items, as I said, are much more second degree sort of portfolio management issues that your portfolio managers pay a lot of attention to, but as a Board, I think there -- it's of less interest to you.

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MR. BAILEY: All right. Let me now move onto fixed income benchmarks. And you recall we talked about -- at our last meeting, we talked about the properties of a valid benchmark. I listed five at that meeting. I said they're -- it's unam -- a benchmark should be unambiguous. So we should understand the composition of the benchmark or the process by which the benchmark is built. It should be laid out on the table completely transparent. The benchmark should be measurable. We should be able to calculate its performance on a reasonably frequent basis. It needs to be investable. You should be able to take the benchmark and passively invest in it, if you so choose, rather than to implement the particular investment process that is on the table.

The benchmark should be appropriate. The risk of that benchmark should be very similar to the investment process that you're benchmarking against.

And lastly, it should be specified in advance. In other words, the benchmark can't be assigned after the period -- performance period has occurred. So these are properties of all good benchmarks. And fixed income is no different.

What we see in the -- and we're going to talk a little bit further about this. But what we see in the fixed income world is they're typically broad bond market indices. And those broad bond market indices can be subdivided and recombined to create specific benchmarks for various investment mandates.

And it's that sort of discussion that I think boards should have with their staffs about how they build those fixed income benchmarks out of those broad bond market indices.

CHAIRPERSON FECKNER: We have another question.

Mr. Jones.

COMMITTEE MEMBER JONES: Yeah. Thanks.

On the component of measurable and I'm thinking of CPI plus 3, so -- or investable rather.

MR. BAILEY: Right.

COMMITTEE MEMBER JONES: So how do we invest in CPI plus 3?

MR. BAILEY: Well, I -- we actually used that example last time. And I think it's a great question. It's not really a good benchmark. There's nothing I know out there that's an investable alternative that you could passively use as your default.

And therefore, it's problematic as a benchmark. It's -- aspirationally, that's great. But in terms of evaluating the performance of an investment program, or investment manager, I think it's very problematic.

COMMITTEE MEMBER JONES: Okay.

INTERIM CHIEF OPERATING INVESTMENT OFFICER BIENVENUE: And just to add a little historical context. If you'll recall, infrastructure awhile back had a CPI. I think it was CPI plus 4 in the past. And that's one of the reasons why we moved all of the real assets onto the, you know, what was ODCE and now the MSCI version of the ODCE benchmark.

CHIEF INVESTMENT OFFICER MENG: Yeah. And we still have one asset class, private equity is public equity plus 150. And that was a good compromise, because there were no private equity benchmarks investable. And later on, we'll talk about that. That create a lot -- a number of challenges.

One of them, since the benchmark not investable, but we have a fixed allocation target to private equity. And when we cannot get to the target, there's nothing we can do. So that is one of the challenges still in the portfolio.

COMMITTEE MEMBER JONES: Okay. Thank you.

MR. BAILEY: While I'm on the topic of fixed income benchmarks here, and that last bullet point and subdividing and recombining, the idea -- let me just take that just a bit further and talk about a couple of ideas related to that. If you, let's say, had a investment manager only invested in long treasuries, you could conceivably take a broad market benchmark and slice out only the long treasury piece of that -- that particular benchmark.

And you might create a benchmark that you assign to that particular manager that was just simply the long treasury piece of the aggregate benchmark. That makes -- there are different ways to do that. I'm not going to try to say that there's only one way to accomplish that goal, but that's -- that's an interesting use of broad market indices to create benchmarks for specific investment mandates.

I think, as you do that, and we're going to talk about this a little bit further, it's important to monitor the appropriateness of the benchmark for any individual investment manager.

Managers tend to gravitate towards more risk inside their investment mandates. They -- they're assigned a particular niche of the market to operate in. And the natural tendency is to own riskier assets in that portfolio. And that makes sense. Those are the higher yielding assets, and over the long run, hopefully produce the higher return. But that doesn't necessarily mean the benchmark is appropriate for that particular manager. If you take in more risk than the benchmark, should you be scored in a positive way? That's one of the big questions that I think so many staffs have when they deal with in -- outside investment managers is how they -- how they keep an eye on the investment guidelines associated with that manager. And it's not always easy.

CHAIRPERSON FECKNER: We have a couple of questions.

Ms. Taylor.

VICE CHAIRPERSON TAYLOR: Yeah. Actually, this is I think for Ben. I was just wondering do we have out-of-benchmark holdings in the program for fixed assets?

CHIEF INVESTMENT OFFICER MENG: For fixed income?

VICE CHAIRPERSON TAYLOR: Fixed income, I'm sorry.

CHIEF INVESTMENT OFFICER MENG: Out of benchmark holdings. Out of benchmark holdings.

MR. BAILEY: Ms. Taylor, you're referring to stock -- or bonds that aren't in the benchmark itself --

VICE CHAIRPERSON TAYLOR: Right.

MR. BAILEY: -- but are being held by the manager it was being bench marked against?

CHIEF INVESTMENT OFFICER MENG: Manage our internal portfolio, I think that's a question for Arnie Phillips

VICE CHAIRPERSON TAYLOR: Oh, there he comes.

INTERIM MANAGING INVESTMENT DIRECTOR PHILLIPS:

Good morning. Arnie Phillips, head of fixed income. Yes, we do -- in certain of the asset types do have out-of-benchmark holdings. So for instance in the mortgage-backed portfolio, the benchmark will have simply agency issued mortgage-backed, so Fannie Mae, Freddie Mac, Ginnie Mae. We will also own agencies -- or mortgage-backed securities issued by say Bank of America or JP Morgan.

So they're not guaranteed by Fannie, Freddie, or Ginnie, but we do an assessment of the collateral and get a comfort level that we are being compensated for that.

So we do own out-of-benchmark exposures in fixed income.

VICE CHAIRPERSON TAYLOR: That's one example.

I -- clearly, that's something that was not a good thing for us in 2008. So what have you done differently in terms of your research on those securities to mitigate the issues that we may have run into in 2008?

INTERIM MANAGING INVESTMENT DIRECTOR PHILLIPS:

Sure. So we own almost no non-agency now. We had taken advantage post-2008 when the prices dropped and invested around 300 million or so, which is less than 5 percent of the mortgage portfolio in those types of securities.

The lesson clearly though is the underwriting is what matters.

VICE CHAIRPERSON TAYLOR: Right.

INTERIM MANAGING INVESTMENT DIRECTOR PHILLIPS:

And pre-2008, the underwriting was clearly questionable. We had positioned ourself to be in what we expected to be a good position, but clearly housing was much worse than anybody anticipated.

And so, you know, the lesson learned though is there's no shortcuts for doing the analysis. And looking at -- Ben had shown some distributions up there. Looking at the extreme tails --

VICE CHAIRPERSON TAYLOR: Right.

INTERIM MANAGING INVESTMENT DIRECTOR PHILLIPS:

-- is extremely important. They may not seem likely, but you need to look at them just to understand the downside that you may encounter if you come into those types of environments.

VICE CHAIRPERSON TAYLOR: So you don't think feel like we're in the same situation with those mortgage-backed securities.

INTERIM MANAGING INVESTMENT DIRECTOR PHILLIPS:

Certainly not in the housing market in the U.S. right now, no.

VICE CHAIRPERSON TAYLOR: Okay. Thank you.

CHAIRPERSON FECKNER: Ms. Brown.

COMMITTEE MEMBER BROWN: Thank you.

My question is for the presenter, or maybe it's more of a statement. But I really appreciate you talking about how managers may gravitate towards more risky investments to surpass the benchmark, therefore they're getting a higher return and they get to keep their jobs or make more money.

My concern though is also for our staff, because we have benchmarks for our Investment staff. And they earn bonuses based on surpassing benchmarks. And I want to make sure that when we set those benchmarks, that we are taking into account risk, that if, in fact even our own staff is making riskier bets in order to surpass the benchmark.

So I hope we're looking at that. I know that's in Perf and Comp. I don't sit on that Committee, but I really want us to take notice of what you're saying. It's not just about our outside managers. It's also about our inside managers as well.

Thank you.

CHAIRPERSON FECKNER: Mr. Jones.

COMMITTEE MEMBER JONES: Yeah. Thanks.

I want to go back to Ms. Taylor's question about the mortgage-backed securities. In the 2008-2009 mortgage-backed securities had tranches that were ranked A, AAA, and you had some in there -D. And that's what caused the problems. So what have you done to be sure today that these mortgage-backed securities do not include tranches that are subprime, if you will?

INTERIM MANAGING INVESTMENT DIRECTOR PHILLIPS:

You're exactly right. There's -- there's the underlying collateral which you can determine the quality of it, and then there's the second tier of protection through the tranches as you gave the example of AAA down to non-rated.

And even through the pre-2008, we had the AAA tranches for the vast majority of our holdings. So the anticipation was -- and to a large extent, a lot of those did survive through that environment. But even some of those that were rated AAA by rating agencies turned out to not be gold plated.

So again, the rating agencies have become much more conservative in their underwriting post this financial crisis. Investors have taken a look at the governance that goes around the process in the sense that there were rules in place that dictated the trustee needed to act in the benefit of the entire trust. And yet, in some cases, some of the settlements and stuff forced some of the losses into investors. And so a large group of institutional investors, including ourselves, have not gone back into those structures, because those protections have not been changed.

And so, at this point, most of what you're seeing in quote the non-agency side of the market is actually super prime borrowers, sort of the best of the best. We are starting to see a little bit of issuance more at the fringes. But still, the overall underwriting criteria in the mortgage market is extremely high right now and still pretty challenging for folks to get loans outside of the agency products, primarily Ginnie Mae.

And so the products that on the non-agency side aren't that appealing to us, because of the quality being too high to actually make it attractive. But even if they were high enough, we don't like the governance and lack of changes that have occurred since the financial crisis that we still would not re-enter that.

And that would be certainly a lesson learned that the documents were written a certain way, but they weren't always implemented in what our view as -- of how they should have been implemented. And without those changes, it's not a market that we find investable right now.

COMMITTEE MEMBER JONES: Okay. Thank you.

CHAIRPERSON FECKNER: Please continue.

CHIEF EXECUTIVE OFFICER FROST: And, Mr. Chair, the only thing that I think would be helpful for some of the newer Board members is that we did recover about $250 million from the rating agencies, as well as hundreds of million dollars from the individuals who were selling -- or the entities who were selling those assets.

CHAIRPERSON FECKNER: Thank you.

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MR. BAILEY: On slide 13 talk about the composition of the broad bond market indices. And what I've posted here is the Barclays -- Bloomberg Barclays has a series called the aggregate. And they have a U.S. aggregate version and a global aggregation versions. And it's somewhat instructive to look at these -- how those are allocated.

Essentially, this is virtually all bonds over a certain maturity. I think it's one year. And the -- you can see that in the U.S. market, there's roughly 40 percent in treasuries, and 30 percent in the securitized, mostly in mortgage-backed securities, and another quarter in corporates.

The world is more treasury type securities. As I mentioned, there aren't -- the corporate bond market isn't anywhere near as large in the rest of the world. And the mortgage-backed security market isn't a feature so much of those other countries.

I think there's a couple of things -- takeaways when you look at that. Passive management relative to those -- those particular industries is a -- indices is a bit more problematic than it is against equity indices. It's possible to just simply go out and own the S&P 500 and say that you've invested in the U.S. equity market and feel quite comfortable with that.

I -- when it comes to the broad bond market indices, the issuers determine the composition of the indexes to a greater extent than is true for equity markets. So in other words, if you think about the IPO market for stocks in the United States, it's tiny compared to the overall size of the U.S. stock market.

So we can have all the Uber IPOs we want and it really doesn't move the needle very much in terms of the composition of the U.S. stock market.

But the U.S. bond market, the government and corporations are churning out new bonds all the time. The government is running record deficits and those bonds go into the indices here. It's hard to imagine, but in the late 1990s, we were running surpluses -- budget surpluses in the United States. And there was a concern that we were going to run out of treasury bonds. Hard to believe that today.

But around the mid-2000s or so, the U.S. aggregate was, I think, somewhere on the order of 20 percent treasuries. And today, it's 40 percent treasuries.

Well, that doesn't mean that your portfolio should move from 20 percent to 40 percent. You have to make a decision on why you have bonds in your portfolio. That's critical. And I think most sponsors, trustees to set the investment policy and the staffs that implement it are leery of just owning the broad bond index, because they recognize that there's this sort of dynamic that goes on.

But that's not necessarily then very instructive about how you go running a passive portfolio for your investment program. And so I think what you see in a lot of organizations -- there are different names for it, but enhanced indexing in some form or another, with the notion that, look, I don't want to run an aggressive active fixed income program. I want to look something like the broad bond market, but I'm not quite sure I know exactly what the broad bond market is that I want to look like.

And so they give their investment managers a considerable amount of leeway to own additional corporates or more treasuries. In other words, it wouldn't be just a fixed 40 percent treasuries today, 25 percent corporates and so forth. There's usually some sort of guidelines that are given to the investment managers, and some sort of responsibility to stay closely near the performance of that particular index.

A lot of these instructions can be somewhat contradictory, and that's what makes passive management somewhat more difficult when it comes to fixed income investing than for equity investing.

It's not objectionable to have this sort of discretion. I think it's just important incumbent on the part of trustees and staffs to understand how much potential tracking volatility they might be taking on with the discretion that they gave the investment managers. These are discussions that should really take place as the investment policies are being set up.

