MEETING

STATE OF CALIFORNIA

PUBLIC EMPLOYEES' RETIREMENT SYSTEM

BOARD OF ADMINISTRATION

INVESTMENT COMMITTEE

OPEN SESSION

ROBERT F. CARLSON AUDITORIUM

LINCOLN PLAZA NORTH

400 P STREET

SACRAMENTO, CALIFORNIA

MONDAY, FEBRUARY 12, 2018

10:06 A.M.

JAMES F. PETERS, CSR
CERTIFIED SHORTHAND REPORTER
LICENSE NUMBER 10063

A P P E A R A N C E S

COMMITTEE MEMBERS:

Mr. Henry Jones, Chairperson

Mr. Richard Costigan, Vice Chairperson

Ms. Margaret Brown

Mr. John Chiang, represented by Mr. Steve Juarez, Mr. Frank Moore

Mr. Rob Feckner

Mr. Richard Gillihan

Ms. Dana Hollinger

Ms. Priya Mathur

Mr. David Miller

Mr. Ramon Rubalcava

Mr. Bill Slaton

Mr. Theresa Taylor

Ms. Betty Yee

STAFF:

Ms. Marcie Frost, Chief Executive Officer

Mr. Ted Eliopoulos, Chief Investment Officer

Mr. Matt Jacobs, General Counsel

Mr. Eric Baggesen, Managing Investment Director

Ms. Natalie Bickford, Committee Secretary

Mr. Dan Bienvenue, Managing Investment Director

Ms. Kit Crocker, Investment Director

Mr. Matt Flynn, Interim Chief Operating Investment Officer

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

STAFF:

Mr. Michael Krimm, Investment Director

Mr. Rob Patterson, Investment Manager

Mr. John Rothfield, Investment Director

ALSO PRESENT:

Ms. Lisa Bacon, Meketa Investment Group

Ms. Rose Dean, Wilshire Associates Consulting

Mr. Allan Emkin, Pension Consulting Alliance

Mr. David Glickman, Pension Consulting Alliance

Mr. Steven Hartt, Meketa Investment Group

Mr. Andrew Junkin, Wilshire Associates Consulting

Mr. Ali Kazemi, Wilshire Associates Consulting

Mr. Stephen McCourt, Meketa Investment Group

Mr. Wylie Tollette

I N D E X

P R O C E E D I N G S

CHAIRPERSON JONES: I'd like to convene the Investment Committee meeting. And the first order of business is roll call, please.

COMMITTEE SECRETARY BICKFORD: Henry Jones?

CHAIRPERSON JONES: Here.

COMMITTEE SECRETARY BICKFORD: Bill Slaton?

VICE CHAIRPERSON SLATON: Here.

COMMITTEE SECRETARY BICKFORD: Margaret Brown?

COMMITTEE MEMBER BROWN: Present.

COMMITTEE SECRETARY BICKFORD: John Chiang represented by Steve Juarez?

ACTING COMMITTEE MEMBER JUAREZ: Here.

COMMITTEE SECRETARY BICKFORD: Richard Costigan?

COMMITTEE MEMBER COSTIGAN: Here.

COMMITTEE SECRETARY BICKFORD: Rob Feckner?

COMMITTEE MEMBER FECKNER: Good morning.

COMMITTEE SECRETARY BICKFORD: Good morning.
Richard Gillihan?

COMMITTEE MEMBER GILLIHAN: Here.

COMMITTEE SECRETARY BICKFORD: Dana Hollinger?

COMMITTEE MEMBER HOLLINGER: Here.

COMMITTEE SECRETARY BICKFORD: Priya Mathur?

COMMITTEE MEMBER MATHUR: Good morning.

COMMITTEE SECRETARY BICKFORD: Good morning.

David Miller?

COMMITTEE MEMBER MILLER: Here.

COMMITTEE SECRETARY BICKFORD: Ramon Rubalcava?

COMMITTEE MEMBER RUBALCAVA: Here. Good morning.

COMMITTEE SECRETARY BICKFORD: Good morning.

Theresa Taylor?

COMMITTEE MEMBER TAYLOR: Here.

COMMITTEE SECRETARY BICKFORD: Betty Yee?

COMMITTEE MEMBER YEE: Here.

CHAIRPERSON JONES: Okay. Thank you very much.

I'd like to take a moment of personal privilege to just welcome our new Committee members, Mr. Rubalcava, Mr. Miller, and Ms. Brown. So welcome to your first Investment Committee meeting.

The next order of business is the election of the Chair and Vice Chair of the Investment Committee. At this time, I'll turn the gavel over to Mr. Slaton.

VICE CHAIRPERSON SLATON: Okay.

Thank you very much. Good morning. We'll now have the election for Chair of the Investment Committee. And I call on Mr. Costigan -- or excuse me, Mr. Gillihan.

VICE CHAIRPERSON SLATON: Richard, Richard, you know

(Laughter.)

VICE CHAIRPERSON SLATON: Too many Richards.

COMMITTEE MEMBER GILLIHAN: Thank you, Mr. Vice President -- or Vice Chair.

(Laughter.)

COMMITTEE MEMBER GILLIHAN: You almost got a promotion.

(Laughter.)

VICE CHAIRPERSON SLATON: We'll get organized eventually.

(Laughter.)

COMMITTEE MEMBER GILLIHAN: With deep appreciation for his leadership on this Committee, I would like to, and I'm honored to, nominate Mr. Henry Jones for the Chairmanship.

VICE CHAIRPERSON SLATON: Okay. Mr. Jones has been nominated.

Are there any further nominations?

Are there any further nominations?

Third time and last, any further nominations?

Nominations are closed. And these nominations do not require a second.

So with that being --

BOARD MEMBER MATHUR: I would elect by acclamation?

VICE CHAIRPERSON SLATON: Motion to elect by acclamation.

COMMITTEE MEMBER FECKNER: Second.

VICE CHAIRPERSON SLATON: And a second.

All those in favor?

(Ayes.)

VICE CHAIRPERSON SLATON: Opposed?

Motion carries.

Congratulations

(Applause.)

CHAIRPERSON JONES: Yeah. I want to thank my colleagues for reelecting me to be Chair of the Investment Committee for another year.

With that, we will move to election for the Vice Chair. And with that, I need to call on someone, if they're.

Mr. Slaton.

VICE CHAIRPERSON SLATON: Thank you very much.

I'd like to nominate the other Richard for Vice Chair, Mr. Costigan.

CHAIRPERSON JONES: Mr. Costigan has been nominated for Vice Chair of the Investment Committee.

Are there any further nominations?

Are there any further nominations?

Are there any further nominations?

Seeing no further nominations, I'll entertain a motion.

COMMITTEE MEMBER MATHUR: Move to elect Mr. Costigan by acclamation

CHAIRPERSON JONES: It's been moved by Ms. Mathur.

COMMITTEE MEMBER FECKNER: Second.

CHAIRPERSON JONES: Second by who?

VICE CHAIRPERSON SLATON: Feckner.

CHAIRPERSON FECKNER: Feckner.

Okay. Congratulations, Mr. Costigan.

(Applause.)

CHAIRPERSON FECKNER: All in favor say aye?

(Ayes.)

(Laughter.)

CHAIRPERSON JONES: Opposed?

So we're going to take about a five-minute break to move the chairs around. So let's allow that to happen for about five minutes.

(Thereupon a pause in the proceedings.)

CHAIRPERSON JONES: Okay. Thank you.

We will now move along to the next item on the agenda is the Executive Report, Chief Investment Officer briefing, Mr. Ted Eliopoulos.

CHIEF INVESTMENT OFFICER ELIOPOULOS: Terrific. Good morning, Mr. Chair and Mr. Vice Chair. Congratulations on your elections and members of the

Committee and new members of the Committee good morning. Ted Eliopoulos, Chief Investment Officer for CalPERS.

Today, we have a very in-depth agenda to review the calendar year 2017 performance and risk and attribution of the PERF. You'll be hearing first from the Committee's independent third-party consultants first. We like to flip flop the calendar year returns. You hear from your independent consultants first, and then you'll hear from your professional staff second, all reviewing the same set of data and returns from different perspectives. In the fiscal year, as you remember, your staff goes first and the consultant goes second. So we try and choreograph the presentations to not go over too much of the same material and take different takes.

But as I said, the review is quite in-depth and we're -- are getting a bit of a later start than anticipated. So I want to make sure to leave time for that.

We did have quite an interesting time in the markets the past few weeks though. So I thought it might be a good time to reflect a little bit on volatility in the markets as we turn to our in-depth review in just a few minutes. I'll get to these -- I have a couple charts to -- just two charts to share with you in that regard and I'll get to them in a minute.

On a big picture, the very first point is looking at this last calendar year returns that we'll be reviewing in depth was a terrific return year for the PERF. 15.7 percent return for the calendar year.

Our equity portfolio alone, as you will hear later, was up 24 percent during that calendar year time. And all asset classes had positive performance. So an unusually strong return performance for the PERF as a whole.

Now, this chart that you see in front of you, you can think of this year's performance really capping an overall very strong period coming out of the global financial crisis. So you can see on the left chart the zero point is March of '09 following the financial crisis. And you can see the S&P 500 cumulative data up almost 400 percent over that time period. And then you can see this last few weeks of volatility at the very tail-end of that very long bull market run.

For the total plan over that same time period, from the end of 2009 through 2017, the total plan returned a cumulative 98.6 percent over this time period. And roughly nine percent annualized over that time period. So a very strong rebound out of the financial crisis over this time period. Asset prices across the Board looking at the various individual asset classes have really benefited as we've discussed, in many occasions and on -- in many different forum, the extraordinary central bank policies, including zero interest rates and quantitative easing during this time period, coupled with this gradual but very persistent global economic recovery over this time period.

In addition to that, we'll talk a little bit later today is particularly over the course of last year and the year proceeding it, markets have been unusually calm, very low volatility period that we've talked about from time to time with measures of volatility, as you'll see in both your consultants' and our report measures of volatility at very all-time -- at all-time lows, very low periods of measured volatility during this last two-year period.

Now, looking forward to 2018, last week, we're seeing the beginnings of a market environment that may be shifting. And last week, we saw the first major market downturn in several years ending this period of unusual low volatility that we've been experiencing. In fact, from its peak on just January 26th of this month -- or last month, January, the S&P 500 lost 8.7 percent, that downturn that you see reflected on this chart, through Friday.

Our fund as a whole over that period experienced estimated loss of 4.6 percent, showing some of the value of diversification of our total fund portfolio.

Now turing to the second chart, it's always important to remember these periods of volatility, and particularly declines, negative volatility in a larger historical context. This graph shows that 10 percent drop in the stock market, and certainly, you know, a 10 percent drop for our plan is not unusual in the context of this larger -- longer historical time period.

The blue lines are -- date back to 1953. We've shown the time period just to give a larger and longer historical context. The blue lines again are the U.S. stock market as represented by the S&P 500. And you can see the downturns that have occurred fairly regularly during this historical time period, and we would expect to experience during our time periods that we review. In fact, this last two-year period has been, as I said, unusually calm.

But experiencing a 10 percent drop in the stock market is something that we should expect to see from time to time and certainly over the time period of our future ALM expectations that we've just gone through. So that's a bit of context for the experiences over the last couple weeks.

I think looking forward you'll hear some discussion in depth today on the economies -- global economies the U.S. economy. To preface that discussion a bit, I think what you'll hear is that we have some mixed -- mixed picture -- mixed perspectives from an economic and market perspective going forward. The world economy as a whole, the U.S. economy, the Chinese economy, the economy of India, Brazil, Europe are all growing more strongly than during other time periods of the financial crisis. And this growth is coordinated really for the first time during this post-financial crisis time period.

On the other hand, we're starting to see some late-cycle pressures that we've discussed from time to time in this Committee, including, you know, very early signs of potential upticks in inflation that you'll -- we'll be talking about.

As a result, the central banks across the globe, led by our Fed, have started to shift from the highly accommodative policies that I referenced earlier, and we've discussed at length on this Committee that really has supported markets since the financial crisis.

In the U.S. really just in the same period of volatility we've been talking about our I've been talking about, we've seen the 10-year note interest rate increase from 2.4 percent to 2.8 percent in this time -- at the same time period. In fact, today, I think coming down this morning, it ticked up to 2.9 percent so far in 2018. Rising rates put pressure on valuations for equities and our other asset classes, including private equity and real estate. So it's a mixed had economic and financial picture in 2018 going forward.

Also important I think, as we start 2018 from the Investment Committee's perspective, we need to look at CalPERS -- context of CalPERS and our investment portfolio going into 2018 as well. And this too presents a mixed picture of both positives and challenges, the looking at attaining our investment objectives.

Entering 2018, CalPERS, you know, starts with an approximately 70 percent funded status. We also have quite elevated valuations across all of our asset classes. And having concluded our ALM process just this last December, we are projecting, as the Committee is aware, lower returns over this next 10-year time period, lower than we have in previous ALM cycles.

On a more positive note, much more positive note, due to the Board's decision to lower the discount rate to seven percent over time, we are now forecasting neutral to positive cash flows taking into account both contributions, distributions, and investment income, which strengthens the fund and strengthens our ability to invest through volatile periods like this, not only not having to sell assets during a downturn, but also to reinvest during downturns.

So again, another set of mixed pictures for context for 2018. Now, of course, we can't predict how the year will unfold and how the years will unfold, but it looks like 2018 is more likely to be more turbulent than what we have experienced the last couple of years. And we should expect the return of this volatility as we manage the portfolio into the coming year.

So, Mr. Chair, those are my remarks for the morning. I'll be happy to take any questions or respond to the agenda.

CHAIRPERSON JONES: Yeah, thank you very much.

Yeah. I have one question. In looking at the chart, 1987, I thought that was the Black Monday and that was the worst decline ever, but the chart doesn't reflect that being the worst decline ever. So what am I missing?

CHIEF INVESTMENT OFFICER ELIOPOULOS: Well, it was a -- it was a 30 percent decline in the S&P 500, and it was topped by the financial crisis during that time period, so...

CHAIRPERSON JONES: So -- but looking at seventy -- what was that, '73, it's -- that's declined by 40 plus -- and I'm just -- from what I read, I thought it was the worst ever. So I'm just trying to reconcile --

CHIEF INVESTMENT OFFICER ELIOPOULOS: It could be endpoints -- starting and endpoints for the calendar year in this case.

CHAIRPERSON JONES: Oh, okay.

CHIEF INVESTMENT OFFICER ELIOPOULOS: So we'll get back to you to see what -- if there are different time periods that refresh your memory.

CHAIRPERSON JONES: Okay. Yeah. Thank you.

Mr. Costigan.

VICE CHAIRPERSON COSTIGAN: Thank you, Mr. Jones.

Mr. Eliopoulos, just a couple questions so I can better understand it. So last week, while the markets were roiling, one issue that came out was the fact that bonds and stocks were moving in the same direction, which was downward.

CHIEF INVESTMENT OFFICER ELIOPOULOS: There you are. I couldn't find you.

(Laughter.)

VICE CHAIRPERSON COSTIGAN: I know. I moved over here.

CHIEF INVESTMENT OFFICER ELIOPOULOS: I'm used to looking that way. I was like where is Richard.

(Laughter.)

CHIEF INVESTMENT OFFICER ELIOPOULOS: Sorry.

VICE CHAIRPERSON COSTIGAN: Thank you for your support, Mr. Eliopoulos.

(Laughter.)

CHIEF INVESTMENT OFFICER ELIOPOULOS: Yeah, yeah. Sorry about that. I was like where is Richard?

(Laughter.)

VICE CHAIRPERSON COSTIGAN: So just last week, it seemed to be that everybody was caught by surprise. VOX was up, and then -- but then you had this sort of inverse of stocks and bonds both moving downward. And there was actually nowhere to go, if you were a retailer or a short-term investor. And again, we're a long-term investor, so it's different.

Just could you opine a little bit on why do we think just -- this is something that the markets had not seen before was this both moving in the same direction, and just the increased volatility. And I do think you're right -- well, I know you're right. Based on everything I am also reading is we're going to see 2018 is going to be extremely volatile, but -- and then looking at a financial report, they're now talking about that interest rates might go to five percent, which will have a negative effect on the housing market. The number of people will step away, and based on the affordability, and the fact that wages are still somewhat flat, and we have a closing -- a reduction -- unemployment is exceedingly low.

So we've just got this kind of whirlwind or perfect storm coming. So what did happen -- why did bonds and stocks move in the same direction?

CHIEF INVESTMENT OFFICER ELIOPOULOS: Well, on the first piece, the interest rate environment is reacting to this late cycle concern over wages increasing and signs of inflation. So the market has been waiting a long time for signs of inflation and signs of wages ticking up. So that's -- that's a -- that's one factor.

Secondly, our own Federal Reserve, as well as other banks, are taking some of the liquidity out of the market over time, a very well telegraphed move. And those -- those moves are occurring and the market is putting more and more certainty on future rate hikes certainly by the Fed and expectations that other federal reserves globally will follow in kind. And that has pressure on rates as well.

Lastly, the strengthening economic conditions, the macroeconomic picture that you've seen, both the reports on the underlying U.S. economy as other -- as well as other economies are giving confidence to the growing economic growth picture in the U.S. and otherwise, which tend to stimulate interest rates.

Lastly, is this -- is -- is the prospect of coming off of high valuations in both asset classes. Now, getting back to your question on bonds versus stocks, both bonds and stocks are entering this period at points of historical high valuation levels. So we're at a point where this race between global growth and inflation will play out perhaps differently for stocks and bonds, but they could play out identically if the market fears that either the growth will be less than forecast. And there are risks to the growth forecast or that inflationary pressures will choke off that growth, which would make stocks and bonds move either in the same direction or different directions.

At least this last two-week period, the market was concerned over both interest rate levels rising, signs of inflation, and perhaps taking some gains off -- off of their equity gains for the past two years.

VICE CHAIRPERSON COSTIGAN: Just a couple more quick. So I appreciate the comment that you made that we've now moved back -- we've moved away from cash negative. So these actually become opportunities. So we sort of predicted the volatility coming. Looked at that last year when we took up the discount rate when we looked at the asset allocation. So at least long-term we seem to be somewhat well positioned. In fact, I know Ms. Hollinger is constantly concerned about the cash flow aspect of it. This actually has put us in a positive to look at buy on the dip, to speak, but put us in a little bit better cash position.

CHIEF INVESTMENT OFFICER ELIOPOULOS: Puts us in a much better position. Looking forward having the certainty of those contributions coming in and being able to forecast neutral to positive cash flows going forward allow us to take advantage of these type of dips coming, not just in the last few weeks, but into the future as well.

VICE CHAIRPERSON COSTIGAN: Right. Thank you, Mr. Eliopoulos. Thank you to you and your staff.

CHAIRPERSON JONES: Thank you.

Ms. Taylor.

COMMITTEE MEMBER TAYLOR: Yes. Thank you. Thank you, Mr. Eliopoulos. I just had a -- I guess a clarification point for me. So you were talking about wage and interest upticks causing concern as well as maybe too high valuations. So I guess -- so you're saying a -- our wage increase and the bonuses that are supposed to be coming from this tax break and stuff causes interest to go up, which then causes a concern in the markets, is that correct, am I reading that correctly?

CHIEF INVESTMENT OFFICER ELIOPOULOS: Yeah. That's a good summary of it.

COMMITTEE MEMBER TAYLOR: Okay. So I just have a concern that the market is so disconnected from our working main street Americans wages that an increase in wages causes instability on the market. And I feel like that's an unsustainable path for us. And, of course, I'll be discussing that I'm sure later as we get into the books here. But I just -- could you give me a little commentary on that?

CHIEF INVESTMENT OFFICER ELIOPOULOS: Yeah, I this -- I think the key word in the second part of your comments is "cause". And I think causation is a tricky word, and one to avoid, and I think it goes to your point. In terms of how the market -- the concerns the market has, they worry about things. Are we into late economic cycle, and what are the things that sort of temper or choke off a rally -- a long-term rally. And one of those is rising wages. Now, there are also benefits to increased wages both for purchasing power and other parts that are very healthy for the economy as well.

So I wouldn't say -- and I think you're good to push on the point. I wouldn't say that one causes the other. It's a very complex economy with lots --

COMMITTEE MEMBER TAYLOR: I'm sure. I'm sure.

CHIEF INVESTMENT OFFICER ELIOPOULOS: -- lots of factor playing. Certainly though the fact that -- and we'll be discussing this in more depth, and we'll have our

CalPERS economist here as well, to talk through these issues. In late -- in a late cycle -- growth cycle, looking at both unemployment, but also there have been a fairly persistently low uptick in wages over time. Investors look at that to see what impact it might have on growth.

COMMITTEE MEMBER TAYLOR: Right. Right. And I do appreciate that. I get the cause and effect issue. I do think as we look further down the road into our agenda for the day that we ought to really discuss the sustainability of that, because I've also heard and read in any Wall Street Journal or wherever that the market itself considers itself untethered to the main stream -- main street economy.

And I think that, coupled with this information that -- that -- I'm going to go way from that word "caused" -- but that, you know, the wage increase with the interest makes it seem like we are looking at stifling wages so that we can keep the market calm. And I am certainly hoping that we don't, you know, perpetuate that in any way.

CHIEF INVESTMENT OFFICER ELIOPOULOS: I think we're looking for -- we're looking at a very mixed and challenging period going forward, where these big forces are at play.

CHAIRPERSON JONES: Okay. Thank you. Seeing no further questions, we move now to the consent action item. Do we have a motion?

COMMITTEE MEMBER MATHUR: Move approval.

CHAIRPERSON JONES: Move approval by Mrs. Mathur.

COMMITTEE MEMBER TAYLOR: Second.

CHAIRPERSON JONES: Second by Mrs. Taylor.

CHIEF INVESTMENT OFFICER ELIOPOULOS: Mr. Chair?

CHAIRPERSON JONES: Yes.

CHIEF INVESTMENT OFFICER ELIOPOULOS: Mr. Chair, remember -- oh, this is 4. I'm sorry.

CHAIRPERSON JONES: One more.

Okay

It's been moved a seconded. All those in favor say aye?

(Ayes.)

CHAIRPERSON JONES: Opposed?

Hearing none, the item passes.

Now, we come to Item 5, consent items. Mr. Eliopoulos, do you have a couple of points to make here?

CHIEF INVESTMENT OFFICER ELIOPOULOS: Mr. Flynn will be covering.

INTERIM CHIEF OPERATING INVESTMENT OFFICER FLYNN:

Good morning. Matt Flynn, CalPERS team member.

Item 5d and 5e unfortunately have some

typographical errors that we wanted to bring to your attention? Those errors will be corrected on the information that gets published on the website.

For Item 5d, inadvertently a U.S. dollar sign was used for the Bridgepoint investment instead of a -- what should have been a Euro sign.

And then in Item 5e, the headers for each of the reports are switched, if that makes sense. The content of each respective report is accurate and correct. It's just the header is the wrong header for the content of the reports.

CHAIRPERSON JONES: Okay. Thank you

INTERIM CHIEF OPERATING INVESTMENT OFFICER FLYNN: And we'll make those two changes.

CHAIRPERSON JONES: Okay. So those are the minor changes. So we will receive the consent items as with those modifications?

Mr. Juarez.

ACTING COMMITTEE MEMBER JUAREZ: Yes.

CHAIRPERSON JONES: You need to --

ACTING COMMITTEE MEMBER JUAREZ: If I could?

CHAIRPERSON JONES: You need to -- you need to hit your button.

CHAIRPERSON JONES: Okay. Mr. Juarez.

ACTING COMMITTEE MEMBER JUAREZ: Thank you, Mr.

Chair. And also congratulations on your reelection as Investment Chair.

I appreciate the opportunity to raise on behalf of Treasurer Chiang an item that was part of a letter that he sent to the Chair of the Board in November regarding divestment from wholesalers and retailers of both illegal firearms, as well as the types of ammunition accelerators such as bump stock that caused -- has caused such havoc including the incident that we saw in Las Vegas.

Mr. Chiang in his letter had asked the Board to consider divestment from wholesalers and retailers of those illegal firearms and related accessories that make them into highly deadly weapons. And as such, what I'd like to propose is that the staff return in March with an actual separate item that would be a discussion item that would take up both the extent of our exposure to these types of companies, as well as the pros and cons related to any divestment decision that the Board might make relative to those wholesalers and retailers, and would ask, with all due respect, that that be agendized for the March agenda.

CHAIRPERSON JONES: Thank you, Mr. Rodriguez.

Yes, I did respond to the Treasurer that we would be taking this item up in on our March agenda.

Mr. Costigan, you have a comment?

VICE CHAIRPERSON COSTIGAN: Mr. Juarez, I just a question.

ACTING COMMITTEE MEMBER JUAREZ: Sure.

VICE CHAIRPERSON COSTIGAN: I mean, in the use of the word "illegal", you're referring to guns that cannot be legally possessed in California?

ACTING COMMITTEE MEMBER JUAREZ: In California.

VICE CHAIRPERSON COSTIGAN: It's not that we are investing with anybody that makes an illegal gun?

ACTING COMMITTEE MEMBER JUAREZ: No. No. Similar --

VICE CHAIRPERSON COSTIGAN: I just want to make sure that that's what we're talking about is that the --

ACTING COMMITTEE MEMBER JUAREZ: Similar, but it could be that they would be legal in other states. And so I want to have a broad discussion as to whether or not this Board believes that regardless of whether they're sold here or in other states, we want to have our hand in promoting the sale of such weapons, even in other states.

VICE CHAIRPERSON COSTIGAN: Correct. Mr. Juarez, I just wanted to make it clear, when we refer to the term "illegal", what we're actually referring to is a weapon that is not --

ACTING COMMITTEE MEMBER JUAREZ: That's correct.

VICE CHAIRPERSON COSTIGAN: -- you're able to legally possess in California.

ACTING COMMITTEE MEMBER JUAREZ: That's correct.

VICE CHAIRPERSON COSTIGAN: It's not we're making -- we're investing in companies that possess -- produce illegal arms that are sold around the world. I just want clarification.

ACTING COMMITTEE MEMBER JUAREZ: That's very much correct. And it would be very similar to the same action this Board took, I guess it was about four years ago, relative to the actual manufacture of such weapons.

VICE CHAIRPERSON COSTIGAN: Thank you, Mr. Juarez.

Thank you, Mr. Jones.

CHAIRPERSON JONES: Okay. Thank you, Mr. Costigan.

CHIEF INVESTMENT OFFICER ELIOPOULOS: Mr. Chair?

CHAIRPERSON JONES Okay. Now, we move to --

CHIEF INVESTMENT OFFICER ELIOPOULOS: Mr. Chair, If I just --

CHAIRPERSON JONES: Yes.

CHIEF INVESTMENT OFFICER ELIOPOULOS: If I could. So our plan in March was to review our ESG strategic plan update. We have received several suggestions for agenda items to take up during that -- during that review from the Treasurer's office as well as the Controller's office and some other Board members as well. I think we've collected up four or five very important policy discussions.

Our plan was to bring that forward in March as part of the discussion around our ESG strategic plan, but we were not planning on having separate agenda items for each of the requests, including the one that the Treasurer's office outlined today. So I know it's a distinction, but I want to make sure that we're providing a clear response.

CHAIRPERSON JONES: Right, but the discussion will occur.

CHIEF INVESTMENT OFFICER ELIOPOULOS: Yes, and we can include the discussion around both the expo -- capital exposures, as well as the pros and cons, but we weren't planning on having a separate agenda item for it.

CHAIRPERSON JONES: Sure. Okay.

Mr. Juarez.

ACTING COMMITTEE MEMBER JUAREZ: Again, with all due respect to the staff's suggestion, I would ask that it be a separate item. I think -- and not to, in any way, take away from those other items you may be discussing. I can assure you this is very important to the Treasurer. And I think his expectation would be that it would be considered separately. That there would be a place you could find it in the agenda. And so for that reason, I would ask that it be held separate from the other discussions.

CHAIRPERSON JONES: Well, I think -- I think it will be discussed separately. It's just that what I hear Mr. Eliopoulos saying that you have an agenda item with several different issues that will be addressed, as opposed to four different agenda items. So it will be highlighted. Okay?

ACTING COMMITTEE MEMBER JUAREZ: If I could respond?

CHAIRPERSON JONES: Sure.

ACTING COMMITTEE MEMBER JUAREZ: I think -- given that, I think it's -- would be the Treasurer's intent that we ultimately take this up as an action item. I'll again open it up one more time to say I think having it treated separately in the agenda as a discussion item would be very important to that future discussion. And so merely having it compiled with other things, I think doesn't do it the justice that I think we would all expect.

So again, I would ask the Chair to consider having that directed to staff to be a separate item.

CHAIRPERSON JONES: Okay. I will consider that.

Okay. Mr. Slaton.

No. Okay.

Now, we move to the big item for the day, the CalPERS Trust Level Review Consultant's Report.

CHIEF INVESTMENT OFFICER ELIOPOULOS: I believe Wilshire will be coming up first.

(Thereupon an overhead presentation was presented as follows.)

MS. DEAN: Good morning. Rose Dean, Wilshire Associates. And I'm joined by my colleague Ali Kazemi. Ali and I'll be reviewing the portfolio performance as of end of 2017. But before getting into the specifics of the portfolio. I'll just add to Ted's comments on just where we are in terms of the economic and capital markets environment in light of the recent market volatility, as well as to update you on the revised asset allocation assumptions.

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MS. DEAN: So we'll start with slide 2. And these are the updated Wilshire Associates forward-looking asset class return and risk numbers. And, in general, the theme remains the same. We expect muted returns to be continuing in the medium term, in terms of asset class returns. And if you compare these numbers to those we presented a year ago, just a few highlights.

Equity returns are expected to be about 25 basis points lower across regions. Private equity, which the assumptions are anchored on public equity returns, are expected to earn 55 basis points less.

Generally, longer dated fixed income is expected to have lower returns as well, particularly those associated with credit risk. And the return expectations for asset classes that are considered to be inflation mitigating are, on the other hand, slightly higher. So those would be commodities and your real assets.

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MS. DEAN: Moving on to slide 3, I'll just touch on a few key metrics of the current economic environment.

First is consumer sentiment. In general, the survey shows that consumer sentiment remains strong. And this is related to expectations of continued job growth and potentially wage growth to come. What was interesting in the January survey is that the motivation for purchase decisions have actually shifted now from discounts on prices to increased optimism for wage and sustained job growth.

So you can see that consumer feels relatively confident about the upcoming economic growth. Manufacturing sector also continues to expand. The index came in at 59.7. And just as a reminder, any reading above 50 indicates expansion.

And lastly, in terms of unemployment, the official rate remains around 4.1 percent. And the broad measure, the U6, is around 8.2 percent in January. And these figures are widely considered to be indicative of full employment.

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MS. DEAN: So in the next couple slides, I'll try to add a bit of perspective to what Ted has already mentioned. But obviously U.S. equity markets have had 9 straight years of positive return, as we see on the bottom left graph, since the 2008 drawdown. And Wilshire 5000 earned again over 20 percent in 2017. And this is also supported by corporate earnings growth. We saw sort of mid-teens growth in 2016. And that is actually continuing in 2017.

In fact, over 80 percent of companies that have reported earnings so far this year have beat analyst expectations. So the fundamentals there also are quite strong.

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MS. DEAN: And on the risk side, and Ted alluded to this, but we'll try to provide a bit of a different perspective here. When you look at 2017, there were only four days in the -- four trading days in the year where you had losses that -- of one percent or greater. And there were zero days in 2017 where the market was down two percent or more. And we've already seen much more activity in 2018 already.

So the point here being in looking at any sort of measure of risk and volatility in equity markets, we're coming into 2018 at a historical low volatility. So in that sense, what we're seeing in terms of this correction is not that surprising.

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MS. DEAN: And my last comment on the economy and the Fed balance sheet is that we already know, the Fed has signaled that they will be reducing their liquidity in the market. And this is expected to be about 50 billion per month lower by the end of 2018. And by the end of 2020, the balance sheet would be around two and a half trillion. This is still quite substantial compared to -- compared to where we were pre-crisis.

I think another interesting variable here is that now that we have a new Fed Chair, it will be interesting to see how he manages this cycle, given the fact that he's relatively uncomfortable with a prolonged low rate environment, and using -- the practice of using quantitative easing to boost growth. So another source of sort of unknown here.

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MS. DEAN: And just a quick comment on the rates market, given the Fed stance and raising rates, and also 2017 we saw some meaningful flattening of the curve, we expect a longer end of the curve to steepen out going forward, and spreads in terms of credit fixed income to normalized to historical levels.

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MS. DEAN: So what does this mean so in terms of going forward? And I think there are a couple of things there are at play here. One is that we have an economy that's expanding, the labor market tightening, but we also have fiscal policy that is adding additional stimulus to the economy through tax cuts and through additional spending. And that is supportive of the stock markets, but obviously in the longer term the effects are less certain. And on the other hand, we have monetary policy that's going in the opposite direction where liquidity is being taken out of the market and rates are expected to rise in response to inflation expectations.

So these conflicting policies will introduce uncertainty in the capital markets. And this is, you know, signaling that this is a correction. No one really expects this to be a sustained bear market. But volatility is probably here to stay. So those are my comments. Before I turn it over to Ali for performance specific data, I will be happy to take any questions.

CHAIRPERSON JONES: Okay. Seeing no questions at this time.

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MR. KAZEMI: Good morning. Ali Kazemi, Wilshire Associates. I'm going to be looking at 2017 performance.

Starting with slide, I believe, 107, Rose already covered the new capital market assumptions. Slide 107 is intended to show what the new expected -- thank you -- the new expected risk and return levels are of the target allocation. This is not the strategic asset allocation that was selected, which will be implemented later this year. This reflects the existing implementation.