The appropriateness of the benchmark versus the particular strategies that are being implemented I think is the key issue here. Trustees and staff should understand how much risk is actually going into their portfolios versus what the benchmarks are stating.

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MR. BAILEY: All right. You saw this slide last time and I think it bears repeating. The standard paradigm, as I said, is that stocks beat bonds and bonds beat cash. And stocks beat bonds by an incredible amount. And we just showed here from 1970 through the end of the 2018. But these numbers are true for just about any long time period that you want to look at in the United States history.

The notion that stocks beat bonds then oftentimes brings up the question why not 100 percent equities? And it's an interesting question. There is a modestly famous article written by a gentleman named Cliff Asness back in the 1990s that had the title, *Why Not 100 Percent Equities*?

And I think the data show that if you were somewhere able to constantly rebalance -- or rebalance. If you're 100 percent equities, there's no rebalancing.

(Laughter.)

MR. BAILEY: If you -- if you are willing to hang in there for the entire period of time, 100 percent equities is going to be the greatest wealth generator on a historical basis that any -- of any other strategy.

Asness came -- oh, go ahead, Ben. Do you have a comment?

CHIEF INVESTMENT OFFICER MENG: Sorry. It's very much related to the topic of my talk. If you go back one slide, slide 14. So if you look at the top blue line, the equity, in the long run, you realize you attain much higher than bond and cash provided you can sustain the drawdown. So the highly importance of drawdown, prepare yourself for the drawdown.

MR. BAILEY: I couldn't agree more.

I think Asness answered that question and I think most practitioners tend to agree with it, is that we don't see 100 percent equity portfolios, because investors really aren't long-term investors, if they have 100 percent equity position.

In other words, they have a tendency to exit those positions too soon. And so that creates, as Ben was showing in his set of slides, if you can't stay in the market for that -- in those down periods, if your desire ultimately is you're -- you're concerned about the viability of the fund, and you're 100 percent equities, and you pull out at exactly the wrong time, that's the worst option.

CHIEF INVESTMENT OFFICER MENG: Yeah. So that's exactly what I meant early on, stick to the plan. Most people cannot, and most people cannot be a long-term investor.

MR. BAILEY: Right. So as a result, it's unusual to see pension sponsors with long-term horizons that, even though they claim they have long term horizons that have Extremely high equity exposures, 100 percent, or 90 percent, or 80 percent.

We do see some endowment funds in that range, large endowment funds. But it's unusual, let's put it that way, for large institutional investors to be 100 percent equities or close to 100 percent equities.

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MR. BAILEY: So for the next few minutes or so, I want to spend some time talking about the case for fixed income. And I say the standard case, and I don't mean that derisively. I mean, these are four very valid reasons why you would own fixed Income in your portfolio.

I highlight 1 and 3, because I think they're probably the most prominent, but 2 and 4 are interesting as well. I think as we get going, it's important to agree that we'll be talking about low default probability fixed

Income. And that means essentially U.S. treasury bonds are extremely high quality corporate bonds.

And the reason I say that is as you start to move down the quality spectrum, you start to bring in different forms of equity risk into the portfolio. And you may desire to do that, and there's nothing wrong if that's part of your policy, but it starts to obscure the reason why you own fixed income in your portfolio. You're trying to capture some of the equity risk premium. And again, that may be a -- you may have a valid reason for doing that, but that isn't really what we mean when we say high quality fixed income is owning lower quality corporate bonds.

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MR. BAILEY: So let me move to the item number -- or reason number one here, the volatility dampener. And this is by far the most important and common rationale that sponsors have for owning fixed income. And as Ben has alluded to in his discussion earlier and just a moment ago, the idea is sticking to the plan.

Equities experiences huge volatility. And few long-term investors can stomach the volatility. That's just a fact. They exit at the wrong time and selling at the bottom is by far the worst strategy. I'm going to repeat a couple of slides that we saw from last time.

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MR. BAILEY: And here are equity and fixed income annual returns. And you can see the year-to-year performance of U.S. common stocks U.S. long-term government bonds, and treasury bills. And you can see those significant spikes down in U.S. common stocks. And as recently as The Great Recession, we saw almost a 40 percent decline in one annual period. So there was -- that's what I mean when I talk about a bumpy ride and the inability of most investors to be able to hang in there in those environments.

So the -- while it's true that bonds have volatility of their own, these are long-term government bonds. Remember, the longer the maturity, the more volatility you have in those return series. They don't experience anything like the volatility of common stocks. You can see bonds are roughly half the volatility. And these long-term government bonds are half the volatility of stocks.

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MR. BAILEY: The other thing that I want to point out when we think about volatility dampener and these go together, is that fixed income exhibits this low correlation with equities. Again, we're talking high quality fixed income when we're -- when we're referring to this. But it is the asset class with the lowest correlations, reliable correlations with equities.

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MR. BAILEY: So I showed this slide before, and I'm just going to repeat this idea of correlations again just very briefly. When you think of correlations, we would measure that as falling between a minus 1 and a plus 1. And when we think of a plus 1, we're thinking of the picture on the left where we have two returns series that just move in lockstep with each other. One goes up, the other goes up. One goes down, the other goes down. Those would -- that would be a positive correlation and it would be close to 1.0.

On the right side, you see a negative correlation, a very negative correlation, almost minus 1.0. And those would be a series of -- a set of returns where when one goes up, the other goes down predictably.

VICE CHAIRPERSON TAYLOR: Can I fit in a question?

MR. BAILEY: Yeah, please.

VICE CHAIRPERSON TAYLOR: Thank you.

Ms. Paquin.

ACTING COMMITTEE MEMBER PAQUIN: Oh, thank you.

So I was just curious, are they any situations where bonds and stocks are performing the same way, in other words, both going down?

MR. BAILEY: And we'll stick with high quality bonds, right?

ACTING COMMITTEE MEMBER PAQUIN: Okay. Yes.

MR. BAILEY: Okay. Yes, I'm going to get to that in just a moment. I think it's a great question. Just give me --

ACTING COMMITTEE MEMBER PAQUIN: All right, sure. Thank you.

MR. BAILEY: -- just give me a couple slides and we'll move into that idea.

But I think the big thing that I want to drive at here is we're look -- we prefer in the portfolio to have assets that are at least zero to low single digit posi -- or low 0.1, 0.2, 0.3 correlations. It's the correlations that get up towards one that are dangerous for the portfolio in terms of adding volatility. And in periods of strong downdrafts or down -- drawdowns, we're going to see in those situations the most pain.

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MR. BAILEY: And, Ms. Paquin, I'll be to that in just a second. But this is a historical view of this. So this is from 1926 to 2018. If we look at annual returns, long-term government bonds have a correlation with stocks of essentially zero.

And that's the big draw for stocks -- excuse me, bonds in the portfolio, long-term government bonds, is they have that very close to zero correlation. If stock markets are going up, we don't know necessarily that bonds are going to go up or go down. There's effectively no relationship between the two. And that's a valuable feature to be able to incorporate in the portfolio. And that's why bonds make it into pension portfolios.

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MR. BAILEY: This is an interesting question too. So we say that bonds and stocks are not highly correlated and we have to be a little bit careful of that. This goes a little bit to your question. And I'm going to get to your question in another slide as well.

It depends upon the quality of the particular type of fixed income security. So this shows the correlation to the S&P 500 along the horizontal axis there. And on the vertical axis is the yield on those bonds. And what you see is -- and this is the reason that investor -- or bond investors tend to stretch for risk is that the lower the quality of the bond, the more it tends to correlate with the S&P 500, but also the higher is the yield.

So if you look in the right side, you can see U.S. high yield, U.S. HY, you can see different types of me emerging market debt. Those are all very sensitive to movements in the U.S. economy. And so they have a high correlation with the S&P 500. But because they act a lot like stocks, they have higher yields. So there's a lot of volatility there, a lot of correlation with the stock market, but you get compensated for that.

If you go to the lower left, you can see various maturity U.S. treasuries on the far left. You can see developed counties like Japan and Germany who's debt is quite secure. So you can -- you see that these bonds have -- have a much -- in fact, in this -- this is a -- this is a 15-year period, have a very low correlation -- a negative correlation with the S&P 500.

So that's why I wanted to talk about only high quality bonds, as we got into this. As you talk about lower quality bonds, you actually find positive correlations with the broad U.S. stock market.

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MR. BAILEY: If you put high quality bonds in a portfolio, you get the diversification benefit. And this is what we see in this slide. Again, we saw this slide before, but I just want to reiterate some of the key points there. That the average return on U.S. stocks over this very long period of time was 12 -- almost 12 percent, while the return on bonds was about 6 percent.

The volatility of stocks was almost twice that of bonds. If we just put together a very naive 50/50 mix of those two, you see we lose about, oh, 3 percentage points in return over that historic -- in that historical period, but we drop the volatility by almost 8 percentage points. So there's a trade-off there. And only trustees can make that decision about whether they're willing to take that sort of tradeoff. I mean, that's your job.

When you said investment policy, are we willing to accept some of the longer term reduction in expected returns versus the significant reduction you get in volatility. And I'm not suggesting a 50/50 mix is the right one. It's just for educational purposes here.

But regardless of whether you were 60/40 or 7030, you get those sort of impacts. And it's up to you in setting investment policy to make that allocation. But there are significant diversification benefits in terms of risk reduction to owning bonds.

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MR. BAILEY: And then lastly, to your point, Ms. Paquin, this -- I think this is -- this is where this sort of gets interesting. These are 50/50 stock/bond real drawdowns. And Ben explained drawdowns earlier, and we saw this in our last session. Basically, a drawdown is one -- I like to think of it as once the -- once your portfolio experiences a negative return, you keep measuring its performance and you don't stop measuring it until it gets back to zero.

And so you look at the -- you look at the performance. Let's say back in the 1970s, and you can see blue is the S&P 500, and those are inflation adjusted, and then gold is the 50/50 stock/bond mix, and again, inflation adjusted.

So what you see is you see that bonds in that period of time, they provided some protection against the drawdown. It wasn't quite as severe as with stocks. But it was pretty bad. And the reason being, of course, the 70s was a period of very high inflation. And high inflation impacts bond returns.

And so bonds got hit pretty hard, their returns. And they weren't as valuable a diversifier in the portfolio in the 1970s.

Now, move into the 2000s, inflation wasn't really an issue in the 2000s. And you can see that bonds were significantly protected against drawdowns. So the correlation of stocks and bonds in the 1970s was actually greater than the correlation of stocks and bonds in the 2000s. And the -- in my mind, the biggest reason for that was the inflation issue going on.

So what happens in the 2020s? You know, I don't know. It's -- we have very low inflation right now. Is that likely to be an issue? I guess I'm -- my looking glass isn't that powerful. So something to think about.

I think in any event, and this is something I would really emphasize, they -- bonds still provided diversification, even in the 1970s, which was a period of historically bad inflation from the United States. Never experienced anything really like it outside of brief periods around civil war and World War I.

I mean, these are -- so this was high inflation. And would we experience something like that? Perhaps. But even then, bonds provide protection in the portfolio.

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MR. BAILEY: I think this is the other thing that's interesting to pay attention to is that these correlations do change over time. So I said over the period 1926 to 2018, the correlation between long-term government bonds and stocks was zero in the United States. That was the average.

You can see in the 19 -- oh, late 1980s and early 1990s, it was positive. It certainly wasn't 1.0, but it was more positive than it is today. And then there was a big change in regimes in the 2000s that drove it into negative territory. Over average it's close to 0.

CHIEF INVESTMENT OFFICER MENG: Yeah if I may add something here. Exactly as Jeff said, that inflation part of it. And if you look at 80s and 90s, the correlation between stocks and bonds is positive. So it means that there's less diversification benefits.

For more diversification benefit, you need lower correlation on negatively correlated ideally. So a few years ago, Bridgewater had a research paper on this topic. And their argument is that in the 80s and 90s, so if you look at the nominal interest rate made up by two components, one is the risk-free rate, the real yield plus inflation.

And according to Bridgewater, that research paper from Bridgewater in 80s and 90s, most of the surprise of the nominal yield, or the inn economy coming from inflation. And if that's the case, when inflation is surprised on, say, for example on the upside, you have -- all of a sudden you have hyper inflation that hurts both the stock and bond. So it means that they both go down together, so correlate is positive.

And if the inflation is surprised on the negative, say you've got deflation, so that's the -- on the other side of it. If it surprise, it caused by uncertainty in inflation. Stock and bond tends to be positive correlated as Mr. Bailey has mentioned. And then in 2000, when there are regime shift.

So after 80 -- the experience of the 70s, 80s, and 90s, the Fed had -- and the global central bankers had become much more effective in terms of managing inflation. So from 2000, the regime shift. From 2000 onward, the surprise in the economy really coming from the real interest rate part, less so from the inflation part. If you had -- if we -- if we had another chart here, you would see the inflation from 2000 become much more tamed.

So when the surprise coming from real yield or real economy. So when the economy doing well, it's good for stock, bad for the bond. And when the economy not doing well, it's bad for stock, good for bond. So that's why you see negative correlation.

So from 2000 onward, we see the negative correlation between stock and bond. So we started having some diversification benefit. We need lower or negative correlation to have the diversification benefits.

Now, the question is going from today going forward, what's the regime? With the surprise in the economy more -- coming from inflation side or the real yield side? So that we're waiting now.

But back to Jeff's points, the correlation between bond and stock is dynamic. And the diversification benefit between the -- between stock and bond, what we may get in the next downturn is really depending on the correlation, what's the new regime we are in?

MR. BAILEY: That's an excellent point. And I definitely won't get into politics, but it's important. I think bond investors pay attention to, as the President job owns the Fed reserve, you know, there is a lot of -- you start to worry, at some point, about the -- whether inflation could creep back into the American economy.

For the last 15 years, everyone has just assumed that that wasn't a key -- wasn't a key issue. Going forward. It's certainly something that no one is panicking about at this point. But if you thought that the -- if you thought that the Fed was really going to end up being a lot looser in a time of huge budget deficits, I mean, it's conceivable that you could go back to those periods.

Again, I'm -- my crystal ball is not very good, but it's something that bond investors I could assume would worry about.

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MR. BAILEY: All right. Reason number two why investors tend to hold fixed income. This is something that's a little bit more of a history lesson than anything else.

But even within my lifetime -- in my lifetime as a professional in the investment business, deflation hedge has always been a reason why pension funds might own fixed income -- high quality fixed income. It's -- if there was ever a deflation, fixed income would be the place to be. And there isn't any doubt about it. The evidence in The Great Depression, you can go back and look at the returns on fixed income at that time. They significantly outperformed -- fixed income significantly outperformed equities.

If it was your only reason to hold fixed income in your portfolio, it's pretty expensive insurance, but it's -- as I said, it's hard to argue that it doesn't work. In these days of 10 years of a strong economy, sort of fades in the back of your mind that deflation could be a problem, but it's -- certainly, as Ben pointed out earlier, in Japan, it's -- you know, you had periods of -- a long period of time when there's essentially zero, or deflationary sort of environment.

In Europe, treasury yields are negative in some countries. It's -- so, it's not really that much of hypothetical. We just don't recognize it in the United States at this time. But it's -- fixed income would be very productive in a deflationary environment.

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MR. BAILEY: Liquidity management is another key reason I think why -- why organizations -- pension funds in particular own fixed income. High-quality fixed income, it can be bought and sold essentially at almost no cost. Treasury bonds trade very liquid, and so it's a great buffer, as I say, for -- and a low-cost way to manage your liquidity.

Probably four ideas that go along with that liquidity, and different organizations view them in different ways. But fixed income is a very fungible asset that can be sold, if needed. So to rebalance equity positions, if there was a significant equity market drawdown, it would be easy to sell high quality fixed income and invest back into equities.

A lot of fixed income serves as collateral for delivery -- derivative positions. It's a very cost effective way to do that. Again, you're earning interest on your holdings at that point, so it's much more productive to hold it in bonds than it is in cash. And so they provide that sort of ability to meet margin calls, if necessary.

It's dry powder. In the case, to deploy it in other asset classes, some organizations use it as a place to place funds that are ultimately going to go into private equity or real estate in some future capital call.

And lastly, they fund benefit payments. I mean, fixed income generates income. It's -- so it can help pay for the benefit payment. It certainly is liquid if securities need to be sold to bridge some period of time in between contributions. So it's -- all of those are key elements of the liquidity management.

And it's -- you know, I think all organizations, even large endowment funds will have fixed income in their portfolio simply for liquidity management.

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MR. BAILEY: And lastly -- and again, we won't get into this. This is for an asset allocation discussion at some point. But I do want to point out that there are attractive risk-reward characteristics to balance portfolios.

This is a much more nuanced view of fixed income. As we discussed, the expected return on fixed income is lower than equities for reasons that make complete economic sense. But you could conceivably create portfolios with fixed income in them that had higher expected returns. It would require some sort of leverage in the portfolio.

And that sometimes is controversial among pension sponsors, but I'm always a little bit in awe that pension sponsors would find owning 80 percent -- not that you folks do it, but owning 80 percent in various private equity, and public equity, and so forth. Not controversial, and using some sort of levered position of equities and fixed income.

Both of them have risk associated with them. The whole idea of you're taking risk to try to earn higher returns. There are ways to incorporate fixed income to a portfolio that targets certain levels of volatility. This whole idea of risk parity is involved in that concept. And I'm not trying to promote risk parity, but I think it's an interesting application of that, and it points out to the fact that it's possible to separate the risk decision from the asset allocation decision. That's the big thing that I would try to drive home.

And so fixed income could be part of a portfolio that if you wanted to have a particular risk level, you could achieve that risk level, even having that fixed income in the portfolio and possibly earn commensurate returns with equities. So it's something for discussion.

CHAIRPERSON FECKNER: Before you go on.

Mr. Rubalcava.

COMMITTEE MEMBER RUBALCAVA: Thank you.

I think this slide actually runs into the question I had in the previous slide when you talk about liquidity management?

It drives the question as well, if one of the issues you have -- one of the reasons you have fixed income is to be able to have a source of liquidity for -- you know, to buy -- to withdrawal or purchase, whatever. Then it -- the question -- you mentioned it here now -- I think maybe I should have just waited -- about it does -- it's a question to have in consideration when you've set up your asset allocation process.

So I guess the question is -- I never thought of it this way. I guess when you talk, you know, about how much -- how to allocate your assets, I guess you have to think about -- you also have to have some ability to lose your fixed income, so you can sell it for something else, I guess.

I never thought about it this way. How much does that come into play? I'm not sure if that's for Ben or somebody.

CHIEF INVESTMENT OFFICER MENG: Yeah. So during our four-year cycle asset liability management workshop, four-year cycle, we explicitly consider liquidity. So we have a liquidity allocation -- particular allocation to liquidity. Currently a target at 1 percent. And then we have a 28 percent allocation to fixed income.

Granted, not all the 28 percent are equally liquid. But ballpark, the 28 percent -- I'd say 10 percent of U.S. treasury securities very liquid, and there's another 18 -- no, 14 percent -- 12 percent, 14 percent mortgages that rather liquid as well.

So I would say the majority of the 28 percent of fixed income is very liquid. And on top of that, we have 1 percent allocation just to liquidity, super liquid cash -- almost cash-like holding, 1 percent of the total fund.

COMMITTEE MEMBER RUBALCAVA: Thank you.

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MR. BAILEY: Homestretch here.

CHAIRPERSON FECKNER: Microphone, please.

MR. BAILEY: Oh, sorry. Thank you.

CHAIRPERSON FECKNER: Thank you.

MR. BAILEY: Homestretch.

A few items I wanted to mention about fixed income and its compatibility with expected return targets. And I think public funds -- and speaking in very general terms here now, not just CalPERS.

But public funds have tended to have very sticky expected return targets. And they've -- despite the fact that, as I show on this slide, that interest rates have been on a long secular decline since the early 1980s, you haven't seen significant declines in the expected returns on most public fund portfolios.

And again, CalPERS is not alone. In fact, I commend you for a lot of the changes that you've made. They're ahead of many other organizations.

But if you -- if you would say that -- and as Ben noted I think very well in the presentation that he had earlier, but if you think of treasuries as the bedrock upon which you would say that risky assets are priced, it should be the case that your expected returns on risky assets decline as your expect -- as the expected returns on high quality fixed income declines.

And we can measure the return on high quality fixed income on a regular basis. I can get out my iPhone and look at the -- what the 30-year treasury is right now. And I promise you over the next 30 years, if you bought that bond and just held it and reinvested the -- your interest and -- into that -- back into that bond, that you'd end up with a current yield of about two and a half percent or so. That's just the nature of fixed income, high quality fixed income.

So if we think of then this thigh quality fixed income as the base and then we apply some risk premium to that to calculate what we think our return on our risky assets is, it must be that as the yields on long treasuries decline, the yields on those risky assets should decline.

Now, we've been in a Goldilocks period since The

Great Recession that's been quite amazing. Every thing has exceeded expectations. Inflation has been better than anyone thought it was going to be. The economy has been better than anyone thought it was going to be. The Fed has been more accommodative than anyone thought they were going to be. Stocks have done better than anyone would have thought they were going to perform.

Your job as Board members and the staff is to say what does the future look like? And so that has to be a very objective sense. And it is amazing that we've had these great stock returns over this period of time. But as long treasury yields decline, I think objectively you have to think that the expected return on risky assets has to decline as well.

I can't tell you exactly what that is. That's for your asset allocation modeling to get into. But we don't see the significant decline in the expected return on assets in most -- in most public pension plans.

Eight and a half to 7 percent is an important move, but it's not reflective of the significant move in long treasuries over that period of time.

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MR. BAILEY: And I'd like to think of this in terms of fixed income and its compatibility, in your case, with a 7 percent discount rate. I like Anne Simpson's

Pension Buck. I think it's really a nice visual for trying to think about how this works.

I'm kind of a finance guy, so I put stuff into formulas.

(Laughter.)

MR. BAILEY: Pictures not quite so well. But I say benefits are equal to contributions plus investment earnings. I call that the fundamental law of pension finance. There isn't any other way around that and your Pension Buck is built right into that formula.

And so the higher the investment earnings, the lower potentially is the contributions. Similarly, the lower of the contributions, the more your investment earnings have to be to be able to pay the same level of benefits.

And benefits are only paid out of realized earnings. They aren't paid out of expected earnings. So you can put a target on it, but it's only what you earn that's important.

And so I think what we've seen among most public funds is that if the will to make additional contributions is lacking or -- then the bird starts to rest on the investment earnings. And so in an expectational way, organizations try to push more into the expected earnings.

And that's a problem, as we saw from that previous chart, that if long-term treasury yields are declining significantly and expected return on equities aren't following that, how do we try to make our adjustments here?

Well, I think we end up taking more risk in the portfolios. And that's what you've seen across the country is, is that empirically there's absolutely no doubt about it, that public funds have taken on more equity risk in their portfolio since the great recession.

And certainly that's worked out over the last 10 years. Will it work out in the future?

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MR. BAILEY: I think one way to think about that is doing the math on your expected returns. And I'm sure you've been through this a little bit. Your capital market assumptions I have under those expected returns. And if you just take a weighted average, in other words, take the policy allocation and multiply its weight times the particular expected return, you end up with 6.7 percent.

There's a volatility penalty that goes along in a portfolio. Mr. Jones, you talked about the volatility penalty, in a sense, in your example. If you're -- if you have a $100 and, you know, you go up 50 percent, you get to 150. But if you go down 50 percent, you're back at 75.

I mean, that's the equivalent of a volatility penalty. And that's what's going on here. So your arithmetic average is not your compound return over time. There's actually a penalty applied to that.

And I'll work out the math some other day, but it works out to a compound return of your 6.1 percent. That's what you have built into your capital market assumptions.

And so you can see the fixed income expected return. And that's consistent with the way the markets are right now. Essentially owning some corporate fixed income in your portfolio and mortgage-backed securities and so forth, it can get you to a 3.2 percent expected return. But still, it's hard to get to the 7 percent. I think that's the takeaway from this.

And so if you look out how other organizations have tried to deal with this, this is public funds in -- fixed income allocations are modest.

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MR. BAILEY: They're -- they've -- I think the numbers have -- since The Great Recession, fixed income allocations in public funds have declined somewhere around the 33 percent mark down to 28 percent or even lower across all public funds.

This particular database, the Center for

Retirement Research in Boston is showing fixed income at 21 percent. I think the important point is that fixed income allocations have declined considerably since The Great Recession. And the reason being that they just don't fit in the expected return calculations any longer. The yields are just too low.

If you went back to the 1990s, the standard asset mix was 60/40. Everyone would talk about 60/40 as the asset mix. And today no one talks about 60/40. And the reason being, it just doesn't generate the expected return that people would like to plug into their calculations. And I understand the pressure, but it's a question of how that ultimately is going to play out.

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MR. BAILEY: And just to conclude on that then, as I said, I think the simple answer is that fixed income just doesn't really square with a 7 percent discount rate, or worse in some organizations 7 and a half or 8 percent. And so something has to give and public funds have responded by moving into higher risk assets, private equity being the more prominent feature of these plans now.

And so I'd like to conclude by just simply saying that taking higher risk doesn't guarantee higher returns. Taking lower risk is always going to get you lower returns, but taking higher risk doesn't do it. And it's understandable again why organizations are pushing on that -- that particular lever. But I think the ramifications of taking higher risks are only going to be clear in the next major downturn. And, at that pint, we'll find out how those -- how those strategies worked.

I think my bottom-line conclusion is I think fixed income is still a relevant part of investment portfolios. Bonds aren't boring. They should be part of your investment program. They just have to be properly rationalized in your -- in your fund. And that's a lot of discussion on your part with your staffs.

So with that, I'll conclude and happy to answer additional questions.

CHAIRPERSON FECKNER: Great. We do have a couple of questions, but I want to thank you for your time today. Great presentation. Great help. A lot of the questions are still coming.

Mr. Perez.

COMMITTEE MEMBER PEREZ: Thank you. The graph on page 31 shows that it's 2017.

MR. BAILEY: Yes.

COMMITTEE MEMBER PEREZ: Is there much change from today?

MR. BAILEY: To the best of my knowledge, no.

That was the latest available that the Center for Retirement Research had. I pulled that from a 2000 late 2018 article, so I don't know.

COMMITTEE MEMBER PEREZ: Thank you.

CHAIRPERSON FECKNER: Ms. Taylor.

VICE CHAIRPERSON TAYLOR: Yes. Thank you. So I guess I want -- I mean, I think it's important that we have fixed income, especially for liquidity issues at a later -- if we do have a downturn.