So using these new capital considerate assumptions, expected return for the target allocation is at 6.1 percent, expected risk levels are at 7.4 percent. If we look at the actual allocation, those numbers are slightly elevated due to the fact the we have a slight equity overrate -- overweight in the portfolio. And overall, that overweight contributes about 65 basis points of tracking error from an actual allocation standpoint, which is still a very tight range.

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MR. KAZEMI: With allocations in mind, the slide -- slide 9 here looks at what the actual allocation is. I'd mentioned earlier there was a slight overweight to equities. That's at about four and a half percent currently within the portfolio to growth assets. That's offset by the underweights to real assets and inflation. We'll look a little bit deeper into the attribution in terms of how that manifests itself with respect to the excess return. But again, those remain tight levels

From a risk standpoint, not surprisingly, growth leads the way in terms of contribution to volatility in the portfolio. At the current allocations, about 85 percent of the volatility of the portfolio is coming from growth related assets relative to this -- the target allocation at 82 percent.

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MR. KAZEMI: So I'll now flip over to the big book of performance for PERF. I'm going to be focusing on the one-year column. In the executive summary package, some of the commentary there states, you know, 2017 as a steady advance, which I thought is a quite appropriate way to revisit 2017 performance.

Monthly returns throughout the year were consistently positive with low levels of volatility. So we were able to advance the portfolio on a very steady basis, and the numbers here reflect that.

For the one-year total fund performance, Ted already covered this, but we were at 15.7 percent relative to the policy of 15.5 percent. So very strong returns, easily beating the actuarial rate of return of seven and a half percent.

When we dive into the drivers, it should be of no surprise that growth assets led the way in 2017 at 23.2 percent relative to policy of 24.2 percent. That two main drives of that, between public and private, public equities returned 24 percent, underperforming the policy benchmark, which we'll dive into a little bit detail in the attribution. But also, from a private standpoint, returns were quite robust at 18 percent.

Now those will typically lag public markets when we have such a strong public market return. It is no way an indictment of how the private portfolio is doing on a relative basis.

Looking at the other asset classes. Each of these would be stand alone highlight in any other year. But given where public equities were, they still do look like they're lagging. But still it's very robust returns coming from income at 7.2 percent relative to the policy at 6.6. Real assets gained eight and a half percent, beating the benchmark handily by over two percent. And inflation came in level with policy at 6.3 percent, but the overall picture was quite strong across all the buckets.

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MR. KAZEMI: I want to flip to the calendar year to date attribution. For the benefit of some of the newer Board members, I'll walk through a little bit about the goal of what we look at when we dive into attribution. Really, it's about highlighting the contribution to the excess return across two key dimensions. One is the actual allocation effect. So to the extent that you are overweight or underweight your asset classes, has that benefited the PERF.

And then the second component that we look at is how is active management contributing, either positively or negatively overall to the performance on an excess return basis.

And this is revisiting the entire 2017 calendar year. I'll first start with the actual allocation dimension, which is the first column in that table to the right. As you can see, the overall actual allocation impact is 38 basis points for 2017. That was clearly the major driver of the excess return over that period, which was 25 basis points.

And if you move up from the 38-basis point number, you can see that primarily came from two places. First, public equities. Given that we were overweight in public equities, and that was the best performing asset class, that nets you a positive excess return contribution from that overweight.

Conversely, when we look at the real assets row, we gained 19 basis points there. That was caused due to an underweight to that asset class. And that asset class underperformed relative to the policy. Now, for context, the real assets sleeve of the portfolio did quite well. It's just that it lagged relative to the overall strategic policy. And so that underweight manifests itself into a positive contribution to the overall excess return, which is a good thing.

The flip side, the other dimension that we talk about is active management, and how did that contribute to the overall excess return in the portfolio. We can see that that was a negative six basis point contribution for the calendar year. Now, most of that was in the first half of 2017. And on another slide, you can look at the fiscal year-to-date attribution and see that active management actually contributed positively over the second half of the year.

The main drivers of the negative return happen to be within the growth bucket. Public equities contributed negative 15 basis points to the active management, and private markets contributed negative 38 basis points. Again, not an indictment really of the active management in that portfolio. It's just a reality of one of the challenges of benchmarking private assets to a public equity, a proxy plus a premium.

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MR. KAZEMI: I'm going to dive a little bit more into some of the context behind some of the numbers we've discussed. I first briefly wanted to touch on the overall equity markets, which as we've stated already, were quite strong.

The one interesting thing on this chart that I wanted to point out is some of the dispersion that we've seen in the equity markets, and how that can affect the portfolio. If you want to first focus on the year-to-date column, and look at large caps versus small caps, you can see almost eight percent differential between large caps and small caps.

And if we think about the way we invest portfolios, and look at the 10-year number, typically, we would expect small caps to outperform large caps. It's one of the reasons why smart beta has evolved and fundamental investing has evolved the way that it has.

So quite a strong dispersion for a one-year period. That can be a challenge from an active management standpoint. As a lot of managers like to tilt their portfolios towards the small cap. And as I mentioned, smart beta portfolios are also tilted towards that factor. So we can see that even during a strong equity market like this, if you have tilts in one direction, that can cause a portfolio to lag on an active basis, which is something we've seen across the institutional space.

Similarly, I would say from a growth value standpoint, if we look at the large growth versus large value, small growth versus small value, a big disparity there between those two. And a lot of these actively managed portfolios, a lot of smart beta portfolios have a value tilt.

So what does that mean going forward?

Well, if you believe that markets will mean revert at some point, then you would expect that those tilts would be beneficial from an active management standpoint. It's something that we can track through the attribution itself and will continue to do so, and it will be interesting to see how 2018 evolves from a mean reversion standpoint.

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MR. KAZEMI: Within the non-U.S. equity market, I just wanted to highlight there again extremely high robust returns as the continued strong fundamentals within the non-U.S. market continue to drive returns. A weakening dollar has also been beneficial from an international equity investment standpoint. But what we're really stands out there is the emerging markets, which is at 37.7 percent return for the year in 2017.

Again, that's a portion of the market that's typically less efficient. There can be value found there. And has shown up in some of the active management that we've seen as international equity portfolio, active management has been stronger than I would say U.S. equity active management in 2017.

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MR. KAZEMI: All that being said, if we actually dive into the growth sleeve of the portfolio, we can see those returns manifest themselves in terms of how U.S. equity did at 21.2 percent, slightly underperforming the policy benchmark by 50 basis points. Again, if there's a small cap tilt in there, then that is going to be a big driver of why that may be the case.

Within international equities, they beat the policy by 30 basis points for a very strong overall return of 24 percent from the growth sleeve.

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MR. KAZEMI: Flipping forward to just an overall view of the private equity investment space, slide 27 of the Wilshire book. Overall, fundraising in 2017 continued to set record levels, as compared to where we left off in

2016. The one caveat there being that the number of funds closed and deals closed actually decreased in 2017 relative to 2016, which has an impact from a pricing standpoint, but also from an impact of how much dry powder is still out there to continue to fund private equity investing going forward.

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MR. KAZEMI: One of the points I wanted to highlight on slide 29 is just the fact that smaller investments comprised the majority of the deals that we saw in 2017. Although, I would state, you know, we did also have the biggest buy-out fund and the biggest infrastructure fund of all time also funded in 2017. But put those aside, most of the deals were on the smaller side based on the results that we've seen.

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MR. KAZEMI: Rose already touched on where interest rates were in 2017. In terms of how they affected performance on slide 39, we can see that the U.S. income portfolio generated 6.7 percent return relative to policy of six percent. A lot of that had to do with the flattening yield curve that we saw in 2017, as well as continued spread tightening. So the long-dated investment grade corporate sector performed very well. And this portfolio has exposure to that. So that is one of the reasons why you see such a strong return for the income-generating U.S. portion of the portfolio.

In the non-U.S. space, we continue to see strong stimulus in Europe that has continued to drive rates at levels where the U.S./non-U.S. income portion of the portfolio has performed quite well at 12.6 percent, easily beating the policy benchmark by a percent in 2017.

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MR. KAZEMI: I wanted to briefly touch on private real estate before we finish off here. The commercial property slide that you see here I know has been presented at past meetings, continues the trend that we've seen with respect to availability and vacancy rates continuing to decrease. Although that's slightly tapering off, but we continue to see a good trend in the real estate sector.

From an absorption rate standpoint, all sectors are in the positive. The one caveat there is in the retail space, where in the last period of 2017, that was actually in the opposite direction.

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MR. KAZEMI: But how that is manifested in terms of performances in 2017 again has been a good story to tell. The overall real asset portfolio again beat policy by over 2.1 percent. That was primarily driven by the private real estate portfolio. The performance there in

2017 was driven by interest rate levels, strong growth in the labor markets, and then just continues strong fundamentals, not too remiss of what we see in the infrastructure space. That easily beat the benchmark. We see an 18.2 percent return there. So the combination of real estate infrastructure all told has netted the portfolio quite well in 2017.

And so with that, I will pause and see if there are any questions.

CHAIRPERSON JONES: Yes, we do.

Mr. Juarez.

ACTING COMMITTEE MEMBER JUAREZ: Yeah. Thank you for the presentation. It was excellent. So I'm going to imagine that this time next year when you give this report and you look at the 10-year, do we lose 2000 -- the entire period of downturn in 2008? And therefore, we should expect a much rosier picture with regard to the 10-year forecasted? Will it happen, I guess, in the next -- in the next report this time next year?

MR. KAZEMI: Yeah, I mean, I was actually looking at that in preparation last week that we are getting to a point where that 10-year number is going -- is going to drop off the 2008/2009 period.

ACTING COMMITTEE MEMBER JUAREZ: So how significant will that be? Do you have any sense?

If you look at today's 10-year --

MR. KAZEMI: It will have a lot to do with how 2018 shapes out too.

ACTING COMMITTEE MEMBER JUAREZ: Right. Let's assume that we're just stable for the rest of the year.

MR. KAZEMI: If we -- you know, if we assume -- you know we could probably come back with a hypothetical number, if we assume that capital market assumptions stay true and we get exactly what we assume, we could easily come back and calculate the hypothetical type of performance number, I believe -- I mean --

MS. DEAN: We'd be at closed to 30 percent drawdown for the equity markets.

Rose Dean, Wilshire Associates.

We had a 30 percent drawdown in the equity markets. So if that rolls off, and we assume that equity market forward-looking assumption return is -- meets the target at six and a quarter percent, you will see a substantial bump in the 10-year number just naturally. But again, that has to materialize through, you know, volatility that we'll see in 2018.

ACTING COMMITTEE MEMBER JUAREZ: Thank you.

CHAIRPERSON JONES: Ms. Yee.

COMMITTEE MEMBER YEE: Thank you, Mr. Chair.

So I was struck by the observation about the focus shifting from the discounted prices to wage growth. And I was curious as to, you know, when you view this increased -- this recent market volatility, do you think that's more weighted towards, you know, positive labor market news or is it really more attributed to more high frequency trading or a combination?

MS. DEAN: That's a very interesting question. I think when you see market volatility. Over the past 10 years, you definitely have seen a proliferation of algorithmic trading, high frequency trading exacerbating the volatility. So, you know, these programs are made to anticipate a trend that is happening in the market, so when the market seems like it's going to drop off the cliff, then these algorithmic trading patterns are programmed to actually take advantage of that, and that will tend to exacerbate the volatility up or down.

So that is definitely a factor. And also, we have a lot more products in the market that are levered versions of the instruments that are -- that existing instruments.

So these all will add to the volatility. But I think the question in terms of consumer behavior really has more to do with the fundamentals of the economy, where again, these decision -- purchase decisions are driven by their optimism on the potential stability of the job and the future wage growth.

COMMITTEE MEMBER YEE: Thank you.

CHAIRPERSON JONES: Mr. Costigan.

VICE CHAIRPERSON COSTIGAN: Great. So, Mr. Junkin, I've got a question for you, if you'll come up for a second.

(Laughter.)

VICE CHAIRPERSON COSTIGAN: But I do just -- no, but I'll ask you on page eight, actually this is -- so when I look at the expected return of 6.1, and we're projecting this ten years out. Similar to the question I asked Mr. Eliopoulos. Last week, again, we had this just negative reaction -- odd reaction of bonds and stocks moving in the same direction when they're supposed to go in opposite directions, or that's what the theory is. I mean, you watch NBC and, you know, the business shows and no one can explain it, right, other than just wait, wait, waited, you know, the volatility.

So when you look at the 6.1 and then the target allocation, I mean, because they're close enough, how do you opine as to what happened last week, because this is based on a set of facts, which at least the way I read it no one -- what happened last week was once in a life time. Now, we're talking about it happening going forward.

MS. DEAN: Well, so, I think I would say two things. One in periods of volatility, it is not -- you know, it is uncommon, but it's not unprecedented that you will see, you know, asset classes kind of moving in the same direction. And when we talk about bonds moving in different a direction than stocks, you know, we're talking about obviously that bonds being safe assets.

But what's, I think, important to kind of dissect there is this is in an anticipation of higher rates, meaning, you know, obviously bonds will tradeoff as rates go higher. So, you know, you have that depression on the bond price.

VICE CHAIRPERSON COSTIGAN: But it's the expectation that if rates go up, bonds would trade higher, but that was not the case last week.

MS. DEAN: No, no, no, expectation that the rates will increase, right?

VICE CHAIRPERSON COSTIGAN: Correct.

MS. DEAN: And which means prices will go down in terms of fixed income. But also on the equity side, as rates go higher, the borrowing rates for corporates and governments will go up, and that is negative to the equity markets.

So here the equity market is really recalibrating to a higher rate environment. And that will push both bond markets to -- especially in the longer end to steepen out, and then equity markets to anticipate higher buying costs, therefore lower discount rates, and therefore lower equity prices -- higher discount rates and lower --

VICE CHAIRPERSON COSTIGAN: And then just when you look at both return rate and the expected risk, does that factor in for example with the Feds? Now, you know, we're talking about before rates this year, next year, will you be redoing these charts or is that -- or, I'm sorry.

MS. DEAN: So these -- the capital markets assumptions we saw on slide 2, that does take -- and the fixed income assumptions, it does take into account the forward curve. So what's being priced in in terms of the rate expectation in the future for the next 10 years is also being priced in here.

VICE CHAIRPERSON COSTIGAN: Okay. And -- but the December assumptions were forward looking when we had yet to expect --

MS. DEAN: At the end of the December --

VICE CHAIRPERSON COSTIGAN: -- the December -- I mean, exactly, when -- and so I. --

MS. DEAN: But it also takes into account the entire historical fixed income market, and the break-even and the yields. So it is giving -- it's taking the perspective of the historical markets as well.

VICE CHAIRPERSON COSTIGAN: Now, Mr. Junkin, just for you. Given the markets the past year, would it be accurate to state that similar to the Oklahoma Sooners in the Rose Bowl --

(Laughter.)

VICE CHAIRPERSON COSTIGAN: -- that then there was a lot of buildup and hype. And once there was pressure applied, the markets and the Sooners reacted negatively?

(Laughter.)

VICE CHAIRPERSON COSTIGAN: Thank you, Mr. Jones.

MR. JUNKIN: Congratulations, Mr. Costigan, on your Vice Chairmanship. I appreciate the question.

CHAIRPERSON JONES: You don't have to answer that.

(Laughter.)

MR. JUNKIN: I will solidly answer yes.

(Laughter.)

MR. JUNKIN: Well played, sir.

CHAIRPERSON JONES: Ms. Hollinger.

COMMITTEE MEMBER HOLLINGER: Yes. Thank you. Thank you for the report. My question is regarding the expectation of the rising interest rate environment. Given the size of the deficit, don't you think that's going to put -- do you think that is going to put a ceiling on how high interest rates are going to go? Could you speak to that?

MS. DEAN: I wish I could tell you for sure what the --

COMMITTEE MEMBER HOLLINGER: I wish you could too.

MS. DEAN: But, I mean, so the facts are we are already at a very high debt level, so --

COMMITTEE MEMBER HOLLINGER: Right.

MS. DEAN: So -- but at some point, we're also having -- seeing the impacts of additional debt due to tax cuts due to additional spending, et cetera.

COMMITTEE MEMBER HOLLINGER: Right.

MS. DEAN: So at some point, the money has to come from somewhere, right? And typically that's borrowing. So when you have to borrow more, you have to pay more. And also when you are looking at a Fed that's trying to control liquidity, the rates are expected to go higher. So, yes, we expect sort of the impact of this spending in additional debt to eventually have a negative effect, whether in the form of depreciation of currency or higher borrowing rates, et cetera, and which is sort of the uncertainty here that caused the market volatility that we're seeing now.

Having said that, we are seeing very strong fundamentals, like I said, in terms of economic growth. So, you know, can economic growth reach the levels that is required to offset these spendings? That is probably difficult, but hopefully it's not the case.

CHAIRPERSON JONES: Ms. Yee

COMMITTEE MEMBER YEE: Thank you, Mr. Chair.

Thank you, Mr. Chair. I had a question. This was in your performance analysis on page 17. You referenced the Corporate Governance Program and experiencing a 29.5 percent performance jump in the fourth quarter and adding value relative to the growth policy benchmark. What's the magnitude of assets under management that we have invested in these right now?

MR. KAZEMI: Sorry. What slide were you on?

COMMITTEE MEMBER YEE: I'm on -- it's actually the attachment 2, page 17 of 54.

MR. KAZEMI: Oh, it's the executive summary, I believe.

COMMITTEE MEMBER YEE: To the growth review for the PERF and corporate governance.

CHAIRPERSON JONES: Attachment 2, Ms. Yee?

MR. JUNKIN: Ms. Yee, I'll probably take this question --

COMMITTEE MEMBER YEE: Okay.

MR. JUNKIN: -- just given my experience. And I think I see out of the corner of my eye, Dan Bienvenue getting up.

It's less than -- it's a hundred millon dollars. That program is -- has been being wound down for some time.

COMMITTEE MEMBER YEE: Wound down, yeah. Okay.

MANAGING INVESTMENT DIRECTOR BIENVENUE: Yeah. Dan Bienvenue, Managing Investment Director of Global Equity. Yes, that's a program that we've wound down due to the highly concentrated risks and fees. So that is actually one existing partnership with one security in it that we were very patient in finding a liquidity event.

We've actually since found that vast majority of that liquidity event, so you'll very likely not see that in the future or at least even in smaller assets.

COMMITTEE MEMBER YEE: Okay. All right. Thank you.

CHAIRPERSON JONES: Okay. There are no further questions on that item. Thank you very much.

Next up, I guess, is PCA.

MR. GLICKMAN: Good morning, Mr. Chairman. David Glickman and Allan Emkin from PCA. Our colleague Christy Fields unfortunately couldn't join us today. She's a little under the weather, but she's looking forward to seeing all of you next month.

In your packet, we have provided you with a memo describing the real estate markets, describing the real estate portfolio in CalPERS, and a little bit of forward looking suggestions. In general, as Wilshire described the domestic U.S. domestic commercial real estate markets are close to equilibrium in terms of supply and demand.

We are seeing, with no big surprise, that the delivery of multi-family assets has continued to be higher than in years past. To Mr. Costigan's earlier comment about increases in interest rates, which may dampen demand for single-family purchases, especially from first-time home buyers, the rental market will be a beneficiary of that.

And so in your portfolio there will be an offset, if you will. You are not heavily invested in the single family private real estate business, but you do have good footings in high quality, well located, multi-family. So your managers have been instructed to pay very, very close attention to occupancy in an asset class where the tenants turnover every year, and are tacking towards continuing to keep high occupancy in markets where there's a little bit of pressure on rental rates.

Overall, though, the level of new supply and the quality of the assets that you own should give you some pretty good downside protection.

Demand continues to be strong for commercial real estate assets that are similar to the kinds that you seek and that you hold.

And the reason for that is among other things, the performance of the stock market and rebalancing by other institutional investors who find themselves underweight to real estate in light of 24,000 or 25,000 stock market index.

And so where they thought they were at 10 percent, all of a sudden they're at nine. And so they want is to buy some more, irrespective of any other consideration but to stay balanced. To the credit of your third-party managers and staff who supervise them, discipline has been very much maintained in the real estate acquisitions program.

You have plenty of dry powder, but it has been used very sparingly and very judiciously, because the rates that have been offered for purchasers haven't warranted making the purchase. The returns need to do the job, and the role that you've assigned to commercial real. And what's being offered right now, is many cases, doesn't show a high enough projected return with enough certainty to chase.

And so the managers have not chased. And while we're a little disappointed that the amount of money that was allocated in the last round of commitments up to approximately $4 billion of new net allocations has not been spent to any great degree at all, we admire the discipline and the patience that is being shown in this private illiquid asset class.

The increase in rates overall, over time, may give you better access to more properties at prices you would like to pay than what you've experienced over the last two to three years.

There's still plenty of foreign money that is seek a home in the United States. There are still very favorable borrowing environments in absolute terms for high net worth individuals and publicly traded companies to acquire new real estate. So you still have and should expect during calendar year 2018, plenty of competition for the kind of things that you want.

In terms of the performance of your existing portfolio, you've undertaken a shift over the last several years to align the components of your Real Estate Program with your strategic plan for real estate. And by that I mean almost 80 percent of the real estate that you own is strategic. It's long term, it's leased, and it's throwing off positive cash flow.

Over the next year or two, it will continue to throw off cash flow. It will continue to be highly occupied in terms of the occupancy rates of the properties. The amount of total return is likely to decrease from what it has been in calendar year '17, '16, and '15 and '14. And the reason for that is while your cash flows will probably be similar, the rate of price increase we don't see growing as fast as it has grown.

There will be other things for people to buy. And so with higher interest rates suggesting the fixed income securities may meet the needs of some investors. Whereas, they've been looking for real estate to do that heretofore. And so in that regard, it may be a slightly more favorable acquisition environment for you, but it's pretty early to tell.

One of the things that rose alluded to was uncertainty. And uncertainty hits real estate markets in a bunch of different ways. While we have a new tax act, we don't know all of the regulations yet. And the devil will be in the details, insofar how those regulations and how they're enforced affects decisions to take up space, which is ultimately the fundamental on which you need to keep a close eye.

In terms of the ESG update, Sarah Bernstein will be here next month during the March meeting to describe in a little bit more detail the top view -- the 25,000 foot view is that real estate continues to be an asset class in which you have a decent to good chance of being able to measure things. And in terms of the work that is being done to identify climate risk and how it affects your portfolio, as well as some of the other measurable criteria, the real estate department continues to make progress towards a time when even more meaningful portfolio construction decisions can arise from the information that's collected from the ESG monitoring programs.

With that in mind, Allan and I would be glad to take -- oops, Allan has something to add.

MR. EMKIN: Wearing my joint hat of real estate and general consultant, a couple of observations. You've been discussing risk. There's a term that we used to use a lot, but there aren't too many people who remember it. But the biggest risk that we see is what's called stagflation. And that is when you have not a lot of economic growth and you have inflation. And when what happens, everything does poorly.

And we haven't experienced that in a lot of people's memory, but that is why you want a truly diversified portfolio that something does well in that environment, and not too many things do.

The other challenge is it didn't get addressed, but there are things that are not obvious in the capital markets, and that's political risk. And the world has become a much more uncertain place politically, whether it's Washington or what happened over the weekend in the Middle East. And had the Israeli pilot landed in Syria as opposed to landing in Israel, you might have a world that looks much more precarious today than it did before. Not that that's going to happen.

But it's those types of events which are unforecastable, which can take all of these nice assumptions that get developed and throw them out the window. And we live in an environment where the recent volatility is being impacted by so many variables, and so many unknowns that anyone who says they know what's going to happen in the next 12 months, let alone in the next decade, that's -- they're fortune tellers.

And it's just important to recognize the limits that we have in our ability to know about the future. And know one has ever proven any ability to forecast where the capital markets are going, particularly in a very short period of time.

And to the Chairman's question, that volatility that you saw in the equity market, that huge negative that you were concerned about, that was a -- the biggest one day drop. It wasn't the biggest drop from peak to trough. And that's what's really distinguishes that period in

1987.

MR. GLICKMAN: When we come and report to you, it's become our habit to try to give you some things to identify looking forward to sort of keep and eye on or watch out for. This isn't the formal SWOT report like we do in November, but things that we would point out. And these are things that the real estate team continues to monitor closely and discuss regularly. But in the real estate portfolio, what are some of the technological changes that are going to affect space use?

Whether it's sharing of office space, or residential, how the residential landlords are now figuring out how to deal with Airbnb among their tenants, so as to not lose quality and control over the apartment assets.

That's a change that we need to keep an eye on. The difference between online and in-store purchases continues to be of high importance. And there's going to be some execution risk between the store owners who get it and the store owners, the landlords, who don't, and the tenants who don't.

We would tell you that another risk, which now that your real estate separate account program, which has been successful in the core area, is reaching a certain age, it's important to look at the managers and try to figure out what the succession plan is for some of the bright people who helped deliver terrific gains in the earlier and current years, but are now reaching a point where the next generation in their firms is going to be taking over control, and whether they've been trained and are incented and are as likely to repeat the performance as the folks who started out.

Many of your real estate managers are privately held companies, and they are captive to you. You're their only client. And so the idea of succession and planning is an important thing to consider, even though it might not be on the laundry list of the typical real estate risks like occupancy and overbuilding and things like that. The way you've adopted a real estate investment business model forces some spotlight I think onto who the folks are who you've delegated the fiduciary authority to actually make the discretion within a box.

And so we're coming up on age issues for some of them that staff is continuing to monitor. And I think Paul may be talking a little bit about that going forward. So that's some things to keep in mind.

If there are any other questions, Mr. Chairman, we've used a lot of time for nine percent of the assets.

CHAIRPERSON JONES: We have a couple of questions.

Ms. Taylor.

COMMITTEE MEMBER TAYLOR: Yes. Thank you. Thank you, Mr. Glickman. I -- first of all, I do want to applaud you for including the ESG update in here. And as we go into March, I do look forward to seeing more on that. I thought it was interesting that you included the hurricanes, and the fires, and the mud slides. And I'd like to see what our measurable problems were with that, if we had any at all; and then climate risk data, if we've got that in the real estate portfolio.

But I had one other question. You'd mentioned earlier on in your presentation that there was pressure on rental rates. So are you foreseeing that we're not -- we're no longer in -- enable to enjoy higher rental rates, is that what we're looking at, or is that a positive pressure? I don't know if you said positive or negative pressure.

MR. GLICKMAN: No. Let me be a little bit more Precise. In 2017, second half of the year and for all of 2018, there are going to be quite a few more new apartment buildings offered.

COMMITTEE MEMBER TAYLOR: Okay.

MR. GLICKMAN: They are built of high quality, and in locations that will compete with some of your existing assets. For that brief period of time, the rental rates are likely to be flat or off just a little bit, because you'll have more supply than you will have demand. That will take care of itself, if you have the patience to be out a year or 18 months or so. And so that was the pressure on rental rates in the short term to which I was referring.

COMMITTEE MEMBER TAYLOR: Okay. I appreciate that. And I just want to check. And that was it. Thank you very much.

CHAIRPERSON JONES: Okay. Ms. Yee.

COMMITTEE MEMBER YEE: Thank you, Mr. Chairman.

So to what extent are the managers sensitive to I guess the changing nature of our economy, and work, and you know all these issues that you've raised relative to the need for space and occupancy, because it seems to me this is -- in every sector these are issues that are moving pretty quickly. And I think with respect to just kind of our portfolio, it may be that there are companies and other asset classes that could help inform what we do in real estate relative to those issues.

MR. GLICKMAN: There are. And I think that both your staff and your managers take advantage of specialists, for example, in the retail area. You've chosen to invest in retail strategically in large dominant malls, who have the money and the talent to reconfigure their malls and to deal with the bankruptcies that occur and redo those spaces to tenants who might not be able to have gotten into those malls right now, because remember your portfolio is defensive. No more than say 15 percent of your portfolio's leases expire in any one year. That's one of the reasons why it has a lower volatility than some of the other asset classes.

But by using partnerships with very clever very well heeled operators like Simon in the mall space, you're able to respond to the changes in a timely way. The other end of your retail portfolio is grocery-anchored shopping centers. And those are still relatively favored in terms of consumer demand and showing up.

It's the group in the middle that is having more trouble and getting most of the bad publicity. And fortunately that's not where your portfolio is.

In terms of the apartment investments that you have, the managers are offering common spaces. They're offering upgraded technology as a feature of each of the apartments. In order to stay competitive with what other brand new developments might be. And again, you have well heeled managers -- by well heeled, I many they have plenty of capital available to them. And when they have a project in mind to improve a property, they bring that request to staff with a projection of what kind of return on investment spending another several million dollars might be in that one property. And those are the kinds of things that are encouraged in the annual investment plan process.

Office buildings are a little tougher to try to forecast. They're lumpier. They're chunkier. You continue to tilt towards quality, and AAA locations. And again, your overall portfolio is only about 31 percent loan to value. So you have plenty of capacity to reinvest in your properties and continue to keep them current, to the extent that there are opportunities to do that on a positive investment basis.

I hope that's a survey answer.

COMMITTEE MEMBER YEE: No, that's a -- thank you. I appreciate that.

MR. EMKIN: And just to add to that, what Mr. Eliopoulos has done is tried to breakdown the silos that exist in the organization. And all the technologies you're talking about, to one extent or another, are reflected in either a venture capital investment or a growth capital investment. And there's a transmission of ideas, so that there are no surprises when there is a new technology. And the challenge for the whole investment team is how to integrate the knowledge from those markets to the real estate market to share in the knowledge that you have available to you to maximize return.

And that gives you an advantage over smaller organizations that don't have the depth and do have the silos.

COMMITTEE MEMBER YEE: Great. Thank you. Glad to hear that.

CHAIRPERSON JONES: Okay. Thank you.

Mr. Glickman, you mentioned that the supermarkets were a priority. But what impact is going to occur with all this online shopping? Because that's a growing strategy now even, you know, with companies acquiring supermarkets to move them to online shopping.

MR. GLICKMAN: It's going to have an impact. When and how much, I'm not sure.

The grand experiment, which everybody is watching, Amazon, and Whole Foods. And to the extent that they're able to automate part of the shopping experience -- and, you know, it's not just them and supermarkets, but Walmart and Target have also gone into the grocery business. And a lot of the things that people purchase can be done -- can be ordered online and sort of regularized. When it comes to fresh fruits and vegetables and it comes to fresh meat and seafood, people still have not been able to figure out how to deliver that satisfactorily and in quantity via remote. And so the challenge for the landlords to grocery operators and the landlords who own those centers will be to have Enough services in-store to warrant people getting there.

It's shifting. The shifts on the margin are highly publicized. In terms of the number of dollars of revenue, it's still early days. So we can't quite tell.

CHAIRPERSON JONES: Thank you.

Mr. Slaton.

COMMITTEE MEMBER SLATON: Thank you, Mr. Chair.

So we're all trying to look out to what's going to happen in the future, whether it be grocery stores, whether it be residential. There's one area that maybe you could comment on, particularly as it relates to office buildings, and that is the -- it looks like the driverless vehicle platform is going to happen sooner rather than later. And if that were to occur, I've read some pieces about development of office buildings where the parking is convertible to additional office space, if, in fact, we have fewer people parking in their own vehicle in a garage.

Can you comment on how that might affect our portfolio and what you see? Is there any defensive steps that we should be taking to be prepared for that?

MR. GLICKMAN: That's a good question. And my initial reaction to it is garage space is not a high revenue producer. So to the extent that it can be converted to some other use, most garage parking ratios are driven by municipal ordinance rather than market. And so the idea that you could recapture some of those spaces, since they weren't used by cars anymore, and turn them into a more productive use is appealing to me.

Whether or not driverless cars and teleconferencing and other remote combinations of creatives becomes effective and how much and how soon, that's going to be another factor influencing that same office tower as to whether it's discrete offices, or it's hoteling, or it's we work, or somewhere else up on the collaborative scale.

And again, I think at the end of the day, the strategy that your office managers have implemented is highest quality assets, highest quality locations. By highest quality locations, we mean the peripherals as well. The other elements that aren't in your building, but are within walking distance to your building, whether it's transportation, or retail, or entertainment.

And I think by continuing to seek those assets, you'll be in a relatively defensive place in your office portfolio compared to some other More far-ranging office portfolios.

COMMITTEE MEMBER SLATON: Okay. Thank you.

CHAIRPERSON JONES: Ms. Mathur.

COMMITTEE MEMBER MATHUR: Thank you. In your report, you have a brief summary of the current status of our leverage in the portfolio. Could you address whether you think, given the current market conditions and where you see things moving, whether you still -- whether you think that our current policy remains appropriate, where you think there might be opportunities for change, or recommendations to reconsider aspects of our leverage approach?

MR. GLICKMAN: So here's a couple of observations. The key element that PCA looks to in analyzing leverage on your portfolio is not the loan-to-value percentage, but rather it's the debt service coverage ratio. And you're at close to three times debt service coverage. We consider that to be a safe level.

And even if that were to decline, because the cost of your debt went up or the amount of your debt went up, if it's north of two and a half, you're in an extremely good position in terms of defending your assets, and not having to go back to the fund and ask for money to make the mortgage payments because the properties aren't throwing off enough cash flow.

The benchmark element that comprises the largest part of the real estate benchmark is the ODCE Index of open-end performing properties. Their leverage ratio is approximately 22 percent. You're a little bit north of 30 at the moment. You also own assets that are higher risk for roughly 20 percent of your portfolio, and many of those assets have higher degrees of leverage, which influences it overall. So I would say you're at a comfortable level of leverage right now.