I was wondering, Ben, if we -- I think our investment consultants are here. I was wondering if Meketa wanted to opine on any of this, if they wanted to give us their own opinion on this, or had any different conclusion, or...

CHAIRPERSON FECKNER: Meketa is not here.

VICE CHAIRPERSON TAYLOR: Or Wilshire and PCA, that's fine too.

MR. EMKIN: Allan Emkin, Meketa. Thanks for asking the question.

We agree with everything Jeff said. It's basically bonds 101. And it's good to get that education. But I would urge you to go back to Ben's presentation earlier and not focus on the 10-year period, because you're a -- an institution that will live long beyond all of us. And, in fact, the 7 percent number is based upon the 50-year horizon. And that's what should be driving the decision not the 10-year.

VICE CHAIRPERSON TAYLOR: Great. Thank you.

There you go

MR. JUNKIN: Took me a minute. Sorry. Andrew Junkin with Wilshire.

No, I agree. This is a great primer on fixed income. I think putting it in relation to CalPERS, it's important to recognize the changes that have occurred over the past few years. And I think Arnie really hit on those that fixed income is now really income focused, much higher quality to try to address some of the concerns that came about in 2008. There's a saying that we always fight the last war.

VICE CHAIRPERSON TAYLOR: Right.

MR. JUNKIN: And we probably are, but one thing about whatever the next battle will be when the stock market falls is that high quality fixed income is quite likely to do well, certainly treasuries, right?

So I think that's kind of the shift that this Committee has made over the past few asset allocations, in particular the one two years ago. So I think that's really beginning to show up.

VICE CHAIRPERSON TAYLOR: Thanks, Mr. Junkin. Thank you.

CHAIRPERSON FECKNER: Well, thank you all. And thank you again for the presentation today. Really appreciate.

MR. BAILEY: My pleasure.

CHAIRPERSON FECKNER: We're going to take a 12-minute break. We will reconvene at 11:30, picking up the end of Item 9 and then moving to item.

(Off record: 11:18 a.m.)

(Thereupon a recess was taken.)

(On record: 11:32 a.m.)

CHAIRPERSON FECKNER: Can we please take our seats, we'd like to call the meeting back to order.

Mr. Meng, you's on Item 9. I believe you had three slides left.

CHIEF INVESTMENT OFFICER MENG: Good morning, Mr. Chair and members of the Investment Committee. Now, let's continue with the discussion on Item 9, mitigating drawdowns.

The slide, please.

So just follow on what Mr. Bailey just presented to us. He touch upon drawdown again. And now let's do a quick review. What are the undesirable things or outcome would happen in your drawdown. As I said, one, we'd run out of money. We cannot pay our bills. And the other one is that we don't have money to take advantage of market dislocation normally presented during time of crisis. So that number one and two.

And to mitigate that, our plan is to develop a plan. And we can mitigate the impact of number one, number two. Number three and four, the undesirable outcomes -- we cannot maintain our desired risk profile, or we become panicked and then we sell assets that's at the worst time possible.

To prevent from that from happening, once we have developed a plan, let's stick to the plan. So that's the key takeaway points, develop a plan now, and then stick to the plan during the crisis.

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CHIEF INVESTMENT OFFICER MENG: So this slide we covered already. And this is highlighted what's not to do during the crisis on the right is equally important as what to do -- what to do during the crisis.

Since we shouldn't do during crisis one, we should not succumb to common investment behavioral biases. And two, we should not allow a deviation from predetermined plan without a very strong justification. We're not saying that once we have a plan set in stone, we have to mechanically, draconianally follow the plan regardless what the future is. But to change a plan, we have to have a pretty strong justification, why we are changing the plan.

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CHIEF INVESTMENT OFFICER MENG: So this is my last slide. It's really a poster in my office, for those of you who have been in my office recently. And this is a -- actually is a gift to me from Marcie and the executive team to welcome us coming back. We just keep calm and carry on. And somehow my dear esteemed executive colleagues expected water -- there will be rough water, rough sea ahead of investment office, the markets.

And the reason we can keep calm, because we have been anticipating and preparing ourself for a drawdown. So when the drawdown actually comes, it won't be a surprise to us. So that's the reason we can keep calm.

And the other reason we -- the reason we can carry on is again because we have a plan and we know that we have a plan that's developed or encompass all possible difference scenarios. Well, I shouldn't say all possible different scenarios that we can -- I should say -- I should have said all the scenarios we can think of, we have a plan to cover all scenarios. Then we just carry on the plan.

So, again, it's to develop a plan to prepare ourself before the crisis comes, and then stick to the plan during the crisis. With that, we can mitigate the impact of a drawdown, not to completely eliminate the impact of a drawdown.

So with that, I will open for questions.

CHAIRPERSON FECKNER: Very good. Thank you.

Ms. Paquin.

ACTING COMMITTEE MEMBER PAQUIN: Thank you. I had a question about a comment you made earlier in the presentation, where you said something along the lines of maybe possibly changing the policies -- investment policies to be able to react a little bit more quickly in that kind of a situation. Just curious what kind of an example of a change that would be?

CHIEF INVESTMENT OFFICER MENG: Yes, a very good question. So, for example, look at one of the things that -- one of the undesirable outcome during a drawdown second is that we don't have money to deploy to take advantage of market dislocation. And one of the ways we generate additional liquidity is put on leverage on the total fund, so we borrow money.

That will affect our total fund leverage policy. So currently, as we are prepare -- developing emergency plan, we're looking to the potential impact on the total fund, the leverage policy. And it may impact the total fund risk policy as well.

So that we don't know yet. As we are developing the plan, we'll discover more and more. And we plan to come back to you to ask you for any -- if there' any policy change.

ACTING COMMITTEE MEMBER PAQUIN: Okay. Thank you.

CHAIRPERSON FECKNER: Ms. Ortega.

COMMITTEE MEMBER ORTEGA: Thank you.

My question may be for Marcie as much as for Ben, but it's about how the plan will then lead to maybe a communications plan and kind of a strategy for being ready for the pressure that will come from the outside. So when you have the crisis, there's a lot of pressure, what are you doing, what are you doing. And there's an expectation that you're doing something different rather than doing what exactly you had in your plan. So I just kind of want to hear what your thinking is on that.

CHIEF EXECUTIVE OFFICER FROST: So the way that we do most of the workaround, whether it's in the Investment Office or if it's the liability side with Scott Terando and his team is once they have landed on the analysis, it then gets presented to this Board, but we also bring in Public Affairs at that time to create communication materials. And then our Stakeholder Engagement team will go out and meet directly with stakeholders. We meet with them on a regular basis, both with the employer roundtable -- actually, all three, the employer roundtable, the labor roundtable, and then we do a retiree roundtable.

And so our Public Affairs office will help us create communication materials that can be shared in those news. But it will start with, in this case, the Investment team working with us and Public Affairs, and then through the Board, and through these various channels out to the stakeholder groups.

CHIEF INVESTMENT OFFICER MENG: Yeah. So that's a very good observation. Good -- great question from you. So if you see this slide, we specifically call on your partnership. And not just this Board, it's all the stakeholders, so that we develop the plan together, we own the plan together. As I said that one of the famous -- I believe it was Republican lawmaker many years ago said something that really stuck with me. He said that if you want me to be with you in landing, make sure you include me in taking off, right?

So all the stakeholders when the crisis comes, we all have the -- we are all human. We have the tendency to succumb to a lot of -- a number of behavioral biases. So the more we can bring the stakeholders along with us and keep them informed that as we develop the plan, to share with them the plan as much as we can, so that all the stakeholder will stick with us and support the plan during a crisis.

So your question and comment is a very good one that we do need to have a communication plan alongside with the investment plan to prepare ourself for the next drawdown.

COMMITTEE MEMBER ORTEGA: Thank you.

CHAIRPERSON FECKNER: Thank you.

Ms. Taylor.

VICE CHAIRPERSON TAYLOR: Yes. I wanted to thank Ms. Ortega for asking that question, because those were one of my concerns as well. I just want to make sure -- and, Ben, you sort of answered the question -- the question already. But I just want to make sure as we are coming up with these decisions, our plans, that at each stage of the strategy, we are involving communications, so that we -- that we have a broader strategy for that communication.

It's always been my concern that we don't tell our story well enough, and I want to make sure that we get our story out there, because we're going to be scaring a whole lot of folks when we're talking about drawdowns. And it's very important that we get the whole story out there first before everyone else does.

CHIEF INVESTMENT OFFICER MENG: Yes.

CHAIRPERSON FECKNER: Ms. Middleton.

COMMITTEE MEMBER MIDDLETON: Yes. Thank you.

And I appreciate the plan. I think we're going forward in a very good direction. But we need to start that communication now and not when the drawdown occurs. And one feature of that clearly needs to be a very candid discussion of why we are in a better condition to deal with a drawdown this time than we were in 2008 and 2009. And that includes complete candor around what happened in 2008 and 2009.

CHIEF EXECUTIVE OFFICER FROST: So one of the communication products that we put together, because we were getting a lot of questions from the employer community, the member community around the discount rate change, the change in the amortization. So we put together what's called the Solid Foundation for the Future report.

I could see us -- you know, phase 2 Scott is coming in November with the risk report, primarily on the liability side, that this would feed into another piece similar to the Solid Foundation for the Future. And then we would go out and stakeholder that like we did that report. So I -- I went out and did an employer tour, we did a media tour, did a legislative tour, did a stakeholder tour making sure that everyone understood what we were thinking about in that moment.

And today is the first presentation that Ben has done on drawdown risk. And that will kick these next series of events off.

COMMITTEE MEMBER MIDDLETON: All right.

CHAIRPERSON FECKNER: Ms. Pasquil Rogers.

COMMITTEE MEMBER PASQUIL ROGERS: I want to just -- thank you, Mr. Chairman. I really want to thank Mr. Meng and Ms. Frost for this opportunity. Being -- one, it was a learning experience, but also freaks the heck out of me when I think about the curve and everyone is still smiling.

But I really appreciate preparedness, and I really appreciate kind of the opportunity to you speak and then this report in November.

I agree with everybody, I think we need to be really robust and maybe not wait till November, but maybe do little tidbits of communications out to groups, because, you know, we just don't know what we don't know. And the more we get out there, even just in news letters in your meetings, but something that even can be online for employers and members, legislators, all the stakeholders, I think will help familiarize themselves.

Because like myself, it's not going to be one time looking at the video. I'm going to need to pay attention and it will be a few times. And so I really appreciate today. I think it would be really helpful for us to just every month maybe have something.

Thank you.

CHAIRPERSON FECKNER: Mr. Jones.

COMMITTEE MEMBER JONES: Yeah. Thank you.

I just also want to echo what my colleagues have said to thank you, the staff, for executing the decision by the Investment Committee in 2016/2017 to get us to this point. Because as I recall, when we were debating and discussing these elements, we were getting pushback then that that's not the right thing to do. But here you are, we -- if we had not taken these steps, we would not be in the same position that we are today. So I just want to thank staff for that.

Also, the communication piece -- for example, last year, when we had a fiscal year return of 8.6 percent, I had several calls being the Chair of the Investment Committee at the time, well, why did you only have 8.6, and X pension fund 10, and another pension fund had 9? And I said, well, what's their funded status. Oh, they were 100 percent funded.

I said, there it is. When you're that well funded, you could take more risk. And so we were funded at the time back in '16 at 61 percent, we could not take the risk. And you've highlighted many of those elements today.

So we need to keep letting people know that you can't just compare numbers. You've got to look at under the hood, if you will, to understand why you are making those kind of returns based on your financial condition. So thank you very much for making this happen.

CHAIRPERSON FECKNER: Good point. Thank you.

Mr. Miller.

COMMITTEE MEMBER MILLER: Yeah. Thank you again, Mr. Meng, and all the work that's gone into this from staff and everything. It's really appreciated. And I would just also, as Henry did, echo my colleagues' concerns that the communication of this is going to be a big challenge I think for us organizationally, for each of us as Board members.

And for me one of the biggest parts of that challenge is it's challenging enough for me to keep my focus on that long-term time horizon of a long-term strategic investor being, you know, 30, 50 years out, when all the pressures and all the perspectives of most of the folks I talk to, our members, our stakeholders, are much shorter time frames for their decision making, their political survival, just the changes and coming and going of leadership in, you know, State and municipal government all those things that are on these much shorter time scales.

So to the extent we can try to find the commonalities and messaging to try to make this relevant to them in the present day, to help them understand our long-term perspective, of trying to look forward and recognize the kind of dramatic changes in the marketplace -- I mean, changes that just in the few years since I was a grad student, it's like, wow, never would have ever guessed or predicted some of the kinds of changes and where we are today, that -- you know, the pressure from them is often just from the rear-view mirror. It's like, you know, why weren't you guys in bitcoin, you know, that kind of stuff that we get.

So great job. And going forward, the more that you can provide us in terms of help, resources, and information, and packaging, and messaging, so we can kind of speak with one voice will be really, really helpful.

CHAIRPERSON FECKNER: Thank you.

Ms. Ma.

COMMITTEE MEMBER MA: Thank you very much. And I would agree. And also, I don't know if your presentation is on the website. But along with the presentation, I would also put the video of Ben speaking, because sometimes, you know, reporters will go, oh, my God.