And with interest rates going up, staff spends a lot of time with the individual managers at looking at the rolling off of your existing loans and the need to replace them in the future with loans that are likely to have higher interest rates. And staff over the last three years has become more active in managing the debt side of the real estate balance sheet, even though it's spread across a number of different managers, each of whom keeps their own mortgage relationships.

So I think you're moving in a direction over time where you'll have more control and more input over the overall leverage. And I think that increased level of control and consolidation is going to be a positive thing. Right now, I don't see any storm clouds on the leverage front, notwithstanding that PCA clearly agrees that rates are going to go up.

One of the things about leverage in the real estate community is a lot of it comes from regulated companies. And to the extent that these regulated companies have fewer regulations, and they look at real estate as being a relatively high margin business, it's quite possible that notwithstanding rates are going up, regulations may be coming off, which allow regulated and non-regulated lenders to commit more capital to real estate lending. And that competition might be a bit of a break on how quickly the rates rise for mortgages that you and your managers will be seeking.

COMMITTEE MEMBER MATHUR: Thank you.

CHAIRPERSON JONES: Okay. There are no additional questions on this item. Thank you very much for your report.

MR. GLICKMAN: Thank you very much.

CHAIRPERSON JONES: And we now will move to Meketa Investment Groups.

MR. McCOURT: Good morning.

CHAIRPERSON JONES: Good morning.

MR. McCOURT: Steve McCourt, Meketa Investment Group. We have two reviews for you today, infrastructure and private equity.

We'll start with the infrastructure review. And I'll introduce Lisa Bacon, who's going to review that.

MS. BACON: Lisa Bacon, Meketa Investment Group. Good morning.

CHAIRPERSON JONES: Good morning.

MS. BACON: So far our review today, we're going to cover performance, a little bit of market commentary, and we have one item from November -- from the November meeting that you asked us to take a little bit more of a look at and come back to you with.

So on program performance, as Wilshire pointed out in their overview, the infrastructure program continues to perform well, and significantly overperform the benchmark, looking at the one-year period, the six-year period, and really all trailing periods with the difference anywhere from between 600 to almost 1200 basis points. The program also is outperforming the assumed return for the ALM numbers that were not recently updated but the ones that were in existence for the reporting period.

We also took a look at the key parameters for policy compliance. With respect to implementation, we noted an increase in the NAV value of 10 percent. And with respect to the interim target, the program is at 1.2 compared to one percent.

With respect to risk, the core, value-add, and opportunistic distribution are compliant with the policy. With respect to region, the U.S. developed, international developed, and emerging proportions are also compliant with policy ranges. With respect to loan to value and debt service coverage ratio, those two parameters are compliant with policies.

With respect to segments and sectors, those are evaluated at the Real Asset Program level. And so there's not a specific number with respect to the infrastructure program, but the allocations there are certainly consistent with the overall program numbers.

With again -- on the final policy matter, the -- with respect to the external manager, either at an individual investment or an individual manager, those are compliant with the maximums as well.

With respect to market commentary, as in the other asset classes, there is an awful lot of capital out there wanting to be deployed in this space. The numbers are -- remain at all-time highs. With respect to dry powder, deal activity in the space also is at top levels with the fourth increase -- increase in a row with respect to annual values.

Geographically most of the capital is wanting to go into the North America and European space. The space that CalPERS also is targeting. With respect to deals in 2017, the distribution of actual deals is a little bit more -- a little bit better distributed. Capital weighting to be deployed is about 80 percent targeting you -- North America and Europe. Whereas in the deals actually executed, 64 percent of the capital was put into North America and Europe, with the remaining in the balance of the world.

With respect to risk level, Preqin doesn't exactly map it out the same way that you all do, but there's a loose mapping that we looked at. Most of the deals are in what Preqin calls secondary stage, which, for all intents and purposes, is core essentially assets where there's no meaningful expansion, there's no fixing it, there's no turning it around. It's just an asset that's already performing and operating as you would expect it to.

At the global level, about three-quarters of the deals have been in that space. On a region-by-region basis, it differs a little bit. Some regions have less core. Not many really have others. And with respect to the greenfield, between 10 and 40 percent of the capital was deployed into the greenfield space, and about 10 percent deployed into brownfield. And with respect to these definitions, brownfield is an opportunity where it's an already existing asset, but where there's some -- it might be an expansion. It might be a rehabilitation, something that is essentially what we would consider to be the value-add space.

Notably with respect to deal sizes in 2017, Preqin segments the markets into four buckets in all of those buckets except the smallest. And so deals less than $100 million, the number of deals in that bucket decreased. But in every other bucket that they look at of the other three, the number of deals increased. And so as we saw last year, and as we remarked on in November, the deals, in general, are getting larger on average.

We took a look at the California space. There was a lot of activity to take a look at. However, most of the deals were in the energy sector. And in that sector, most of the deals were in renewable. That's not surprising. A lot of solar deals, when you look around the world, a lot of the renewables, are in wind.

We looked at the transportation sector. It really rep -- the deals represents a lot of different sectors with respect to airports, roads, seaports, parking lot. There's a lot of -- a lot of activity in places in the U.S. and in Europe. There were notable deals in the water and wastewater sector. That's a sector in the United States where there's not a lot to see, since it's been usually in the -- held in the public sector. But in other parts of the world, there are a lot more private sector deals. And even in the U.S. there was one deal last year. And in the future going forward, we would expect to see some more maybe here and there.

In the communications sector, most of the deal value was in Europe and Asia. And most of that was in a sort of standard telecommunications. In North America, there was a lot of Internet and wireless deals to the extent that they occurred.

With respect to outlook in 2018, as we noted in November, we expect more of the same. There is an awful lot of capital out there, which creates competition. I think the balance on that is there is an awful lot of deal flow, both new investments, new construction, that are driven by needs for improvement in other places around the world that are driven by urbanization and GDP growth. There are also a number of institutional commingled investment funds around the world that are coming up on their terms. And while the valuations were down over the, you know, maybe last year or two, they -- a lot of managers extended their terms. And so now it's coming time and -- to turn those over. And a number of the deals in the space last year reflected that dynamic.

That is the end of my sort of new commentary. I do have comments on the staffing issues or questions that were raised last time, but I wanted to stop before I moved on to that.

CHAIRPERSON JONES: Yeah. Maybe it's appropriate to have a couple of questions now. The one question I have is that you mentioned deal flow. With the President rolling out his infrastructure strategies this morning, I assume, is that going to have a negative impact of our opportunities to go out and create deals, because he's going to be allocating more money that would perhaps may go to the PPP concept?

MS. BACON: I think in the near term, it's not going to impact what you all are doing. It is going to take some time for those programs and that money to start flowing. I think as we've also seen, there have been a number of starts and stops with the concept of a national infrastructure program.

To the extent that it actually gets implemented the way that they're intending, on the one hand, there will -- there will be some net new capital. Some of the program will move capital around a bit. And so there may be some opportunities for you all to participate maybe where you might not have before just because of the way the programs are implemented.

I also think that at the scale that you all are operating, that a lot of the programs -- a lot of the opportunities in that program, while there will be some very large -- very large projects, there will also be a lot of smaller ones that really aren't going to be what you all were paying attention to anyway.

CHAIRPERSON JONES: Thank you.

Mrs. Mathur.

COMMITTEE MEMBER MATHUR: Well, thank you. You asked about the Trump plan. That was -- I was also going to ask about it. It does seem that it's fairly de minimis in terms of the amount of federal dollars actually being put into this plan, and it's relying heavily on municipal and State leverage or contributions.

And so I was wondering whether you thought that there will actually be municipal and State level projects materializing. That this will -- will this spur additional growth in those types of projects, which we have been interested in in the past, but have not really seen significant deal flow in that regard, so...

MS. BACON: To the extent that the program, in addition to the capital that it makes available or the capital that it tries to attract, to the extent that the processes and applications and different federal agencies and programs that need to be involved, to the extent that the whole program helps streamline some of that, then I think there's going to be more opportunity for certain projects to -- that can attract capital to move along faster than they might otherwise have.

At the same time, you're right, it does look like some of the source of capital is shifting around a bit. And so it really remains to be seen if at the local and State level, if they're prepared to do that, either from a fiscal perspective, if they're even able, or from a political perspective. Certainly in -- on the east coast, we've already seen some -- some of the public governmental agencies balk at losing a federal contribution that seemingly was promised before.

COMMITTEE MEMBER MATHUR: Thank you.

MR. McCOURT: And just add one thing. At least the note I read this morning on the first proposal, which will certainly not be the finished product is that $200 billion of federal funds to support one and a half trillion of ultimate investment. So your point is where the -- how the gap gets filled. And I think that's a huge question mark presently.

COMMITTEE MEMBER MATHUR: Yeah.

CHAIRPERSON JONES: Mr. Slaton.

COMMITTEE MEMBER SLATON: Thank you. You talk about power plants, and primarily wind and solar plants that are coming on line. Do you see that there is going to be a movement at all to any privatization of investor-owned utilities in the electric sector?

MS. BACON: So far, I haven't seen that. There's certainly a lot of activity in the sector with new power plants, both investor-owned and with private sector, and PPP's moving forward. With the way the market dynamics evolve, there certainly could be some opportunities where investor-owned utilities where the economics work better, if there is a joint venture even, you know, maybe even something short of a full privatization.

COMMITTEE MEMBER SLATON: Okay. Thank you.

CHAIRPERSON JONES: Okay. Ms. Bacon, you can proceed with your other report.

MS. BACON: So in November, we talked a little bit about how the Real Asset Program is set up with their staffing organization, and, in particular, you know, given our coverage with respect to the infrastructure program.

And so we've had a chance since then to talk more with the staff and understand how they've been set up in the past, how they're organized now, and what their thoughts are moving forward. And so I wanted to summarize for you what we -- what we heard from them, and what we think it means.

So the Real Asset Program organizes their staffing around the six segments: Commercial, consumer, essential, international, and specialized within the new investment teams and within the portfolio management group. And within the portfolio analytics, that's really more of a functional organization. And so those staff aren't in a commercial group or in an essential group.

Within this structure, essentially what you have is a matrixed organization, where you've got people in each of the -- that are dedicated to each of the segments, but within those segments will work on real estate or infrastructure or timber to the extent that those segments include those. Of the six segments, all -- well, of the six segments, five include at least one infrastructure asset category, and only one residential includes none.

And so within the new investments team and within portfolio management group, essentially everybody but people dedicated to the residential category are working on -- or at least have the opportunity to work on some infrastructure. And certainly the deal flow in infrastructure is less than for real estate, just by virtue of the difference in the allocation there.

This matrixed organiza -- this matrix structure let's the managers take advantage of individual's expertise, let's them organize staff according to deal flow and work flow. And so as a result, there are some -- some staff members who work on infrastructure more than they work on other types of things. And it certainly lets the managers take advantage of -- a number of the staff have extensive backgrounds in infrastructure investing, and it lets them work on the things that merchandise best up with their past experience.

So, in general, this structure puts skilled people on the projects that they have experience to do, and provides some benefits in cross-pollinization or at least working on multiple sectors to apply those skill sets and expertise to the different sorts of investments. And at the same time, it doesn't -- you don't end up with a group of people -- a small group of people segregated who are not really integrated with the rest of the group.

CHAIRPERSON JONES: Okay. Mrs. Mathur.

COMMITTEE MEMBER MATHUR: Thank you.

Thank you very much for coming back to us on this. I know this is spurred by some of the questions that I was asking about the new structure. And so are you confident then that there is -- that the team retains sufficient infrastructure expertise, and that that infrastructure expertise is allocated appropriately to the -- you know, to the -- to -- you know, one of the things I'm concerned about is, you know, we've had -- it's been very challenge -- deal flow has been challenging, et cetera. But are we -- we're structurally not creating impediments to -- to investing more heavily in infrastructure.

MS. BACON: It doesn't look to me like there's any structural impediments. It looks like the staffing and the expertise level that can be deployed to infrastructure is an appropriate and sufficient amount for the present time. I mean, to the extent that you're going to continue to grow that allocation in terms of what you're actually deploying, to the extent that deal flow there is -- takes more work to get the right kind of deal flow maybe than the deal flow that you've established for real estate where there is already lots of managers, and a lot of them work for you and only you in the infrastructure space, you all are deploying a different model. And it's certainly working with managers directly and having separate accounts is going to support that.

So moving forward, I guess, you know, three to five years from now, I would expect to see more infrastructure skills, whether that's embodied in, you know, one or two people specifically, or if it's the next four people you hire have some infrastructure experience, and are, you know, willing and able and eager to work on those sorts of things, this matrix structure can support your program moving forward to the extent that it's taken advantage of.

COMMITTEE MEMBER MATHUR: Okay. Thank you.

CHAIRPERSON JONES: Okay. Thank you. No further questions, Mr. McCourt.

Next.

MR. McCOURT: Yeah. So we're going to shift on to private equity report.

(Thereupon an overhead presentation was presented as follows.)

MR. McCOURT: Great. And I'll start on page three with a very quick summary and then hand it over to Steve to talk about the private equity marketplace and the structure of the CalPERS portfolio before taking it back to discuss performance at the end.

As you've seen with all of your asset classes for 2017, private equity was no exception in producing strong absolute returns. Your value of your portfolio on a net asset value basis increased to $26.7 billion. That's a little under a billion dollars more than it was six months ago, despite the fact that you had nearly $2 billion of cash flow out of the program back to you. As a mature program, that cash outflow is a normal part of your program. That asset level at the end of the year represented 7.6 percent of your entire plan.

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MR. McCOURT: So 40 basis points below your long-term target. As Steve will review, the portfolio is very well diversified by vintage year, by sector. Sixty-two percent of the portfolio is invested in buy-out strategies, which are the most common strategies in the private equity space.

The program I'll note as well has been a bit more active, particularly in the second half of this year. Staff has completed eight commitments totaling $2.4 billion in the last six months of the year, and seems to be on a pace to exceed the $4 billion target for this fiscal career, which is a nice change and trend from the couple of years.

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MR. HARTT: Steve Hartt, Meketa Investment Group.

So I wanted to take a bit of time here to go through a couple of slides quickly on the private equity marketplace and talk a about a couple of segments. The first segment talking about the private equity segment marketplace, primarily the buyouts.

So what we've noticed here in 2016 and into 2017 is a general slow down in the marketplace. There's just less transactions taking place than had been happening in the prior couple of years. There's been fewer mega deals. There's some discussion as to kind of why that's been happening. Part of it might be, as I had discussed last time, kind of the follow through, the liquidation ultimately, of the investments that were done 2004, 2005, 2006. There was the big peak markets that's essentially rolling off, and we're kind of coming back into some of the investments that were done more recently.

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MR. HARTT: That being said, the cost of investments remains high at peak levels that's been maintained. We've seen on average 10.5, a multiple of EBITDA has been maintaining the marketplace. And that is a new peak record.

In addition to, or on other the side of coin, from the new investments being done is the exit activity. And that also is reported down. These numbers through the third quarter of 2017 at the time we did the report, that wasn't -- the full year wasn't yet ready.

But we can see that the pace of exits has slowed down. Another part of this is that the average age of the investments within the portfolio has continued to increase.

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MR. HARTT: Secondary buyouts remain a strong portion of the exit path for private equity investments, fifty percent now in the past several years. That path of exit has become more popular compared to corporate acquisitions, has grown from 40 percent now to 50 percent. I expect that's likely to continue to go apace. IPOs remain a relatively small portion of the exit path.

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MR. HARTT: Turning to venture capital. A little bit different than the buyouts market, where the amount of capital deployed in venture capital has increased to a new record in 2017, $84 billion. The number of investments has gone down slightly compared to 2016 and is down pretty meaningfully from 2014-15. So obviously what that means is that the average size of investments has gone up. And that's reflected a little bit on the next page here, where we --

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MR. HARTT: -- showed the trend lines of the round sizes in venture capital, and showing the different stages of the investments in venture capital. So the bottom line there, the seed stage where the companies are just getting started, middle stage there, and then a late stage when obviously capital is -- the companies are larger and tends to take more capital.

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MR. HARTT: Talking about exits in the venture capital marketplace, that also has come down from the peaks, but remains quite high compared to -- you know, the last several years has been pretty high, much higher than it was in 2008 and 2009. Again, the numbers have decreased. And again that means that the average exit size has been somewhat larger.

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MR. HARTT: In terms of path for how the venture exits are taking place, noting there that different from what might be commonly believed, IPOs again here remain a very small portion of the amount of value that's being created in venture portfolios. Most of these companies are acquired whether by another venture-backed company or a -- someone in the marketplace, a competitor.

The buyouts are increasing in number. What that refers to generally is that another private equity firm is buying -- that's moving from a venture capital space to a buyout space, and seeing it especially in the software area, where there's a lot of interest by buyout companies to invest in software companies that have proven subscription based revenue models become quite leverageable and they've been quite popular.