Drawdown. And then they just look at a slide. But, you know, the better ones will actually take time and listen, you know, to your presentation, because sometimes what looks like, you know, what's on a slide may not be exactly what the interpretation is. So I would say, you know, for any of these touch issues, you know, when they happen, and people get alarmed, and, you know, reporters call, it's best to keep the video also along with the PowerPoint. But good job, Ben.

Thank you.

CHAIRPERSON FECKNER: Thank you.

Mr. Perez.

COMMITTEE MEMBER PEREZ: Thank you very much, sir, for your presentation. And everyone up here is absolutely right, but I don't want -- I want you to focus on the happy face, and --

(Laughter.)

COMMITTEE MEMBER PEREZ: -- let Marcie and her team worry about the outreach.

CHIEF INVESTMENT OFFICER MENG: Deal.

(Laughter.)

CHIEF INVESTMENT OFFICER MENG: I'm not sure that's a good deal for Marcie though, but it's a deal for me.

(Laughter.)

CHAIRPERSON FECKNER: All right. Seeing nothing else. Anything else on Item 9, Mr. Meng?

CHIEF INVESTMENT OFFICER MENG: That's it. Thank you.

CHAIRPERSON FECKNER: Thank you.

That brings us back to Item 8, action agenda item, asset allocation.

(Thereupon an overhead presentation was Presented as follows.)

CHIEF INVESTMENT OFFICER MENG: Yeah. Members of the Investment Committee, so as I said in my opening remarks, this is an action. It's about the California employer prefunded retirement plan. It's the newest addition to our affiliated program. So I have my colleagues here getting situated on the dais.

MANAGING INVESTMENT DIRECTOR BAGGESEN: Okay. We're ready to begin. Eric Baggesen part of the CalPERS staff and responsible for our trust level portfolio management team.

Agenda Item 8a, as Ben mentioned, is an action item. This is consistent with the other asset allocation related items that we bought for the affiliate funds really over the past year or so.

The item will be presented in large measure by Christine Reese, who is one of the team members in the

Global Equity area. And Christine is the person responsible for really maintaining the asset allocation structure within the affiliate funds. And we also have Alison Li who is a team member in trust level portfolio management.

We're also joined by Andrew Junkin from Wilshire Associates, if there's any questions for Wilshire in relation to this. And there is a Wilshire opinion letter that is attached to the actual agenda item.

The Pension Prefunding Trust is in essence really almost a defined contribution plan for employers that elect to basically make additional contributions in anticipation of potentially eventual contributions that will be made -- need to be made to the pension fund.

This was set up by legislation. It was Senate Bill 1413 that took effect in January 1st of this year. We have committed to starting up the prefunding trust as of July 1st of this year, the start of the new fiscal year.

The material that you've seen before has actually also been reviewed by what we're -- is known as our Asset Liability Management Committee. And the Asset Liability Management Committee is a partnership that exists between the Finance Office, the Actuarial Office, and the Investment Office to really review all of these asset allocation related items.

And consistent with a lot of the comments that we just heard, the Public Affairs people also participate in that Asset Liability Management Committee made up of, as I say, an array of the staff members.

And I think as again reinforcing that this is an action item, and I -- at this point, I think I will turn it over to Christine Reese who I think carries the first part of the material.

INVESTMENT MANAGER REESE: Thank you. Good morning, Mr. Chair and members of the Committee. Christine Reese, CalPERS team member.

Before we get started, I want to take a moment to acknowledge the hard work and dedication of all of the CalPERS team members that have contributed to the launch of this trust. It's been a great team effort across many areas of CalPERS over the last six months.

Regarding the presentation, I'll begin with an overview of the trust and some of the characteristics we take into consideration when developing an investment program. I'll turn it over to Alison to discuss the asset allocation and our recommendation for the portfolios, and then I'll finish the presentation with covering off on a few additional investment components.

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INVESTMENT MANAGER REESE: So starting on page three, Eric covered some of this in terms of the legislation. But the California Employers' Pension Prefunding Trust was created in response to rising pension costs over the next several years.

The specific purpose of the trust is to allow State and local public agency employers that offer a defined benefit plan the ability to prefund their required pension payments and invest those payments into a trust. The type of trust is a Section 115. It's the same type of trust we currently utilize for the CERBT, which is another affiliate investment program. So it's a very well understood structure.

It will be exempt from taxes. It will have a single governmental purpose to prefund pension contributions. The contributions and earnings are irrevocable, which means that once they're in the trust -- once the contributions are in, once the earnings have been credited to the trust, they can only be withdrawn for two purposes, one to prefund pension payments -- to pay pension contributions, the other would be to terminate, but only transfer to another qualified trust with the same purpose.

A couple of additional items to note are that trust participants don't necessarily need to be CalPERS pension participants. They could have their own defined benefit program and still be eligible to participate in the CEPPT. And employers are not required to participate in the trust. Contributions and participation are fully voluntary.

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INVESTMENT MANAGER REESE: So when developing an investment program, looking at page four, we want to understand the potential benefits and alternatives to really best align the investment program with the employer goals and to not replicate options that employers may already have available to them.

So CalPERS teams worked with an employer -- worked with the employers to gain an understanding of the -- how they anticipate using the trust.

And a primary goal for employers, as costs rise, is to stabilize their budget and smooth out their pension payments over the next several years. So participation in this trust would provide them with diversified investments with a strategic asset allocation. Many of the employers would have an established relationship with CalPERS, either through the pension program or potentially through the CERBT program. And we are a low-cost provider of this type of product.

When looking at alternatives, employers do have several alternatives. A few on the investment side was -- are that they can manage their own investments. They can also participate in a State-offered local agency investment fund. Both of those options are very short term, very conservative. They could contribute directly to PERF. That's a long-term investment, but that doesn't necessarily help them in terms of smoothing out their upcoming pension payments. There are other prefunding trust providers. So we know it's a valued product. And then, as a last resort, employers could decrease services and increase taxes.

When we look at the employ -- when we look at the investment options that employers currently have, they have options on the short term and the very long term. So when we looked at setting up this trust, we wanted to target something in the middle.

And Alison will speak more to that in the asset allocation component.

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INVESTMENT MANAGER REESE: Diving into some projected characteristics of the trust. We've already spoken about the participants. One thing I would like to call out is that the State of California, if they choose to participate, they could be a very large participant, which would take the assets under management potentially to a pretty large size in the trust.

At this time, we're not -- we don't have an indication that they'll participate soon, but potentially in 2019 later in the year.

Cash flows for the trust will be unpredictable. As they're voluntary, they will vary in size, as well as timing. And the time horizon, in working with the employer community, we learned that their time horizon is kind of short to medium, and the risk tolerance -- the associated risk tolerance is low to moderate. Based on that feedback and with the difficulty of meeting those goals with one option, we determined it would be best to offer two options for employers to have a choice.

And then in terms of the use of funds, because there are restrictions in the distributions, we don't expect large outflows in the early stages of the trust.

So at this point, I'll turn it over to Alison to review the asset allocation and our recommendation for the portfolios.

INVESTMENT MANAGER LI: Good morning, Alison Li.

CHAIRPERSON FECKNER: Microphone, please.

VICE CHAIRPERSON TAYLOR: Turn your mic on, Alison.

INVESTMENT MANAGER LI: Sorry. Good morning. This is Alison Li, CalPERS Investment staff. I will discuss the strategic asset allocation for CERBT. So when conduct our strategic asset allocation analysis, we're under the guidance of our Investment Beliefs, in particular, Investment Beliefs number 1, which is liabilities must influence asset structure.

But in the case of CEPPT, the purpose is actually to prefund the future required pension contributions. So both the contribution and the withdrawal are under the control of participants. So in this case, the cash flow is not determined directly by pension liabilities. Instead, it's determined by the budgeting considerations of its participants. So rather, as a result, in lieu of liabilities, pension characteristics are the determinants of our asset considerations.

So since CEPPT is a new trust, we do not have data from the yet-to-come participants. But it's reasonable to expect the participants will come from the same pool as those of the CERBT, because those are the ones, and the State, with the financial resources to prefund their pension contributions, and they have established a long-lasting trusting relationship with CalPERS.

And our internal administrator for CERBT will also administrate the CEPPT trust, how -- had extensive discussions with those potential participants to gauge their investment goals, investment time horizon, and risk tolerance.

Another source of information is to survey the participants who have already set up similar prefunding trust with private providers. So combining the two sources of information, we believe potential CEPPT participants have the following characteristics:

So first, their contribution to and distribution from the trust are voluntary. Both the timing and the amount are uncertain and varied. This character requires less liquid and less risky portfolio because the fund should be at relatively ready at any time for withdrawal, and it has less ability to remain invested during the drawdown periods.

Investor time horizon and risk tolerance are two characters that can either be closely related or be different. If we do not know anything about investor, then we would expect investor with short time horizon to have low risk tolerance, which will indicate a lower risk portfolio. On the other hand, the investor can choose its risk tolerance based on its own unique circumstances, no matter what is in investment time horizon.

So based on our information resources, we think the investment time horizon for CEPPT participants from short to medium, because the purpose of CEPPT is actually to temper the contribution volatility in the next several years and to mitigate the sharp increase in required contribution in the next 10 plus years, which is expected to level off afterwards. Besides, it's actually to participant's advantage to contribute the funds directly into PERF if their time horizon for the utilization of the fund is in the long term.

So lastly, investor risk tolerance for CEPPT participants is estimated to be low to medium. And this is consistent with the purpose of the CEPPT trust consistent with the discussions we have had with potential participants and consistent with their investment horizon and also consistent with the choices some of those participants have made with other providers.

So, in summary, the characteristics of the CEPPT participants indicates low- to medium-risk portfolios.

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INVESTMENT MANAGER LI: Thank you.

So the process to obtain policy portfolios for affiliate trust mirrors, to the extent possible, of the PERF of asset allo -- asset liability management workshop.

So the first step in the process is to establish capital market assumptions, which defines the risk and return profile of each asset class and determines the composition of candidate portfolios.

So the capital market assumptions for CEPPT has been established for 2019. And this follows the process we used for the 2017 asset liability management workshop. The only -- there is only three difference. So, first, for the fixed income and Treasury Inflation-Protected Securities, they only include U.S. securities, which is consistent with other affiliate trust.

And also, for the fixed income, the benchmark is the aggregate index, which is different from PERF, which is customized to have a longer duration. The shorter duration here is consistent with the investment horizon of the CEPPT participants.

And also for the global real estate investment trusts, we -- the CMA is estimated using an internal dividend discount model.

So this table shows the CMAs asset class correlations and the constraints. So minimum exposures are put on both TIPS and the REITs to increase the diversification in the portfolio.

So this slide is the outcome of the first step and it's also the input to the second step.

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INVESTMENT MANAGER LI: So the second step in the process is to utilize mean variance optimization techniques to build the efficient frontier. So each portfolio resides on the efficient frontier is efficient in the sense that they have the highest expect return compared to all feasible portfolios with the same expected risk.

So all the portfolios below and to the right of the efficient frontier are inefficient, while all the other portfolios above and to the left of the efficient frontier are not feasible.

So here we pick the five portfolios as candidate portfolios and their risk return profiles are displayed in the next slide.

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INVESTMENT MANAGER LI: So here, we show the composition of the five candidate portfolios and we also showed their volatility as measured by annual standard deviation and expected annual returns, which is net of the 25 basis administrate -- basis points administrative fees.

So referring to our Investment Beliefs number 9 that risk to CalPERS is multi-faceted and cannot be just measured by standard deviation and tracking error. So in addition to standard deviation, we also estimated the 95 percentile value-add risk using the Barra Integrated Model and the Monte Carlo Techniques.

So, for example, we estimate at the 95 percent level of confidence, the maximum loss to portfolio 1 within one year is not going to exceed 4 percent. So aided by the information on this slide, during the -- this is the third step of the process, we evaluate candidate portfolios to recommend the policy portfolios.

So a conservative portfolio is recommended for CEPPT strategy 2 to accommodate shorter investment horizon and lower risk tolerance. We recommend portfolio number 2, which has 4 percent expected return, 5.2 percent expected volatility, and we can say with 95 percent level of confidence that the maximum loss will not see -- exceed 5.3 percent within one year.

We -- this is -- portfolio 2 is preferred to portfolio 1, which has very low expected returns similar to a bond reserve portfolio. And also at the left end of the efficient frontier, the slope is very steep, so it pays to take on some extra risk.

A moderate portfolio is recommended for CEPPT strategy 1 to accommodate medium investment horizon and also medium risk tolerance.

So staff proposed portfolio 4, which has 5 percent expected return and 8.2 percent expected volatility. Again, we can say with 95 percent level of confidence that the maximum loss to portfolio 4 within 1 year is not going to exceed 11 percent.

It's preferred to portfolio 3, because portfolio

3 doesn't offer enough difference from portfolio 2, and it's also preferred to portfolio 5, because portfolio 5 have too high -- too higher volatility, which is not advised for investor with low to medium investment horizons and low to medium risk tolerance.

So now I will turn over to Christine again to discuss the implementation of our recommendation.

CHAIRPERSON FECKNER: Well, before you move forward, we have a question.

Mr. Jones.

COMMITTEE MEMBER JONES: Yes. Thank you, Mr. Chair.

Yeah. This is great. I think it's great. It's another step towards sustaining our long-term benefits for our members throughout the state. And certainly, we hope that agencies would take advantage of it.

I do have a question. It indicates irrevocable for contributions and earnings to the trust. My question is, is irrevocable to who? For example, we had agencies that stopped paying into the fund. We had to terminate them from CalPERS, or an agency may go bankrupt. So are these funds irrevocable to the members or to the institution that's providing them?