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MR. HARTT: It was mentioned by Wilshire earlier that the fundraising cycle in private equity has remained very strong. Again, these are through third quarter. But through the full year of 2017, I believe it hit a new record in terms of total funds raised. This is largely driven by some of the large capitalization funds that have been quite popular.

So on the next page here --

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MR. HARTT: -- showing trend lines in the average and the median size of funds, you can see that the average fund size is reaching what had been achieved in 2007. So the -- a lot of the fundraising taking place has been driven by some of the very large funds.

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MR. HARTT: Oh, this is still -- this is still the -- so page here just reviewing the Private Equity Program here showing the allocation of the program amongst the different strategies. And you can see that the program remains in line with all of its allocation ranges. The credit is getting a little bit on the small side. And that has shrunk down somewhat with years.

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MR. HARTT: Looking more closely at the buyouts, you can see that the large and mega funds are a very large percentage of the buyout's exposure with middle markets being a strong second place on that. Very little exposure to small buyouts.

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MR. HARTT: In the credit sector. Again, the portfolio does not move much from each of our reports. The vast majority of the portfolio here is in the distressed market area.

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MR. HARTT: As you'd expect, the exposure from geography is quite strongly tilted to U.S.-based managers, with Europe being next, and emerging markets next. Looking underlying through the portfolio company level --

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MR. HARTT: -- that there are a number of U.S. managers -- based managers that make investments outside of the United States. So looking through at the underlying companies, United States' exposure remains quite strong at 60 percent, and followed by Europe.

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MR. HARTT: This chart doesn't change very much either from our reports. Just looking at the amount of commitments by vintage years, there were a lot of commitments in the 2006, '07, and '08 timeframe. And that's going to take a little bit of time rolling off.

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MR. HARTT: But looking at the exposure -- sorry. Hit the wrong button.

Looking at the exposure, the exposure from an un-COLA capital perspective is rolling more forward to more recent vintages, and that the exposure that's in those older vintages is really rolling off now.

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MR. HARTT: Funds are the dominant structure through which CalPERS has its exposure to the private equity sector followed by the customized investment accounts.

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MR. HARTT: And looking through to the unfunded, it tilts even either to the funds.

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MR. HARTT: In terms of the top five managers, this list is, I believe, the same list of managers that was a bit of a movement around as the two commitments to the Carlyle organization took place, moved them up I think from fourth to second. But the top five managers account for about 30 percent of the exposure in the private markets portfolio.

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MR. HARTT: You can see here in -- this is the chart showing the cash flows in the program. And what the line shows is the net difference between the contributions and distributions with the net cash flows. And you can see since 2011, nearly $30 billion of capital has come back into the program.

So the contributions that were made in the years previous have been coming back, and -- as those managers have been exiting the portfolio. So the -- while there's new contributions being made, those are being drawn down, and that's the -- the blue bar is showing that there's contributions to the program, but there's been more capital coming back than has been drawn down. Although that has begun to slow. It was still a net positive inflow of cash as a -- as you can see on the next page here actually --

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MR. HARTT: -- showing what's happened in the portfolio program value changes Steve had mentioned, $800 million net value increase in the portfolio, but that is based upon the change in cash contribution/distribution, which has a return of capital. So shrinking the program size, but had -- the whole overall program had a two and a half billion dollar value increase or $4 billion for the whole year.

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MR. McCOURT: So the summary performance is shown on page 27. For the one-year period, the Private Equity Program returned 18 percent. So a very strong absolute return. For those of you that have been familiar with private equity for some time, it's normal for private equity to lag public markets, when markets go way up. 2017 can be characterized as a way-up market.

So your program underperformed its policy benchmark, which is the public markets plus 300 basis points, by 4.9 percentage points. And that's a reasonable expectation for a strong up year.

I'll note just for context that the average private equity return for the year using the same endpoints here, and the Cambridge Associates private equity index, which is the industry standard, with 16.5 percents. So your program did outperform the average private equity investor.

It, of course, outperformed the capital market assumption for the asset class as well. Going back 10 years, the program returned 9.1 percent versus the policy index of 13.2 percent.

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MR. McCOURT: Within the program looking at the types of vehicles, where performance is coming from, most of your capital is invested in fund structures. And for the year funds were up 18.7 percent. You can see the co-investment program returned 50 percent for the year. The major message I would send there is that co-investments tend to be lumpy. So you get your returns a bit more idiosyncratically. And fortunately, this was a strong idiosyncratic year for co-investments

Fund of funds have generally produced lower returns over -- over -- for the year and also over time.

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MR. McCOURT: And the final slide I'll go through is just performance by geography. The major item to note here is that for the one-year period, Europe and developed Asia had very strong returns. Part of that can be attributed to execution of investment strategy within those regions. But we also had a declining dollar during the year. So when the currency in those regions appreciates relative to the dollar, your return is generally higher as a consequence. And so the dollar worked in your favor in the Private Equity Program this year.

And with that, we'll conclude our report and happy to take any questions.

CHAIRPERSON JONES: Yeah. On your earlier chart, you identified that our portfolio value was 27 -- 26.7 billion, but you also indicated that the unfunded commitment of -- when you add that to the value of the portfolio, it goes up to $40 billion.

MR. HARTT: Correct.

CHAIRPERSON JONES: So when I look at unfunded commitments, I think of off-balance sheet commitments. You know, you're -- when you're looking at a number, it's not the real number --

MR. McCOURT: Right.

CHAIRPERSON JONES: -- because you've got all this money that you owe out here. So two questions related to that. Is that -- is there a policy -- do we have a policy on how big that unfunded commitment can go? And number two, is that un-commitment number, is that based on a prior commitment dollar value or is it waiting to roll out and then there's going to be a new dollar value? You know what I mean? Because you can make a commitment that you're going to allocate $2 billion per project, or you can make a commitment that you're going to allocate the necessary funds to the project. So is it the number that's in the initial commitment or is it going to be a larger number?

MR. HARTT: So I'll say a couple of points. So there is no -- there's no direct policy restraint on the amount of commitments. The staff every time when they review investment an opportunity will check and see how that opportunity fits in with the exposures that they have, and they roll forward and say, you know, for the different sectors, for the different managers exposure, do -- are we within compliance on that?

So it's not -- there's not an overall number that says do we have too much unfunded capital or do we track that.

Your second question in regards to the

commitment, so what that is, is that when staff makes a commitment to a particular fund, let's say, you know, $200 million, then that is essentially the opportunity for that manager to make capital calls over time to be able to invest into underlying companies over a designated time period. It's usually -- it's typically about five years.

And sometimes not all that capital is called at the end of the day. It depends on whether they find the transactions. But typically, close to somewhere between 90 percent or more of that would get called over -- within the timeframe.

And so the number that you see there about $19 billion of aggregate unfunded commitments will go up and down -- go down as capital is called, down as equipment periods end, but increase as staff makes additional commitments to private market funds.

MR. McCOURT: But at this point in time, that's the maximum exposure that you could have, if every general partner called all their capital the following day. So there's no additional amount that you'd obligated to fund beyond that.

And the other thing I would highlight is relative to other programs, the amount of unfunded commitments you have is actually relatively small compared to your net asset value. One could argue that you've underallocated to the asset class for the last several years, while you've had a lot of capital come back from prior vintages.

So it's normal for unfunded commitments to be -- to match, if not exceed, the net asset value in the program. Your level of unfunded commitments is actually on -- as a ratio on the low side today.

CHAIRPERSON JONES: Okay. Thank you.

Ms. Mathur.

COMMITTEE MEMBER MATHUR: Thank you.

Yeah, I note that Sequoia announced a very large venture fund, an $8 billion fund, I think. And I'm wondering whether you see that as indicative of any trend or shift in the venture market, and whether you think that has -- you know, will result in any opportunities for us, as, you know, we've had a very small allocation to venture, in part because it's so -- such a small space too.

But anyway, just curious about what you -- if you think that is indicative of anything bigger that -- and what that might mean for CalPERS?

MR. HARTT: Sure. So that Sequoia program, the growth fund, is reflective of a trend where companies have been staying private for longer, and that they have been using that -- that approach, and looking at different sources of capital to extend their -- the growth of their businesses.

So that had come from hedge funds. It had come from mutual funds, such as Fidelity and Wellington that have allocated a portion of their mutual funds to this space. And I think that firms like Sequoia and others want to continue to participate.

Their general thought is we've started this company from beginning, we do like the company, let's continue to fund it. So in terms of opportunity for CalPERS being able to deploy large amounts of capital to interesting, exciting companies is a potential interesting area. I think that there are two -- at least two major questions. One is the valuation at which those investments are being made, and number two, ultimately what will be the exit. At some point, how will liquidity be arrived at with these companies. They're becoming, in many cases difficult to do an IPO on with that size. And in some cases, the businesses are not particularly diversified. They're not as robust as maybe other ones. They just haven't have been around as long with their business models. They work in businesses that have business models that are changing pretty rapidly.

So, you know, when you go into the IPO market and investors are looking at that with a different lens, you know, that would have to be carefully considered.

COMMITTEE MEMBER MATHUR: Okay. Thank you.

CHAIRPERSON JONES: Ms. Yee.

COMMITTEE MEMBER YEE: Thank you, Mr. Chairman. Thank you for the report. I was curious as to your sense of our decision to limit or restrict the number of private equity managers? What the consequence has been of that? Whether you think we're missing out on potential investments or do you think it's had a positive effect in terms of really leading to greater access to more attractive investments?

MR. HARTT: So this was a topic I've been asked to kind of discuss in closed session. But, in general, working with staff to discuss ane review this particular topic with the idea of the particular objectives of deployment of capital, the -- as well as cost and transparency, and diversification in the portfolio. Thinking through these factors to assess what is an appropriate strategy for this, and whether it's a continuation of 30, whether it's other options, whether it's a different number or thinking about things.

So that's what we're doing is working with staff to think about that -- those issues.

COMMITTEE MEMBER YEE: All right.

CHAIRPERSON JONES: Okay. Seeing no additional a questions, thank you for the report.

And we're going to recess now -- we have to go across the street for 30 minutes, and then come back for lunch maybe for 45 minutes. So let's reconvene at 1:45.

(Off record at 12:21 p.m.)

(Thereupon a lunch break was taken.)

A F T E R N O O N S E S S I O N

(On record: 1:45 p.m.)

CHAIRPERSON JONES: Okay. We'd like to reconvene the Investment Committee meeting. We will start on item -- CalPERS Trust Level review staff's report.

CHIEF INVESTMENT OFFICER ELIOPOULOS: Great. Terrific, Mr. Chair. Thank you.

So during the break, we always try and highlight things that you haven't, you know, spent a lot of time during the consultant hours, so we've divvied up the pages of the presentation. I think we can make up some time, because I know we have a busy afternoon as well.

First, we're going to hear from John Rothfield, our CalPERS economist to highlight, you know, the main pieces in his report. And then following that, we're going to pick and choose from the rest of the staff presentation. We're going to cover one page on performance attribution, a couple pages on the volatility section Eric will cover, and then lastly just a brief -- very brief report on our GIPS compliance, because we think that's a very important milestone to underscore.

So that's that play to come. And with that, John, you're going to kick us off.

INVESTMENT DIRECTOR ROTHFIELD: Thank you. Good afternoon, everybody.

(Thereupon an overhead presentation was presented as follows.)

INVESTMENT DIRECTOR ROTHFIELD: I wanted to -- I know that we've already prosecuted quite a bit of the material about the relationship between the economy and asset prices or financial markets already in the morning session today, but I wanted to take you through the familiar table that we do for everyone of these presentations, which is on page two of the macro report.

And I wanted to curate it a little bit differently today, because I usually put in the positive and the negative trends in the economy, but I wanted to kind of make a contrast between the positive trends in the economy, which are a little bit backward looking and some of the potential negatives, which are more forward looking.

So unlike some of the exuberance that's been in the market, and estimates going up for economic growth in the next couple of years, I'm a little bit more cautious about the outlook for the economy over the next couple of years. And so looking at things that are positive in the economy. Again, a lot of these are backward looking, so the economy is growing roughly at its potential rate. Estimates of potential growth in the economy vary between the mid-ones and the mid-twos if you look, probably centered around two percent, and also flat leverage.

So leverage in the economy, which is the combination of government borrowing, household, and non-financial corporate borrowing is the same now as it was at the start of the expansion. It's about two and a half times one year's GDP.

So last year, we actually -- growth accelerated a little bit to two and a half percent. That's a little above the average of the first seven and a half years of the expansion.

As Wilshire mentioned this morning, we've had a significant tick up in CapEx intentions and hiring intentions by the corporate sector. To date, a little bit of that, but not much of it, has been realized. We're also coming into the end of a year in a very high corporate earnings and sales environment. So whether you take all of earnings and sales or you take out volatile sectors like banks and energy sectors, the economy toward the end of the year, particularly for corporates was doing very well.

You had an improvement in mining investment last year as energy prices improved. And in the manufacturing sector, you didn't actually have an increase in plant investment in the U.S. with some of the industries supposedly coming back onshore, but you did have a significant increase in use of existing capacity so far of the manufacturers that are out there.

And then probably an unheralded part of the improvement in the global economy, which the administration can't really take credit for, is we've had such a strong upswing in the global economy, since the spring of 2016. So that's about 18 months old. The falling dollar has allowed China to isolate its economy from the rest of the world. The Olympics coming up in Tokyo combined with the stabilization of the housing market has improved Japan's economy.

And Europe's economy after many years of downturn has improved to the point where corporates are actually complaining that they can't find enough labor in Europe to fund their future expansion.

And the U.S., particularly with the dollar falling, has been able to leverage off this improvement in the global economy, which is quite sustained now, and that's led to some improvement in the U.S. economy.

The final factor that I wanted to mention that I had initially in the same trend is a significant improvement in the U.S. housing market. So that's one area that I don't worry that much about, because towards the end of last year, really for about a year now, you've had a movement back toward household formation. So that's people instead of -- and not only have -- has household formation increased, people going into new homes from larger households, if you like, but more of that has happened for ownership rather than rental. And a lot more of that has happened for younger people and lower income people.

So in the last year or so, as you get toward the point where the wealthier and older people have kind of got into their houses, you're getting to the point now where lower income and younger people are starting to form houses, in which they're going for ownership rather than just rental. So that's a good thing.

And also, there has still -- continues to be an under-build of houses. So the number of vacant houses around the country for either rental or sale is still quite low. And it would suggest that if the expansion continues, you've got some more upside and construction of housing single -- both single family and even, to some degree, multi.

Then when you start thinking about the future, what I worry about is we're eight and a half years into an economic expansion. And we're having an unprecedented stimulus to the economy coming out of tax cuts, spending increases, even before the infrastructure program is announced today. And so that gets you into a high pressure economy toward the end of a business cycle, where the labor market is very tight. And central banks around the world are unwinding their support for the markets adding less liquidity provision going forward.

And so what you end up with is a higher risk potentially low reward situation in the economy. Now, a lot of economists have said that because of all of the stimulus, the economy can grow potentially as high as three percent this year.

I'm a little skeptical about that. I think that because of the demographics that are continuing to work on the economy, probably the potential growth rate is still fairly close to two percent. So what you're going to get with this big stimulus is what they call crowding out, so interest rates have to go up. You'll probably get some more inflation, which will erode the purchasing power of the tax cuts that are being given.

And also, you'll probably get a widening of the trade deficit. You can't save less and spend more through investment without having to borrow more from the rest of the world. That's almost an economic identity. So I worry about those particular things. And then some of the specifics of that tight labor markets, there are not many healthy, skilled, and short-term unemployed left in the economy right now.

At the same time though, we're contemplating cutting back on things like lottery visa for skilled workers. The savings rate in the economy has fallen below three percent, down to 2.4 percent, which is as low as it got at the end of the last economic cycle. And then as I mentioned, you're starting to get monetary accommodation unwind, not only by the Fed, which is starting to roll off its balance sheet purchases, but it's -- you're starting to see that with the European Central Bank and the Bank of Japan as well. And so again, these are the things that I worry about.

And if you go to page seven of the presentation --

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INVESTMENT DIRECTOR ROTHFIELD: -- I think in stylized fact, you can see that in the first year what this -- what the chart there does is it basically says on the right-hand side what's happened to the markets. So the S&P 500 this is just in the year to December, so it doesn't include the movements in the markets in January. You can see that S&P 500 has grown much more quickly than it did in the first seven and a half years of the expansion. Consumer confidence and also business confidence have also commensurately grown very quickly, because of this improvement in financial variables, particularly the stock market.

But on the left-hand side, you can see that the economy hasn't really done -- hasn't so far deserved the improvement in the markets. GDP growth rose by 2.4 -- GDP growth rose by 2.5 percent versus the expansion average of 2.2.

A lot of that is due to this very volatile mining sector. Jobs growth is about the same, labor force growth, and the unemployment rate fall have been pretty much the same. So what the financial markets seem to be doing is kind of bringing forward or paying forward, if you like, the expected improvement in the economy in the next 12 months. And it relies on a lot of things happening, higher productivity, increased labor force participation, international funding of our larger deficits, et cetera, without ultimately being disappointed.

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INVESTMENT DIRECTOR ROTHFIELD: And then going to page eight, what we've done in there is we've assumed that the amount of combined purchases by the three main central banks, the European Central Bank, the Bank of Japan, and the Fed, which was around $2.2 trillion in 2016 -- 2017, is coming down to about $700 billion. So about a two-thirds reduction in net purchases by central banks, which is essentially the liquidity provision over the last few years that's held down volatility in the markets.

And what you worry about on the right-hand side of that is that yes we are giving tax cuts and wage increases, but a lot of that is going to be dissipated by impact of higher interest rates on, what they call, household financial obligations ratio, the cost of servicing debt, other payments that consumers have to make because the debt market is struggling relative to the stock market.

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INVESTMENT DIRECTOR ROTHFIELD: So finishing up on page nine, what I tried to show there is that put a little bit more in the downside risk on the economy. So valuation and policy risk -- the chance -- the risk of a policy mistake, the fact that valuations are high and are expecting the economy to deliver a lot in the next couple of years, which may not happen. So I wanted to put a little bit more in that downside bucket in terms of stylized scenarios for the economy.

And, you know, a lot of economists are saying this expansion has got about two and a half years left, if you start drawing on some of the things like the labor market et cetera. But it is possible that because we've done such a large stimulus at this stage of the business cycle, it could, if anything, kind of accelerate the end of the business cycle.

CHAIRPERSON JONES: Okay. We have a couple questions.

Ms. Taylor.

COMMITTEE MEMBER TAYLOR: Yes. Thank you. I -- that was a great presentation.

You mentioned two things that I wanted to just ask about and touch on. You said lower income people and younger people are forming their own households with ownership being the majority of that. And I didn't see in here where you got that, so I was just a little curious about that.

INVESTMENT DIRECTOR ROTHFIELD: Yes, I'm sorry, the data actually came out --

COMMITTEE MEMBER TAYLOR: Afterwards.

INVESTMENT DIRECTOR ROTHFIELD: It's kind of Murphy's Law, it came out a day after this presentation went to the printer.

COMMITTEE MEMBER TAYLOR: Of course.

(Laughter.)

INVESTMENT DIRECTOR ROTHFIELD: I can get you that information.

COMMITTEE MEMBER TAYLOR: That would be great. I

INVESTMENT DIRECTOR ROTHFIELD: Okay.

COMMITTEE MEMBER TAYLOR: Yeah. Thank you.

And then my second question - and I've talked to Mr. Eliopoulos about this a couple of times - you mentioned that the risk of expansion -- corporate expansion in this country with the immigration restrictions coming up could impact that expansion, could you go into that a little bit.

INVESTMENT DIRECTOR ROTHFIELD: Yeah. Well, I think there's a couple of elements in that. Number one is if you look at the performance of the corporate sector last year kind of the wage sharer gross product is very low, profits are very high. There isn't much labor around, so why haven't these labor-saving productive investments already started to occur before we got into this kind of high pressure system where borrowing costs actually for corporates may go up, so -- and then another problem is here where does that labor come from, if we're going to be bringing jobs?

You can make the case that, you know, some of the winning states in this are going to be some of the red states in the midwest and the south, which still have a relatively high unemployment rate. But a lot of the data on the remaining workers in those states suggests that there's not much of a skill issue there. It takes a long time to create the kind of skills to make productive investments that are going to be evident.

So ultimately, you know, equity strategists say that the main effect -- the main impulse for corporate investment is ultimately expected future sales. It's not tax breaks. We've had accelerated depreciation before that hasn't had much meaningful impact on the investment rate. So there is some skepticism about there -- about whether this transfer from the debt to the corporate equity market, if you like, is actually going to spur on a lot of investment.

And again, I think that's skilled migration, how do you find the skilled workers that can engage in this kind of activity is going to be one of the issues.

COMMITTEE MEMBER TAYLOR: Do you consider that a risk?

INVESTMENT DIRECTOR ROTHFIELD: Yes, I do.

COMMITTEE MEMBER TAYLOR: Okay. All right. Thank you.

CHAIRPERSON JONES: Ms. Mathur.

COMMITTEE MEMBER MATHUR: Thank you.

Yeah. Have you looked at all sort of at the macro level at what the cost of some of these extreme weather events, be them floods, or fires in California, or combination of flooding and fires in California, and beyond, around -- I mean, there's -- it's not just -- it's not just limited to California. Have you Done an assessment of what that toll is and any sense of that?

INVESTMENT DIRECTOR ROTHFIELD: I haven't unfortunately done that. There's a lot of east coast bias in Wall Street economics. And a lot of -- a lot of the analysis of the impact on gross product is on the snowfall on the east coast. And the impact of all these events that we've had in California hasn't really been -- hasn't really been worked out. I can dig out and try and see if we can find some information on that, the impact on this particular economy here.

Usually, these events are expected to be something that pulls back growth, but there's a positive growth impact going forward, but at some point maybe the fact that, you know, in this -- with climate change and things like that, there may be a permanent constraint on growth coming from the increase incidents of this kind of weather event.

COMMITTEE MEMBER MATHUR: Yeah, I'd be interested as -- you know, not urgently. But I think it would be interesting to have a better sense of what the implications are for that, both from an economic standpoint, but sort of ongoing growth constraint.

INVESTMENT DIRECTOR ROTHFIELD: Okay.

COMMITTEE MEMBER MATHUR: Yeah. Thank you.

CHAIRPERSON JONES: Mr. Miller.

COMMITTEE MEMBER MILLER: Yeah. We talked a little bit earlier about the implications of this infrastructure stimulus that the President has announced. And, of course, the devil seems to be in the details. And some of the initial thoughts on it seem to be that while it's a very large nominal figure that one would think would have a real impact, that it sounds like maybe some of the restrictions, in terms of the administration's requirements for State and private funding, much -- too a much, much greater extent than has typically been the case.

You know, historically, the Feds would maybe kick in 80, 90 percent. And it sounds like it's almost going to flip that on its head, that it could actually kind of be a negative when we've got a lot of states -- I think we've got like 18 states or more, many of them red states, that have had the increased gas taxes and things like that to try to deal with their own infrastructure needs that they simply aren't going to have the money to do more than a match, let alone a match for the federal.

Is there any thoughts on, you know, how do we suss out the details and how they'll impact the bigger picture, or will they?

INVESTMENT DIRECTOR ROTHFIELD: I really agree with the comment that you made, which is that, you know, there's been such a buildup in prospective federal debt that the situation here seems to be to pass some of this on to State and local kind of municipal level debt funding or raising revenue, which goes to the whole issue about you can't really add to growth without these -- you know, what they call, crowding out.

And crowding out means, you know increasing things like gas charges, or something like that to try and offset the cost, because none of this stuff comes for free.

And so, you know, when you look at State and local jurisdictions, they're -- fiscally, there is a lot of question marks about whether they can afford to participate in this without raising a whole bunch of charges, which brings again some problems back to you, getting on the one hand and you're giving back on the other. So I would agree with that.

CHAIRPERSON JONES: Yeah. Thank you, John. Always enjoy your comments.

My question goes to during the last financial crisis, the Fed had a number of things in their toolbox to ward off the complete disaster. And on your chart you talk about some of the downsides. And so we see that the open market committee may raise rates three or four times this coming year, but it's still not going to be high enough to utilize to deal with a crisis again.

The quantitative easing balance sheet is still very large. So what other things are in the federal government's toolbox to ward off another or deal with another financial crisis? Because you've got low interest rates, you've got these large balance sheet balances, and so what else is there they can do to ward off another financial crisis?

INVESTMENT DIRECTOR ROTHFIELD: Right. Well, in theory, they can cut rates back towards zero -- zero to a quarter where they started the whole process at the end of 2015. They can -- they can stop, and then maybe even reverse some of the balance sheet reduction that they've done. I mean, in theory they can do that, but a lot of people are worried about the asymmetry of it, right? So it's hard to put that back on.

Another route that they're going down is to reduce regulation at the banking sector to allow small banks to lend to small businesses, et cetera in a more effective way than they have been up until now, take away some of the burdensome regulation. But to be honest, when you look at what's restraining small business, it's not lack of access to credit. It's lack of access to appropriate labor. Just haven't been able to find labor. They've had the access to credit.

So it is very difficult to think -- and it would be nice to be able to go through a couple years of growth where the Fed can fully normalize policy, so that they have some runway when the economy goes into the next downturn, but we're not there right now, which does add an element of concern.

CHAIRPERSON JONES: Okay. Thank you.

Okay. No further questions on that. Thank you again.

CHIEF INVESTMENT OFFICER ELIOPOULOS: Great. We're going to switch to the next packet of information, just a cue there, and we're going to turn to Michael Krimm, who's going to start --

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CHIEF INVESTMENT OFFICER ELIOPOULOS: -- start with a discussion on performance attribution for the total fund.

It was attachment 2 I believe. You need to get to attachment 2.

While we're waiting for that, Ms. Mathur, it's interesting. We must be thinking alike. I just actually looked up some information from the National Atmospheric and Oceanographic Organization[sic] organization, NAOO[sic} on that very topic. And actually -- and we hadn't -- we hadn't corresponded at all on this, but I almost included it in my CIO points earlier, in terms of things to look for.

But in the United States, according to their information since 1980, we've had 218 weather and climate disasters since 1980 with a cost exceeding $1.2 trillion. And that does not include -- as John was mentioning, that does not include this year's hurricane or fire related data.

So I'll make sure to get that information. What it doesn't say is the question you asked, which is, you know, what affects on growth does it have, and what effects do the future forecasts of higher and higher -- more frequent and higher magnitude events have. And that's certainly something we have been working on modeling.

Hey, I used the time.

INVESTMENT DIRECTOR KRIMM: Thanks, Ted.

Hi. I'm Michael Krimm. I'm Director of Risk and Performance in the Investment Office.

We started publishing our attribution of a total plan excess returns about a year and a half ago. And since this is still a relatively new topic that we're covering, we wanted to continue to spend a little time on it in each of these meetings.

Now, Wilshire showed you their attribution earlier this morning. And the numbers are essentially the same. They're obviously coming from the same source. We tend to -- we always compare them side by side to make sure we understand the differences. They're usually technical in nature. There is one difference in how we organize and present the results that I think I do want to highlight, so I'm going to walk you through our attribution as well today.

As a reminder, performance attribution is an analysis that decomposes the plan's excess return into its constituent drivers. So the focus is on excess return, not the total performance of the plan, and all the numbers on this page are excess, that means the performance of the portfolio relative to the benchmark.

And since presenting this view is still somewhat new, I'm going to spend a little time and go through the table in detail. And just to orient everyone, I'm going to be talking about the one-year numbers, which is the same period that Wilshire covered. And I want to start you on the very top in the gray bar, 25. That's the total excess return for the year. So that is the number that this attribution is seeking to explain. And the blue bars are the various higher level drivers that together make up that 25 basis points.

The first two sections on the table are from the public and private program contributions. And this is simply the impact of each individual program's performance on the total plan excess return. So it's the impact of the respective excess returns of those programs when measured at the level of the total plan.

And the story you see here, and again Wilshire covered this as well, you can see for the public programs we netted out flat for the year with a negative 15 basis points from global equity, offset by fixed income and a little bit from the other programs.

For the private programs, we had minus 36 basis points coming from private equity relative to its benchmark, and positive 24 from real assets.

But for this period, the real -- the bulk of the plan's excess return came from the next two drivers, which we call allocation management and public proxy performance. And I'll explain that last one in a minute. Together, these each contributed 14 basis and 22 basis points respectively. So I hope you're following them down the column -- the one-year column there on the table.

The allocation management refers to the activity of managing the relative weights to each of our public programs compared to the interim policy target weights in effect throughout the year. For this past year, most of the 14 basis points allocation management return is explained by having been slightly overweight public equities, which outperformed all other asset classes. So that is not shown on the table, but that's what drove that 14 basis points.

The last drive, public proxies, bears a brief explanation. Recall that in our policy benchmark, we specify a fixed allocation weight to our private assets.

For example, for real estate, our interim strategic allocation weight has been 11 percent of the plan for the past year. However, we cannot simply choose to go out and deploy an exact portion of the plan to a private asset class in the same way we could for public markets. These asset classes are illiquid and costly to transact in, and we're often constrained by he availability of investment opportunities meeting our underwriting criteria.

As a result, there will inevitably be differences between our held weight in private assets at any point in time, versus the precise weight specified by policy. And for the past year, we were roughly - just to continue the conversation about real estate, we were roughly two percent underweight our target allocation to real estate.

When a gap like this occurs, we naturally use what we have, which is our public assets to plug the gap. That is what we label here as proxying. Note that proxying, as we use the term, doesn't have to refer to the outcome of a formal proxy strategy for private assets. It's simply the other side of the coin of being underinvested in any given private asset class.

And since for this past year that 22 basis points, is basically explained by the fact that having been underweight real assets, we held commensurately more in the other assets particularly in public equities, which did better than the real assets real estate benchmark this year.

And so that is what explains that 22 basis points of outperformance. So -- and again, on that last driver, I just want to emphasize that -- and the reason we pulled this out in this way, that this proxying attribution driver is really an artifact of our benchmarking methodology, and it's use of fixed weights in the private asset classes. It is not that we're making an explicit investment decision to hold less real estate because, for example, we think that public equities would have outperformed this year. Rather, it's -- it kind of falls out of the investment process for those private assets.

And that really is the primary distinction, if you're going squint at, if you wanted to look at the

Wilshire attribution table. They group both this allocation management and public proxy together under the term "allocation". All we've done is separated those out.

So that's what I wanted to talk about in terms of the attribution. And now I think Eric was going to share some more thoughts on the risk environment. If you have questions.

CHAIRPERSON JONES: Okay. Before you go to the next -- yes.

Ms. Mathur.

COMMITTEE MEMBER MATHUR: Thank you so much for your explanation of this chart. I just want to understand on the public proxy, every -- let's say we're underweight a private asset class, then it -- then the -- that underallocation gets re-allocated pro rata among the rest of the remaining asset classes or are -- is there some decision about what is the best proxy in the public markets for this asset class? So, for example, if it's private equity, would we only use the equity markets or we also used fixed income?

INVESTMENT DIRECTOR KRIMM: So for this purpose, in general, for equities, we -- for private equity, we would use global equity.

COMMITTEE MEMBER MATHUR: Um-hmm.

INVESTMENT DIRECTOR KRIMM: For real assets, we're using an equal weighted mix of the plan. But really that's a decision that's made as part of the monthly strategic dynamic allocation process.

COMMITTEE MEMBER MATHUR: Okay. So there's no policy governing that.

INVESTMENT DIRECTOR KRIMM: There's not policy.

COMMITTEE MEMBER MATHUR: It is really the --

INVESTMENT DIRECTOR KRIMM: It's sort of a staff

COMMITTEE MEMBER MATHUR: -- sort of staff judgment of the team. Okay. And it's not some subset -- it wouldn't be some subset of the public equities. For example, it wouldn't be what we -- some subset that we think best matches, you know, small cap or something that best matches private equity?

INVESTMENT DIRECTOR KRIMM: No, that's not what -- that's not what it has been, yeah.

COMMITTEE MEMBER MATHUR: Okay. Thank you.

CHAIRPERSON JONES: Okay. Next.

MANAGING INVESTMENT DIRECTOR BAGGESEN: Okay. Good afternoon. Eric Baggesen, CalPERS Investment staff.

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MANAGING INVESTMENT DIRECTOR BAGGESEN: Just following on some of the comments that Ted made in relation to volatility and some of the discussion that happened during the Wilshire item today, we just wanted to just catch up on a couple of elements of this.

I guess the first thing to recognize is that there's lots of different volatility measures that roll around this organization and the reporting that we have. So, for example, the chart that we have on page 12 of attachment 2, this is basically a trailing 12-month volatility going back pretty significantly in time, so you have a lot of years of observations. And again, this is a trailing 12-month volatility. So you see as of December 31st of 2017, that number actually represented 6.7 percent.

If you look at the reporting that we have in the -- both in the consent reporting and some of the other reports attached to Agenda Item 6, you'll see that the calculated volatility coming from the Barra risk system for the CalPERS portfolio, 7.4 percent. So that's a volatility that is calculated based on actually an average of two to three years of volatility numbers.

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MANAGING INVESTMENT DIRECTOR BAGGESEN: Then if you think of the next page of this representation, or the next piece of material, what you see is we have two more volatility numbers. So we have the 7.4 percent - this is basically coming out of the Barra risk platform - and then we've got the 11.5 percent basically that came out of the

ALM exercise.

So this whole discussion of volatility can actually be quite confusing. And the -- what we use for the ALM exercise is we're using a much longer run volatility. These are calculated over approximately a 20-year period. So you can literally see how that volatility regime has changed over time. And it becomes pretty important to understand exactly what frame of reference that you're speaking about when you start looking at any one of these measures. And there is no one number that is more right or wrong than any other number. It all depends on what the purpose is.