INVESTMENT MANAGER REESE: I'm not a lawyer, but I believe that the irrevocable is to the employer, in terms of once the money is in the trust, it's there for a very specified purpose to go into the pension plan. So they can't pull it out say to use it for the general fund. Does that answer the question?

COMMITTEE MEMBER JONES: Not really.

INVESTMENT MANAGER REESE: Okay.

COMMITTEE MEMBER JONES: Let's say that the agency like we had with a couple, they stopped paying in, so now it's affecting the members who the monies were being placed in the fund for. So they stopped paying. We have to terminate them from the system. So who --

INVESTMENT MANAGER LI: If I may, I think your question is -- this fund actually doesn't affect our relationship -- our contracting relationship between CalPERS and the agencies.

COMMITTEE MEMBER JONES: Um-hmm.

INVESTMENT MANAGER LI: That relationship is the same. If they cannot pay, then we'll go through bankruptcy. This is just to help them to manage their contribution in the next few years.

COMMITTEE MEMBER JONES: Um-hmm.

INVESTMENT MANAGER LI: So they are -- they have to budget how to come up with the contribution to pay the required contribution. And so this is just a tool. They could have saved some money like this year and let this money grow at 5 percent. After five years, they can use this money to pay for the contribution or the contribution has to come from other ways. This doesn't affect their contribution -- contractual obligation with CalPERS.

COMMITTEE MEMBER JONES: Right. Yeah.

INVESTMENT MANAGER REESE: So we've brought up Arnita Paige who works in our contracts area to assist.

COMMITTEE MEMBER JONES: Okay. Thank you.

PENSION CONTRACT & PREFUNDING PROGRAMS CHIEF PAIGE: Good morning. Arnita Paige, CalPERS team member. I want to make sure I understood your question. What I thought I heard you say was what happens if they -- this plan is terminated, they longer -- no longer contribute? I just want to make sure.

COMMITTEE MEMBER JONES: Um-hmm.

PENSION CONTRACT & PREFUNDING PROGRAMS CHIEF PAIGE: Because this is a voluntary program, those funds, if the employer decided I don't want o participate anymore, they can either transfer those funds to another 115 trust or they can pay towards the trust itself. So what it means to be dedicated is those funds are dedicated for future pension obligations.

COMMITTEE MEMBER JONES: That's what I was trying get to.

PENSION CONTRACT & PREFUNDING PROGRAMS CHIEF

PAIGE: Okay.

COMMITTEE MEMBER JONES: Yeah. Thank you very much.

PENSION CONTRACT & PREFUNDING PROGRAMS CHIEF PAIGE: You're welcome.

COMMITTEE MEMBER JONES: Yeah, because otherwise it's irrevocable. Like you said, they go bankrupt, they take the money out of the trust and it helps solve their bankruptcy problem. But you answered my question it's protected. So thank you very much.

PENSION CONTRACT & PREFUNDING PROGRAMS CHIEF PAIGE: You're welcome.

CHAIRPERSON FECKNER: Thank you.

Mr. Miller.

COMMITTEE MEMBER MILLER: Yeah. Thank you for the presentation.

I'm trying to figure out how to ask this in a coherent way. But I'm kind of interested if you could speak a little bit to kind of the what it looked like when you looked at what the distribution you would expect in terms of the participate -- potentially participating employers in terms of strategy 1 versus strategy 2, and how that played into offering a choice of two strategies versus kind of one strategy versus two that would have smaller numbers of participants, scale, cost, whatever.

Did they kind of come out as kind of a, you know, a bimodal distribution or were they just spread out and you wanted to put something in either end to try to cover all of them more optimally than kind of, you know, midline kind of approach?

PENSION CONTRACT & PREFUNDING PROGRAMS CHIEF PAIGE: I think I'll take that questions. What we did, in Jan -- in February and March, we actually went out and performed workshops at our regional office to gain an understanding of what employers were looking for. And what we heard was these -- some, they were actually conservative, moderate, and then some employers who wanted something a little bit more aggressive.

So when we go back to when we implemented our CERBT program, we offered one investment strategy. And then later through the years, we added the two additional. We thought that for this particular program, because we were hearing -- we were trying to offer a product that was for the entire population that we're hearing from, we thought the two investment strategies would work better, because they were -- what we heard was moderate low-cost program, but with the option of a more risk averse and then a slightly higher risk. So that's why we decided on recommending these two strategies.

COMMITTEE MEMBER MILLER: Okay.

CHAIRPERSON FECKNER: Mr. Perez.

COMMITTEE MEMBER PEREZ: Ma'am, you just mentioned low cost. And I saw in the footnote, is this -- the cost of this is 25 basis points per participant?

PENSION CONTRACT & PREFUNDING PROGRAMS CHIEF PAIGE: Yes. Correct.

COMMITTEE MEMBER PEREZ: And then -- and I think I heard you say that it's -- it makes more sense for a participant just to add money into the PERF as opposed to setting up a 115?

INVESTMENT MANAGER LI: No. For the case if their investment horizon for utilization of the fund is in the long term. Like, when they have extra month money, they can consider whether to contribute to CEPPT or the PERF. If they are going for the long term, it's to their advantage to contribute into PERF. But if they want to have the ability to utilize this money exclusively for the short term, then it's better to contribute to CEPPT.

COMMITTEE MEMBER PEREZ: Okay. So --

INTERIM CHIEF OPERATING INVESTMENT OFFICER BIENVENUE: So maybe I can help a little bit, Mr. Perez. If they're -- if they're trying to just improve their funded ratio, they should contribute to the PERF. But if they're trying to stabilize their budget, then it's better to be in this, because this will allow them to stabilize their budget. Does that help?

COMMITTEE MEMBER PEREZ: That's perfect. Thanks.

INTERIM CHIEF OPERATING INVESTMENT OFFICER BIENVENUE: Okay.

COMMITTEE MEMBER PEREZ: And then can the participants switch between strategies at all or once you pick 2 you're committed to 2?

PENSION CONTRACT & PREFUNDING PROGRAMS CHIEF PAIGE: We're allowing the versatility of them being able to participate in both strategies. And -- yes. I wanted to make sure. Was your question --

COMMITTEE MEMBER PEREZ: So I'm a city and I invest in number 2 -- I'm the city and I invest in 2. And let's say down the road three years later, I want to go to 3 -- 4, can I do that?

PENSION CONTRACT & PREFUNDING PROGRAMS CHIEF PAIGE: Well, we're recommending two strategies. So to repeat the question, let's say your investment -- go ahead.

CHIEF EXECUTIVE OFFICER FROST: He just wants to know whether they can transfer from one to another?

INTERIM CHIEF OPERATING INVESTMENT OFFICER BIENVENUE: Yes, they can.

COMMITTEE MEMBER PEREZ: Okay.

INTERIM CHIEF OPERATING INVESTMENT OFFICER

BIENVENUE: They can transfer. Thank you.

CHAIRPERSON FECKNER: Ms. Paquin.

ACTING COMMITTEE MEMBER PAQUIN: Thank you.

Just curious, how does the allocation and the return -- estimated returns and the fees compare to other 115 trust providers?

INVESTMENT MANAGER REESE: The information that we have available to us on other providers is limited, but the 25 basis points is lower than other providers. It looks like other providers are north of 40 basis points. And once the trust is up and running, we will look to review the fees on an annual basis, and look to reduce them where we can once our start-up costs are behind us.

ACTING COMMITTEE MEMBER PAQUIN: Okay. And as far as allocate -- asset allocation, is that similar to the others?

INVESTMENT MANAGER REESE: The asset allocation -- so one provider offers five different choices from very conservative to very aggressive. It appears that most of the participants are choosing more on the conservative side of those choices.

ACTING COMMITTEE MEMBER PAQUIN: Okay. Thank you.

CHAIRPERSON FECKNER: Ms. Middleton.

COMMITTEE MEMBER MIDDLETON: Yes. What are your plans for rolling out an educational campaign to municipalities on this program, most particularly to finance directors and city managers in the cities?

PENSION CONTRACT & PREFUNDING PROGRAMS CHIEF PAIGE: Well -- I'll take that question. I mentioned earlier that we started our workshops in February. What we do plan is to continue our workshops. They're actually for employers to sign up on our web starting in August through November. So we do go out and we do talk about the program.

We also plan to do like mailing fliers to our current employers, as well as at the Employer Forum we'll also be advertising for the program as well.

CHIEF EXECUTIVE OFFICER FROST: And the other thing that we'll do - we talked about this at the employer roundtable - is that the employers are willing to help market this program as well. So we'll get them a kit that they can use.

COMMITTEE MEMBER MIDDLETON: All right. Thank you.

CHAIRPERSON FECKNER: Okay. Seeing no other requests. Please continue.

INVESTMENT MANAGER REESE: Thank you. So page 11 shows the recommended benchmarks. These benchmarks are broad market-based indices. These are in use for other affiliate funds, so they're -- they're very well understood. I won't spend much time more on those.

--o0o--

INVESTMENT MANAGER REESE: Page 12 shows our recommended asset class ranges. What these show is for each asset class, how much that asset class can move from its target before triggering a portfolio rebalance.

INVESTMENT OFFICER McHENRY: Balance. So in our investment program, we rebalance portfolios on a quarterly basis. This will reduce any sort of mid-cycle frequency and costs around rebalancing.

This also facilitates contribution and distribution activity. In terms of the liquidity, we don't have a target for liquidity, but we do have a range of plus 2 percent. And that allows for cash moving into and out of the portfolio as participants contribute and withdraw.

So before I go on to the final slide, I just would like to also mention the Investment Policy, which is provided as attachment 2. The policy has been modeled from other affiliate trusts. It's been updated for the necessary components of the two CEPPT strategies, and the targets, and ranges.

The benchmarks, if those are approved, those will be updated in the Total Fund Policy in the future via and administrative update.

--o0o--

INVESTMENT MANAGER REESE: So in terms of a recommendation and next steps, we are hoping to get approval for the two portfolios, the recommended targets, benchmarks, ranges, and the Investment Policy. And then if approved, we would continue with our set-up work, launch by July 1st, and then we would fold the CEPPT into our ongoing affiliate trust reviews to the Board.

Those are our prepared remarks and we're happy to take more questions.

CHAIRPERSON FECKNER: Thank you.

Ms. Taylor.

VICE CHAIRPERSON TAYLOR: I just want to thank you very much for the report. It was very clear for me. And I just also would like to reiterate Ms. Middleton's concern that we make sure there's an educational portion as we roll this out, so that we are keeping our employers informed.

CHAIRPERSON FECKNER: Thank you.

Mr. Jones.

COMMITTEE MEMBER JONES: Move approval.

COMMITTEE MEMBER BROWN: Second.

CHAIRPERSON FECKNER: It's been moved by Jones, seconded by Brown.

Any discussion on the motion?

Seeing none.

All in favor say aye?

(Ayes.)

CHAIRPERSON FECKNER: Opposed, no?

Motion carries. Thank you very much.

MS. ORTEGA: Rob, you have a comment on that one.

CHAIRPERSON FECKNER: Oh, pardon me. You are correct.

Mr. Gibbons, please come forward.

Please give your name for the record and you'll have up to three minutes for your comments. Sorry about that.

I only wrote it in three places.

(Laughter.)

MR. GIBBONS: Chair, members of the Committee, Dillon Gibbons with California Special Districts Association. I'm glad that I know that I already have your support for this provision --

(Laughter.)

MR. GIBBONS: -- but that's what I was going to be encouraging. I'm -- I wanted to also just thank the Board and the CalPERS staff for all of their work on this effort. The legislation that came through last year, SB 1413, truly was a team effort. It was something where we sat down and asked the Board for assistance on providing a tool for our members to address upcoming increases in their pension costs, and came -- this Board came through with support for that legislation and assisted by giving staff the direction to work with us. So this was an effort between employers, labor, and CalPERS. And now here we are about to roll this out.

To Member Middleton's comments about rolling this out, we do look forward to partnering with CalPERS in Educating our members in trying to get as many folks enrolled and knowledgeable on the program itself.

We're -- we anticipate the same type of participation as in the CERBT. And we're hopeful that this will be a true tool. To the question from Mr. Perez regarding, you know, why a member may or may not get into this program, this -- this tool will assist our membership in dealing with the fluctuations of rates. When they have a little extra money, they can put it into this fund and then it will help stabilize their payments into CalPERS in those years where maybe they have other concerns or other needs for the -- on their general budget. They can drawdown from this fund to offset any increase that they may receive from CalPERS and their annual payments.

So with that, again, thank you for your support for this and look forward to working with you in rolling it out.

CHAIRPERSON FECKNER: Thank you for your comments.

So again, that brings us to Agenda Item 10, Summary of Committee Direction. Mr. Meng, did you have any to add?

CHIEF INVESTMENT OFFICER MENG: We didn't note any directive from you. But we did note the request from many of you to come back with a communication plan on the drawdown. And we'll continue to inform you as we develop the plan.

CHAIRPERSON FECKNER: Very good. Thank you.

That brings us to Agenda Item 11. I have two requests so far to speak, and a whole handful of people that aren't even here.

I have Ms. Fanucchi and Ms. Theiss on the list so far. Would you please come forward.

No, that's okay. Thank you.

Please give your name for the record and you'll have up to three minutes for your comments.

MS. THIESS: Yes. I'm Sara Thiess from Fossil Free California. Some of you are familiar with me and my organization. As I've said before, I'm also a CalPERS retiree. Myself and my organization are concerned about climate-related financial risk. So in that light, I thought I'd just bring to your attention, and you may have seen it, the latest developments in Norway. The Norway Parliament has instructed their sovereign wealth fund to shed -- to pull about $13 billion in investments in coal, oil, and gas and to move 20 billion, which is 2 percent of the fund, into renewables.

And specifically, the funds will scrap investments worth about 7 billion in oil and gas production companies. Now, these are smaller companies that focus specifically on oil and gas. And they're retaining investments in some larger companies that are limiting exposure to fossil fuels by investing in renewables.

So I just wanted to bring this to your attention. I think it's a sign of the times and it's something worth talking to staff about.

Thank you so much.

CHAIRPERSON FECKNER: Thank you.

Okay. We now have 11 or 12 requests to speak. It looks like on the same topic.

So I'll call down the first three. Please give your name for the record. You'll have up to three minutes for your comments. And please don't repeat the comments from the predecessors. So let's bring new concepts when we come up and talk and not repeat one another, please.

I have Ms. Fanucchi, Ms. Olvera, and Mr. Austin. Are they here?

MS. GOLDMAN: Can we do them instead in a different order than what you're reading.

CHAIRPERSON FECKNER: Well, if you had put them in a different order, I could have, but that's what I got. So how would you like to put them in some sort of order?

I just would recommend for future times, if you turn them in earlier and list them the way that you'd like them read, that's how we will present them.

Over on this slide, please. Yes, the first three seats.

Thank you.

The microphones are already on for you.

First three. There you go.

No, just the first three seats, please.

VICE CHAIRPERSON TAYLOR: Just the first three seats.

CHAIRPERSON FECKNER: Excuse me, just the first three. There we go.

Thank you.

Please begin.

DR. CANTON: Good afternoon.

CHAIRPERSON FECKNER: Good afternoon.

DR. CANTON: My name is Cecil Canton. I'm a professor of criminal justice at California State University, Sacramento. I'm also a member of the California Faculty Association, which represents more than 29,000 professors, lecturers, coaches, counselors, and librarians in the Cal State system. I've been a CalPERS member for 28 years.

I'm here today to speak to you about our union's call for this body to divest in private prisons that are committing egregious human rights violations; private prisons who sole purpose is to prosper for the mass incarceration of people of color and profit from the detainment of immigrants to our country; private prisons that improve their bottom lines at the expense of our fellow human beings.

I'm going to point -- excuse me, paint a picture for you of what transpires in places like ICE detention facilities owned and operated by the GEO Group, refrigeration units filled with slimy lunch meat, moldy bread and open packages of raw chicken leaking blood, inadequate medical care, solitary confinement as a punitive and retaliatory measure, and nooses in detainee cells.

This is not Orwellian fiction. This is reality for 5,000 people detained in just four of the GEO's Group's ICE facilities, one of which is in Adelanto, California. These were among the findings contained in a report by the Office of the Inspector General released June 3rd. The report is a factual account of the horrific conditions that detainees face daily and is the third report since Trump came into office, the findings of which are all consistent.

It's shameful that there is even debate about whether CalPERS should continue to include GEO Group and CoreCivic as part of its investment portfolio. I, along with my colleagues, do not want our pensions connected to these atrocities.

In April, the California Faculty Association passed a resolution calling for CalPERS and its Executive Board to divest from the GEO Group and CoreCivic. I want to read you a piece of that resolution.

CoreCivic and GEO Group are engaged in human rights abuses linked to their operation of the largest family detention centers in the country, where migrant children and adults are detained in life-threatening conditions, given contaminated or insufficient food, denied effective legal representation, denied basic medical support, forced to endure unsafe working conditions, forced labor and wage theft, denied access to communication outside of the facility, and held in prolonged or indefinite detention.

CoreCivic and GEO Group have failed to improve conditions at their detention centers even after lawsuits. Fines from government agencies and scathing reports from the Office of the Inspector General, which is the Department of Homeland Security's oversight body.

Consider this, the investment in these private prisons is a tiny fraction, just 11.4 million of CalPERS overall investments, which is some $360 billion. That is de minimis to the overall portfolio return and profit.

There is no good reason for continuing to allow our retirement pensions to be intertwined in companies committing willfully negligent human rights abuses.

CFA, and as Part of CFA, we as faculty are committed to dismantling racism and social justice that permeates the institutions, systems, and policies in California and our country. We will not back down from this fight. This is the wrong side of history.

CHAIRPERSON FECKNER: Thank you. Your time has expired.

DR. CANTON: Please, CalPERS don't be on that side.

CHAIRPERSON FECKNER: Thank you.

DR. CANTON: Thank you.

CHAIRPERSON FECKNER: Next.

DR. WEHR: Good afternoon. My name is Dr. Kevin

Wehr. I'm a professor of sociology also at Sacramento State. And I'm Vice President of the California Faculty Association. I've been a CalPERS member for 17 years.

As Dr. Canton mentioned, CFA passed a resolution in April calling for CalPERS to divest from CoreCivic and the GEO Group. We sent that resolution to this body on May 16th. While we received a response dated May 24th, I'd like to counter several of the claims in your response about CalPERS policy and your philosophy regarding divestment.

The letter states that investment quote, "Does not signify that CalPERS approves of the company's policies, products, or action", end quote. This, to be very blunt, is a cop-out. It's a cop-out used to remain separate from any kind of moral culpability that may come from looking critically at who is being exploited for the sake of profit. And in this case, those being exploited are immigrant families.

Your response further states that CalPERS quote, "Wants companies it invests in to meet higher corporate governance, ethical, and social standards of conduct", end quote. In this case, however, divestment is the proper course of action.

After Sandy Hook, CalPERS sold its stakes in two major gun manufacturers. We are simply asking you to do the same right thing in this instance as well.

CoreCivic and GEO Group run private prisons and profit off of the unjust and racist laws that incarcerate innocent, undocumented immigrants. These organizations operate the largest family detention centers in the country, where the vast majority of detainees are seeking asylum.

CoreCivic and GEO Group's business model and continued profitability relies on a system that is caging children. Their stock prices depend on violating the basic human rights of families fleeing violence in their home countries. These companies have seen an increase in demand for their services thanks to the broken system that is abusing them and violating their rights. The supply in this case being humans at the mercy of racist and xenophobic federal policies.

CalPERS must divest. Nothing achieved through policy changes by these companies is enough. In fact, they can make no changes that will satisfy the kind of policy improvements that would facilitate continued investment in them. Everything CoreCivic and GEO Group does or can do to remain profitable is, at its very core, unjust.

The New York City Pension Fund divested, so did New York State Common Retirement Fund. In November 2018, CalSTRS divested. And now JP Morgan stopped financing the private prison industry and Wells Fargo is following suit. And yet, CalPERS continues its investment in this corrupt system.

I am here as a professor who has dedicated my career to lifting up, understanding, and knowledge and generating --

CHAIRPERSON FECKNER: Sir, your time has expired.

MR. WEHR: -- future generations of thought leaders. I'm here as part of CFA, a faculty union deeply committed to racial and social justice.

CHAIRPERSON FECKNER: Please bring your comments to a close.

MR. WEHR: And I'm here as a CalPERS member who finds it reprehensible that this pension that I will rely on for my retirement --

CHAIRPERSON FECKNER: Please -- please end your comments.

MR. WEHR: This is my final sentence. The pension that I will rely on for my retirement is invested in funding human rights abuses. Please divest and dump CoreCivic and GEO Group.

Thank you.

CHAIRPERSON FECKNER: Thank you.

Next.

MS. FRITZ: Hi. My name is Niesha Fritz. I'm a member of the California Faculty Association. We are here in coalition with Educators for Migrant Justice, and I would like to cede my time to Emily Goldman with Educators for Migrant Justice.

CHAIRPERSON FECKNER: Well, we can't cede your time, be that's okay.

Next.

MS. SHRECK: Hi. My name is Aimee Shreck. I'm with the California Faculty Association, and I'm also here in support of the coalition and Educators for Migrant Justice. And I'm in support of the comments that my colleagues just gave. I'd also be happy to cede my time to one of the speakers who would need some more time.

CHAIRPERSON FECKNER: It's just three minutes per person. We can't give them extra time, but thank you.

MS. SHRECK: Thank you.

CHAIRPERSON FECKNER: Next person, please.

MS. RODRIGUEZ: Hi. My name is Janeth Rodriguez. I'm with the California Faculty Association.

I would also just like to echo the comments made by my colleagues and would willingly cede my time for any of the other speakers.

Thank you.

CHAIRPERSON FECKNER: Okay. And I don't have a request for your -- to speak. Could you please fill one out so the court reporter can have it?

MS. RODRIGUEZ: Sure.

CHAIRPERSON FECKNER: Thank you.

Yes.

MR. CEVASCO: Hi. My name is Vincent Cevasco, also with the California Faculty Association here in support of their call for divestment. And I -- if possible, would cede my time.

Thanks.

CHAIRPERSON FECKNER: Thank you.

MS. FANUCCHI: Hi. My name is Joanne and I'm here to echo all of the --

CHAIRPERSON FECKNER: Please give your full name.

MS. FANUCCHI: Joanne Fanucchi.

CHAIRPERSON FECKNER: Thank you.

MR. FANUCCHI: I'm here to echo all of the remarks that the coalition has brought to your attention with the divestment. I was here two weeks ago on fossil fuel divestment, which I've been doing for three years. And we need to join forces, because we're after the same goal.

I don't mean to be unkind, but I do have a comment regarding all of your graphs. I've been here for several hours, all of your graphs, and charts, and all of that. And I would really appreciate seeing a chart for risk reward ratios that have the number of families detained illegally on the border. I would love to see a chart -- well, not love, but I would like to see a chart graphing the number of rapes, sexual assaults, and other attacks against women and children in detention.

I would like to see the number of murders on these charts, so that you can weigh the risk and ratio rewards on another level besides what's in it for me.

I really -- again, I don't mean to be unkind, but you need to see the whole picture. This was a very dry presentation, stay the course in the downturn, which is going to happen in 2020, according to the Duke University professors interviewed today. You really have a lot of work to do. I understand it's very hard. But at the same time, staying the course is not going to work.

So when you get that graph together with all the atrocities being committed in this country's name, would you email it to me? I'd be happy to leave my email address with the people back there.

Thank you.

CHAIRPERSON FECKNER: Thank you.

Next.

DR. JOSEPHSON: Hello. My name is Dr. Tristan Josephson. I'm also a CalPERS member. And I'm an assistant professor in the Women's Studies Department at Cal State Sacramento. I'm here like with my colleagues to express my concern about CalPERS complicity in the ongoing migrant abuse by for-profit prison companies. And I, with -- in solidarity with my colleagues, urge you to divest my retirement funds from CoreCivic and GEO Group.

The reason I'm particularly concerned is this is actually part of my academic research. I'm writing a book on trans migrants who come to the U.S. and their experiences with the immigration system. And part of my work is on what happens in detention centers. So I'm well aware of the decades long abuses that have been extensively documented by human rights organizations and immigrant justice organizations in the U.S. immigration detention facilities.

I particularly focus on what happens to trans folks in these situations. So all migrants, as my colleagues have mentioned, are subjected to various sorts of abuses in these -- they're basically immigrant prisons. Trans folks, particularly transgender women, are especially vulnerable in these centers, right? And a really horrible example, sort of extreme, but actually routine example of this is a recent death of Roxsana Hernandez Rodriguez in May of last year who was held -- a trans woman who was held in a facility in New Mexico that was run by CoreCivic who died as a result of her incarceration. The New York Times reported that an autopsy after her death showed signs of abuse that she had sustained in the facility.

And other trans women who have been released from that same facility, which is the Cibola County Correctional Center run by CoreCivic, have also testified to inadequate medical care, poor mental health services, the arbitrary use of segregation, which makes trans folks more vulnerable to abuse.

And this is nothing new. These -- as I said, these documented abuses have been going on for decades. One of the cases that I write about in my research is a case of another trans woman from Mexico in 2007 who died in an immigrant prison in Southern California.

So as my colleague Kevin Wehr pointed out, these are folks who are entering the U.S. under legal -- under U.S. law and under international human rights law to declare asylum, right. And so this is a right that's guaranteed to them and they're being treated in these ways.

So I don't want my retirement funds invested in these companies. I would also argue the financial bit of this is -- you know, CalPERS investment in CoreCivic and GEO Group is a relatively small number of the larger portfolio that CalPERS has.

So I'm just here to urge CalPERS to live up to its reputation as a leader in responsible investing and to take immediate action to end its financial complicity --

CHAIRPERSON FECKNER: Your time is up, sir.

DR. JOSEPHSON: -- in these human rights abuses.

Thank you.

CHAIRPERSON FECKNER: Thank you.

Ma'am.

DR. SAECK: Hi. My name is Dr. Melanie Saeck. And I'm a staff member at Sacramento State University. I'm also the logistics coordinator of a group that we formed on campus, Queer and Trans Faculty and Staff. The short is QTFAS. And like my colleagues, I also support the divestment from the detention centers, as well as family separation.