So we use a longer term volatility, given that we're basically establishing a set of expectations for a 10-year period into the future, in contrast to the more contemporaneous measurements that, for example, are coming out of the Barra risk system, or if you look at that chart showing a trailing 12-month volatility.

We would not want to, in essence, plan on a low volatility environment, and then you walk into the kinds of events that we had over the last two weeks and suddenly that whole volatility regime could shift. So, in essence, we believe that our ALM type numbers provide us with an approximation of what we consider our sort of quote unquote normal volatility environment, which we think is more relevant for something like the long-term ALM planning.

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MANAGING INVESTMENT DIRECTOR BAGGESEN: One of the other things that we wanted to do was to point out also, as we go through exercises like the ALM work and setting of expectations, and doing calculations, optimizations, all of this sort of mathematical derivation of the conditions that affect the investment program, what we wanted to highlight with the chart on page 14 is the fact that when we establish, for example, our assumed rate of return of being six percent or seven percent, or seven and a half percent, that in essence is a central tendency of a distribution potential outcomes.

So what you've got on this page, and this is just look at investment outcomes. This isn't looking at the cash flows of the portfolio and the things that impact the actual net asset value of the CalPERS portfolio. But if you just look around a central tendency, and this is built on just looking at a six percent return number, you can see, for example, the range of possible total values for the CalPERS portfolio with a sort of two-thirds of the time probability - that 68 percent probability number - could range in five year's time from an expectation of $340 billion of value, which is a little bit less than we're currently at, to a high of 570 odd billion dollars.

So you start to see the breadth of potential outcomes that can happen. So we tend to think about these numbers and perhaps attach too much specificity to a specific measurement or a specific rate of return. There's been a lot of discussion, for example, about the shorter term one to ten year set of return expectations, which ranges around 6.1 or 6.2 percent relative to the longer term numbers that range out to seven and a half percent.

Our expectation from the Investment Office is that all of this information is so -- it is so nonspecific that we would not interpret the expectation being rational of a six percent return number for the next 10 years, and then suddenly jumping up 130 or 40 basis points from that for the following years after that time period.

We truthfully have no idea when the returns are going to be generated or the losses be generated in this distribution of potential outcomes. So we caution you to not overinterpret the specificity of some of the data that gets put in front of you.

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MANAGING INVESTMENT DIRECTOR BAGGESEN: What is important though is actually understanding the potential of downside risk. And for the Board members that have been on the Board for some time, we went through a whole exercise over the last year and a half basically digging into some of the portfolio priorities. And we identified downside risk as a priority to try to de-emphasize the downside risk, to the extent that that's possible to do.

But what you see is that if right now, and this is based on our current portfolio structure, not the new ALM exercise, or the new asset allocation that we'll be moving towards. But based on our current portfolio, you see if we replayed the financial crisis, for example, you would be looking at a potential 36 percent drawdown in that kind of an environment, where the value of the portfolio would decline by almost $130 billion. And you would then have a commensurate, if this happened in one time period, shock to the funded ratio, you would be dropping into the mid-40s to low 40 percent range on the funded ratio.

This risk is real. And this is the kind of risk that engenders from the equity portfolio that drives the majority of the risk in this portfolio. The Wilshire data today pointed out that about 85 percent of the risk in this portfolio emanates from the public equity space, and the equity- and growth-related investments that we have. So it's also private equity attached to that.

But it's just important that you as Board understand just how variable the potential outcomes can be in any specific time period. And we have absolutely no mechanism to forecast when these kinds of events could potentially his this portfolio.

So we invest into this risk with a long-term expectation that that is the way to keep the cost of funding the benefits that have been promised as inexpensive as possible. But that's the other side of that coin is the risk that's being taken in an effort to try to pursue a relatively high rate of return.

So that's basically the message that we wanted to emphasize at this point in time in the discussion and --

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MANAGING INVESTMENT DIRECTOR BAGGESEN: -- I think at this point, we can turn it over to Rob to talk about GIPS standards, or if you have any questions, I'd be happy to answer.

CHAIRPERSON JONES: No. Next

INVESTMENT MANAGER PATTERSON: Good afternoon. Rob Patterson, CalPERS, Investment Risk and Performance.

And I wanted to -- I'm pleased to announce that we now able to make the claim of compliance with the Global Investment Performance Standards, common referred to as GIPS.

And this work is a culmination of a multi-year effort, including support from the Investment Office, FINO, as well as ECOM.

And I felt I would first start by describing why it is important that we're adopting these standards, and then provide some additional details on the climate compliance.

So a little bit of background. The GIPS standards are a set of principles that define how performance is measured and reported. They're sponsored by the CFA Institute and are widely adopted by asset managers.

As a means of comparisons -- comparison, I would liken the standards to GASB from an accounting perspective. And the standards are based off of two core ethical principles, full disclosure and fair representation, which are intended to increase a level of trust and confidence people have in the investment performance information that we present.

As part of making the claim of compliance, we completed an independent verification and examination of our performance measurement and reporting processes. And that was conducted by the Spaulding Group.

The verification is somewhat analogous to an accounting audit where you go through and you review processes and controls to make sure that they're compliant with the standards. And the verification is a bit more detailed where the actual performance of the fund, as well as a benchmark, and any disclosures that we include in the compliant presentation are vetted for accuracy, and compliance with the standards.

So as part of making the claim of compliance, we will begin providing to you, as we did in this instance in your attachments, what are referred to as a compliant presentation. And from this point moving forward, we'll begin doing so on an annual basis.

So continuing to leverage that accounting analogy, the compliant presentation that I mentioned is comparable to a formal financial statement. For example, the CAFR, or the comprehensive annual financial report, the compliant presentation provides things like a standardized view of performance, important disclosures that define how it is we value things in the portfolio, and how we calculate performance, and also details on asset allocation, and the benchmark composition.

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INVESTMENT MANAGER PATTERSON: So moving on to the next slide, there's a number of benefits resulting from adopting the standards. And I would generally describe them as lending to improved credibility and comparability.

Let me explain what I mean by that. As part of adopting the standards, which are set of industry best practices, we conducted a thorough review of our documentation to make sure that they were compliant with the standards. All of that work then was then reviewed by an independent verifier and examination process to make sure that it was all compliant with those standards, lending to increased credibility and consistency of what it is we produce.

And then second, once we're able to produce that information, the hope is that we're going to have other pension plans follow on and begin adopting the standard similar to us, so that we can then have increased comparability of our performance results relative to other plans.

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INVESTMENT MANAGER PATTERSON: So I'll conclude by just sharing a little bit about what changed. And what I'd say is by and large, all of our processes and performance methodology and valuation approaches and things of that sort were consistent with the standards. There are two primary things that needed to change.

One is that we had to move the frequency of valuing or the valuation of real assets from an annual basis to a quarterly basis. And that became effective fiscal year 15-16, or July 1st 2015.

Second, we began to include INVO internal expenses in the performance that we report. And that started at the same point in time.

So I'd like to conclude by sharing that I think one of the reasons this is what I consider a big deal is that we are one of the first pension plans in the U.S. and also in the world that has adopted the standards and making the claim of compliance.

And I think what it does is it demonstrates really our leadership in the space, and also our commitment to increased transparency.

So I'll open it up for any questions.

CHAIRPERSON JONES: Yeah, we do have a couple questions. Thank you. And we applaud you for taking the initiative to continue to set the pace in this industry. So good work.

Mrs. Mathur.

COMMITTEE MEMBER MATHUR: Yeah. Thank you.

I have a question. You note that we're now evaluating -- valuing real assets quarterly. I imagine there's quite a hefty price tag associated with that. Do you know how much that costs?

INVESTMENT MANAGER PATTERSON: So the process moved from independent valuations on an annual basis. And now what we do is we receive from the managers valuations on the interim quarters.

COMMITTEE MEMBER MATHUR: Okay.

INVESTMENT MANAGER PATTERSON: So no additional costs as a result of that.

COMMITTEE MEMBER MATHUR: Okay. So it's not to -- because I was imagining doing --

INVESTMENT MANAGER PATTERSON: Yeah.

COMMITTEE MEMBER MATHUR: Okay. So that answers my question. Thank you.

CHAIRPERSON JONES: Okay. Ms. Brown.

COMMITTEE MEMBER BROWN: My question was related to cost, so thank you very much.

CHAIRPERSON JONES: Okay. Ms. Taylor.

COMMITTEE MEMBER TAYLOR: Yeah. Thank you.

I was just curious as to what the value of doing this quarterly is supposed to do? I know it's part of changing the way we're doing this under the GIPS, but why -- what's the value of that? Because we're a long-term fund, so I'm a little confused at the value.

INVESTMENT DIRECTOR KRIMM: Michael Krimm, CalPERS staff.

So the -- the difference in performance numbers by and large is not going to change. But when it matters is when there's a large movement in the asset values.

And in that case, you know, this forces the performance to keep up with essentially market conditions. That's the primary reason that they it as part of the standards.

COMMITTEE MEMBER TAYLOR: Okay. So, for example, then during the 2008 crash, it said real assets. So our real assets, our real estate portfolio, went down quite a bit. So that's what this is supposed to measure as it happens, is that what you're saying basically, almost as it happens?

INVESTMENT DIRECTOR KRIMM: That's essentially the logic. In the performance community, the basic thinking is that the more timely, the better. And the GIPS Standards Committee - this is part of the CFA Institute - shows quarterly as a compromise between the timeliness that one should be able to expect from a modern kind of private asset class investment, and the considerations that it does require, you know, a valuation or assessment of some kind.

COMMITTEE MEMBER TAYLOR: Okay. I'm not sure that answered my question.

And then we never -- and then the last -- the second part was including our internal expenses and performance, four basis points. So that's not a big deal. We don't -- it doesn't cost us a lot to do that, I imagine.

But the value of the real assets quarterly, I'm just -- I'm not quite clear on how that's really making a difference. And I know it's part of this process that we've joined and become a leader in, but I'm not quite clear on how that's helpful.

CHIEF INVESTMENT OFFICER ELIOPOULOS: I'll just jump in just quickly. So thinking about the financial crisis time period, we were -- we were very focused on the real estate portfolio at that time. And our evaluation data was very stale, you know, over a year. And we actually implemented an interim valuation just to catch up, to understand where values were falling what -- at different market -- different markets, different impacts, different subasset classes.

So it's important to have more timely assessments of the value of your portfolio. We're making commitments all the time across the real estate portfolio to but or sell, more or less office, buy or sell more or less apartments, and the staler your evaluation information is, the less precise you can be in constructing your portfolio.

COMMITTEE MEMBER TAYLOR: And so on a quarterly basis, as we move forward and something like 2008 starts to happen, we start to see the value go down, and we're able to move that more quickly is what you're saying.

CHIEF INVESTMENT OFFICER ELIOPOULOS: We just have more confidence in what our values are --

COMMITTEE MEMBER TAYLOR: Or get out of it more quickly.

CHIEF INVESTMENT OFFICER ELIOPOULOS: -- in order to make decisions.

COMMITTEE MEMBER TAYLOR: Okay. And is this just for real assets or overall?

INVESTMENT MANAGER PATTERSON: Yeah. So what we're making a claim in compliance is with our seven specific funds. And so a little bit of background there is the CFA Institute defines a firm. It's kind of one of the underlying tenets. And the idea as the firm is how you extend yourself to your market or to whom it is that you are reporting performance, ultimately who it is that's going to act that information. And so what we're making the claim to compliance with is that of the asset owner, which is the seven compliant presentations you have in the attachment, one of those being the PERF.

We're not producing any information below the top level figure at this point in time. That could be a second effort that we could pursue, but it's at the top level. The remaining, which is not yet in scope, would be an additional firm that we look to make the claim to compliance of at some point in the future. There are slightly different requirements around the additional funds. It would be the CERBT I, II, and III, and the target date funds which will do three, four years -- or valuate doing that three or four years into the future.

COMMITTEE MEMBER TAYLOR: Okay. Thank you.

CHAIRPERSON JONES: Okay. Thank you.

Does that conclude the presentation, Mr. Eliopoulos?

CHIEF INVESTMENT OFFICER ELIOPOULOS: Yes, it sure does.

CHAIRPERSON JONES: Okay. We do have a request to speak on this item.

Mr. Wylie Tollette.

(Laughter.)

CHAIRPERSON JONES: And you know the rules.

(Laughter.)

MR. TOLLETTE: I do know the rules actually.

(Laughter.)

MR. TOLLETTE: I think you need the three up there, right?

I wouldn't want to use more time than I'm allocated.

CHAIRPERSON JONES: Three is indicated.

MR. TOLLETTE: Thank you, Investment Committee, President Mathur. And congratulations Chairman Jones and Vice Chairman Costigan.

I was giving my team a hard time back in December about actually using my three minutes. And so I'm here to make good on that threat.

(Laughter.)

MR. TOLLETTE: And it's great to see everyone, all of my friends and colleagues.

I'd like to commend and support CalPERS and the Investment staff for moving to GIPS compliance. There's currently a very large disparity in performance reporting amongst the public plans in the U.S. Last year, the Pew Charitable Trusts provided a report that indicated roughly half of the states report some combination of gross and net performance. There's ten states that actually report gross performance only.

And so it's very important to understand your performance returns, because it's what you use to make future investment decisions, and to make better investment decisions. And expenses, as we all know thanks to good old Investment Belief number 8, matter. And so the incorporation of accurate expenses, including internal Investment Office expenses, current valuations, and all of the other pieces of information that go into reporting, according to GIPS, make a huge difference in the quality of the performance reporting landscape.

And for CalPERS to take this step -- I think only Ohio Teachers is the only other public plan that actually reports according to GIPS. And I'm hopeful that we see many other plans take this additional step.

So thank you to the Investment staff and good to see you all.

CHAIRPERSON JONES: Thank you, Wylie.

Okay. So that concludes the discussion on that item.

We will now to have to Revision of Real Assets Program Policy, first reading.

INTERIM CHIEF OPERATING INVESTMENT OFFICER FLYNN:

Good afternoon. Matt Flynn, CalPERS team member. I'm joined momentarily by Kit Crocker from our Investment Compliance and Operational Risk Team. Kit is going to walk you through the first read of this revision to the Real Assets Investment Policy.

Take it away, Kit.

INVESTMENT DIRECTOR CROCKER: Good afternoon. Kit Crocker, CalPERS staff. With staff support, this Committee will recall that it completed a substantial revamp of essentially all our investment policies in 2016. Staff reviews each individual program policy on a roughly annual basis for any indicated updates.

And Item 7a is a first reading of staff's proposed updates to the Real Assets Program's Investment Policy. The last round of revisions was in late 2016 and coincided with the new strategic plan. Staff in staff's view, these latest revisions are largely clean up in nature, with the possible exception of some items noted in the agenda item memo.

So the Committee has received clean and markup versions of the policy, along with opinion letters from PCA, Meketa, and Wilshire as the Board's investment policy consultants.

And at this point, this is an information item, we're looking for feedback. And with that, I'll pause for any questions, and also invite PCA, Meketa, and Wilshire to make any comments they may have.

CHAIRPERSON JONES: Okay. I see no questions from Committee members.

Wilshire, Meketa, and -- no comments

So this will come back as a second reading next month. Okay. Thank you for the report.

Okay. That concludes our agenda items, so summary of Committee direction.

Mr. Eliopoulos.

CHIEF INVESTMENT OFFICER ELIOPOULOS: I think I'll go in reverse order. So I think the economic impact of weather-related events. Gave a brief verbal response. It will take us some more work into the future to think through the economic piece. But John will work with -- work to do that. That's sounds okay. I think we committed to do that.

CHAIRPERSON JONES: Yes.

CHIEF INVESTMENT OFFICER ELIOPOULOS: The -- there was a request. I don't -- I'm not sure whether or not it was directed to provide some data on the low income and cohort and youth cohort for increased housing data on household formation.

CHAIRPERSON JONES: Yes, that's the direction. That's Ms. Taylor's request.

CHIEF INVESTMENT OFFICER ELIOPOULOS: Yes, we'll provide that.

And then lastly, I think you tabled the discussion for March whether or not to have a separate agenda item to consider --

CHAIRPERSON JONES: I'm going to consider that.

CHIEF INVESTMENT OFFICER ELIOPOULOS: Pardon me?

CHAIRPERSON JONES: I'm going to consider that.

CHIEF INVESTMENT OFFICER ELIOPOULOS: You're going to still consider that.

Okay. That was the last one that we had.

CHAIRPERSON JONES: Okay. Thank you.

Okay. Well, that ends this meeting. We will adjourn and we will go into closed session in 10 minutes.

Thank you very much for a wonderful...

(Thereupon California Public Employees' Retirement System, Investment Committee meeting open session adjourned at 2:39 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 18th day of February, 2018.

James F. Peters

JAMES F. PETERS, CSR
Certified Shorthand Reporter
License No. 10063