And I want to speak about the conditions of the centers, especially considering what's happening to trans detainees a little bit further. It's been coming out lately that the detention centers are really thought of as being very similar to concentration camps. And I have a Ph.D. in art history of the early 20th century specializing in queer and gender studies. And having studied extensively concentration camps during World Ware II, including, you know, Nazi Germany, the U.S. Japanese internment camps, I found the detention centers to be -- there's a striking similarity between the detention centers and concentration camps.

Andrea Pitzer, a journalist and author of the book *One Long Night: A Global History of Concentration Camps* defines concentration camps as mass detention of civilians without a trial.

So I want to speak to the detention of trans women in particular, because this is a very personal issue for myself, not just because of my research. But I identify as non-binary, and I have numerous loved ones who are also trans.

And I've been reading about the horrors. Trans women who are being placed into facilities for men, no medical care. So that means that they're denied their hormones, which is a defilation of human dignity to anyone who is trans. And then, of course, the two trans women who were reported as dead who were both HIV positive, but were refused medical care.

In a recent interview with two former detainees, they expressed some of the atrocities. One was chained to a pole in a men's facility for multiple hours while the men detainees were watching her and taunting her. And, of course, several have been placed into solitary confinement. And these are, of course, asylum seekers.

They're not criminals.

How is this issue even up for debate? I love my job at Sac State. And the reason why I love it so much is because of its dedication to supporting diverse populations. So this is not part of our values.

Thank you.

CHAIRPERSON FECKNER: Thank you.

Who's next?

MS. OLVERA: Good afternoon. My name is Linda Olvera. And I have been with PERS as a State employee for -- since 1968, Department of Industrial Relations.

Right now, I'm representing an organization that I work with in the Oakland Bay Area called Freedom for Immigrants.

I wanted to start out, there's something that are -- I'm going to repeat, but I've got a presentation here. I didn't have time to take it out, so I wouldn't repeat. So bear with me.

But I wanted to start out with asking you if you remember the 60s? Do you remember the anti-war demonstrations? I can kind of look at some of you I know that you do, and that you hopefully participated in that.

Well, there's a song by Buffalo Springfield.

"There's something happening here. What is it ain't exactly clear. It's time we stop, hey, what's that sound? Everybody look what's going down".

Let me tell you what's going down. PERS investing with CoreCivic a for-profit private company that owns and manages private prisons and detention centers, you've already heard that.

So let's look at one of its hundreds of operations at the Cibola Immigration -- excuse me, Cibola Immigrant Detention Center in Grants, New Mexico. While the immigrant population detained in Cibola have often committed no crime, they live in conditions fit for no human. The 1,100 bed detention center is notorious nationally for unlivable conditions, health violations, solitary confinement, and prison labor. Asylum seekers at Cibola face indefinite detention.

Remember, no crime. Historically, political asylum seekers detained at Cibola were being categorically denied parole, regardless of their circumstances. Detainees spend an average of six to eight months in Cibola, and some stay flat -- some stays last over a year. Remember, most have committed no crime.

Health violations. Cibola accumulated more repeat deficiencies in health services than any other private federal prison in operation. A 2012 report found that Cibola was operating without a single doctor. The lack of access to health care has often resulted in death.

Labor violations and inhumane treatment. Detainees work for unbelievably low wages. Inmates often work for only $1 a day. The cost of one phone call for three minutes is $10. This is a tremendous obstacle to obtaining important evidence for their cases.

CoreCivic has upwards of 100 contracts with the U.S. Immigration -- with the Department of Homeland Security, and many operate in the same heinous dehumanizing fashion. They get away with it because they operate secretly --

CHAIRPERSON FECKNER: Your time has expired.

MS. OLVERA: -- like the military and many -- I have one more sentence.

By the way, does all this sound familiar to you? These same inhumane conditions early on under Hitler were called concentration camps. Rest of the sentence. You may balk at this term. That's good. You should balk. But more than that, you should refuse to have anything to do with these money making for-profit death camps. PERS and this country should have nothing --

CHAIRPERSON FECKNER: Please end your comments.

MS. OLVERA: -- to do with CoreCivic. Divest now. Thank you.

CHAIRPERSON FECKNER: Thank you.

MR. AUSTIN: Hello. My name is Josh Austin. I'm a teacher in Berkeley. I'm a public school teacher. A Member of Berkeley Federation of Teachers, and California Federation of Teachers, and Educators for Migrant Justice. I'm a CalSTRS member. My medical benefits are through CalPERS.

I call on you to divest from CoreCivic and GEO Group. CalPERS is claiming to be a progressive institution. There's nothing progressive about investing in CoreCivic and GEO Group. You've heard about the human rights abuses. We are well aware of what's going on. There's no reason -- there's no excuse for this.

Financially, divesting from CoreCivic and GEO Group, maybe that is the language that you'll understand. In response to the company's conduct, CalPERS fiduciary duty, given the level risks in these investments, poses a threat to CalPERS rate of returns.

According to a recent report from Norway's Government Pension Fund, conduct based investment from companies with serious or systematic human rights violations produces higher returns for investors. The California State Teachers Retirement System, CalSTRS, divested from CoreCivic and GEO Group in November after determining that owning private prison companies was detrimental to the overall portfolio return and tracking error.

Compared to CalPERS, which oversees $360 billion and currently has $11.4 million invested in CoreCivic GEO Group, CalSTRS oversees just $219 billion and is considered its $13.7 million investments in CoreCivic and GEO Group a drop in the bucket and a rounding error. Those are quotes.

The material risks posed by CoreCivic and GEO Group's human rights abuses are already affecting both companies' bottom line with their stock prices tumbling after JP Morgan and Wells Fargo announced plans to stop providing loans to either company due to their treatment of migrants and other detainees.

So again, as a member of CalSTRS and CalPERS, I call on you to divest holdings in for-profit prison companies CoreCivic and GEO Group and to use your leverage to pressure General Dynamics and United Rentals and their subsidiaries to provide access to redress for those adversely impacted by their operations and to end your material support for the detention of migrant children and families.

Thank you.

CHAIRPERSON FECKNER: Thank you.

Ma'am

MS. MANCIAS: Good afternoon. My name is Nancy Mancias. I'm a public stakeholder. I am a divest campaign organizer for the women's group Code Pink.

And I just want to share a story with you that I am the product and the result of family who crossed the U.S./Mexico border, who crossed the U.S./Mexico border for better economic advances. I am here on the backs of my ancestors who crossed the U.S./Mexico border.

Things were different when they crossed. There was no General Dynamics. There was no GEO Group. There was no CoreCivic. So it's my responsibility, and perhaps others in this room, to speak out against the atrocities that are happening on the U.S./Mexico border.

My family wasn't separated. We were kept together. We were able to build a new life for future generations. So I am here as a result of that and took full advantage of all their sacrifices.

General Dynamics, a U.S. defense contractor, specializing in missile defense systems and combat vehicles is currently under contract with the Department of Health and Human Services for infrastructure services for shelter care for unaccompanied children at the Florida Homestead facility. United Rentals one of the largest rental companies is also providing rental equipment and infrastructure to this facility.

We've all heard CoreCivic and GEO Group operate the largest family detention centers in the U.S. where the vast majority of detainees are seeking asylum. My family in the past seeked asylum and we got it.

Plaintiffs in six federal lawsuits have alleged forced labor and other human rights abuses in CoreCivic and GEO Group's facilities. According to independent medical experts, CoreCivic and GEO Group's practices have contributed to the deaths of numerous detainees. And advocacy groups continue to voice concerns over medical neglect and sexual abuse at the company's migrant detention centers.

A recent report by the Department of Homeland Security's internal watch dog concluded that ICE's detention facilities, including those operated by CoreCivic and GEO Group, are not subject to rigorous oversight and therefore are not held accountable for substandard conditions.

This conclusion is all the more alarming, given that the current administration, the Trump administration, has sought to terminate standards that prevent children from being held in CoreCivic and GEO Group family detention facilities for prolonged periods of time.

Nearly a year after his zero tolerancy immigration policy was first announce --

CHAIRPERSON FECKNER: Your time has expired.

MS. MACIAS: Thank you for your time.

CHAIRPERSON FECKNER: Thank you.

So I have two other requests to speak Ms. Berta-Avila and Ms. Goldman.

I guess it's just Ms. Goldman.

MS. GOLDMAN: Yes. My name is Emily Claire Goldman. I'm the founder and director of Educators for Migrant Justice.

I'm going to keep it short, since we've had quite a few public comments and I know that you all have heard quite a bit from me.

I first wanted to share a few updates. First of all, AB 32, the California legislation that would prohibit the State from contracting with CoreCivic and GEO Group has passed the State Assembly is onto the Senate and set for hearing on July 2nd. It is expected to pass.

This is very significant for both companies. In one of the -- one of CoreCivic's most recent SEC filings, they noted that the mere reduction in the California -- in California's prison population cost them $14 million over one year, just a reduction in their prison population. This bill alone would have a devastating effect on both companies. The conduct by both companies, as everyone else has noted, is also affecting their bottom line.

The human rights abuses recently led the City of Indianapolis to cancel its contracts with CoreCivic as well as the Federal Bureau of Prisons to cancel its Adams County Correctional Facility, which alone generated $60 million in revenue for the company.

Moreover, going back to the California prison population reduction, that alone affected CoreCivic's share price and dropped it by a couple cents per share, which overall is quite significant, again, just the mere reduction.

Also want to note that, again, when we're talking about engaging with companies, it should be good faith engagement. And what we've seen in a recent class action securities lawsuit against CoreCivic, we have the judge that previously refused to certify the class action, several weeks later went back and ended up certifying it. After finding a discord between what CoreCivic's CEO was telling shareholders and what corporate employees themselves knew, when CoreCivic employees were given an advanced copy of the 2016 report from the Office of the Inspector General.

One executive wrote, what I'm shocked is that they totally overlooked the consequences of our staff vacancies. The company has settled at least three lawsuits stemming from understaffing at their facilities for undisclosed sums, with one pending class action lawsuit alleging that understaffing at CoreCivic's

Trousdale Turner facility put diabetic prisoners' lives at risk.

The judge's ruling in the securities litigation also cited a CoreCivic executive who was quote, "Worried that health care problems might be putting contracts in jeopardy at two facilities", and wrote in an email quote, "This is going to kill us".

It's important for the Board to keep that in mind as you continue the engagement process. Much of this information has been provided to each of you in a report that I emailed just 30 minutes ago.

CHAIRPERSON FECKNER: Your time has expired, Ms. Goldman.

MS. GOLDMAN: Thank you.

CHAIRPERSON FECKNER: Thank you.

All right. Seeing no other requests from the public, I do have one Board member request. Ms. Taylor.

VICE CHAIRPERSON TAYLOR: Thank you.

I wanted to thank our California Faculty Association folks for showing up. I've spoken on this on a couple of occasions. These corporations displace our workers -- state workers in prisons. I disagree with the business model in general. But I will assure you that we are discussing this. We are discussing the impact. So thank you again.

CHAIRPERSON FECKNER: Thank you.

Ms. Middleton.

COMMITTEE MEMBER MIDDLETON: Yes. Thank you, Mr. Chairman. And I want to thank California Faculty Association for coming.

Currently, SB 132 from Senator Scott Wiener is in the Legislature. It would define a number of practices that would be prohibited in California prisons when it comes to the treatment and assignment of transgender individuals.

I would like to have staff contact both GEO Group and CoreCivic and get a specific answer to their willingness to follow the precepts of SB 132 and to ensure that transgender pris -- transgender people in their custody are treated with dignity and are treated in conformity with their gender identity.

Thank you.

CHAIRPERSON FECKNER: Thank you.

Mr. Miller.

COMMITTEE MEMBER MILLER: Yeah. I thank you for your comments. And, in particular, I want to thank the presenters for -- in your comments, you'll recognize that we're here as fiduciaries. And some of your comments I find are very helpful to me as a fiduciary, because as I've expressed before, I think there are -- as Ms. Taylor has as well, there are serious problems with their business model. There are serious problems that from a hard core financial Wall Street investor, long-term strategic investor, we need to look at as whether they're evil, whether they're angels doesn't really matter. In that context, it's is this a smart investment? Is their business model going to survive? Are they going to hurt us in our ability to provide and support the fund that provides the benefits for our members?

And that's where I think some of your comments that went to the relevance of them as an investment, as a business model, as having exposure to real serious liabilities from their behaviors that may be deplorable, but are also material and financially relevant to their ability as An investment to support where we need to go with this challenge of our funding. So I appreciate that some of the comments recognize that that's the perspective we have to look at it from.

And to that extent that you did, that was helpful to me. So thank you.

CHAIRPERSON FECKNER: Thank you.

Seeing no other requests.

We thank you all for coming today and for your comments.

This open session is adjourned.

(Thereupon California Public Employees' Retirement System, Investment Committee meeting open session adjourned at 1:01 p.m.)

C E R T I F I C A T E OF R E P O R T E R

I, JAMES F. PETERS, a Certified Shorthand Reporter of the State of California, do hereby certify:

That I am a disinterested person herein; that the foregoing California Public Employees' Retirement System, Board of Administration, Investment Committee open session meeting was reported in shorthand by me, James F. Peters, a Certified Shorthand Reporter of the State of California, and was thereafter transcribed, under my direction, by computer-assisted transcription;

I further certify that I am not of counsel or attorney for any of the parties to said meeting nor in any way interested in the outcome of said meeting.

IN WITNESS WHEREOF, I have hereunto set my hand this 19th day of June, 2019.

James F. Peters

JAMES F. PETERS, CSR
Certified Shorthand Reporter
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