VIDEOCONFERENCE MEETING

STATE OF CALIFORNIA

PUBLIC EMPLOYEES' RETIREMENT SYSTEM

BOARD OF ADMINISTRATION

INVESTMENT COMMITTEE

OPEN SESSION

ZOOM PLATFORM

TUESDAY, FEBRUARY 16, 2021

9:45 A.M.

JAMES F. PETERS, CSR
CERTIFIED SHORTHAND REPORTER
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APPEARANCES

COMMITTEE MEMBERS:

Theresa Taylor, Chairperson

David Miller, Vice Chairperson

Margaret Brown

Rob Feckner

Henry Jones

Fiona Ma, represented by Frank Ruffino and Matthew Saha

Lisa Middleton

Stacie Olivares

Eraina Ortega

Jason Perez

Ramon Rubalcava

Betty Yee

STAFF:

Marcie Frost, Chief Executive Officer

Dan Bienvenue, Interim Chief Investment Officer

Matt Jacobs, General Counsel

Scott Terando, Chief Actuary

Sterling Gunn, Managing Investment Director

Pam Hopper, Committee Secretary

Arnie Phillips, Interim Deputy Chief Investment Officer

APPEARANCES CONTINUED

STAFF:

Christine Reese, Investment Director

Lauren Rosborough Watt, Investment Director

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PROCEEDINGS

CHAIRPERSON TAYLOR: I'm calling the open session of the Investment Committee to order. And the first order of business is roll call.

COMMITTEE SECRETARY HOPPER: Theresa Taylor?

CHAIRPERSON TAYLOR: Here.

COMMITTEE SECRETARY HOPPER: Margaret Brown?

COMMITTEE MEMBER BROWN: Good morning.

COMMITTEE SECRETARY HOPPER: Rob Feckner?

COMMITTEE MEMBER FECKNER: Good morning.

COMMITTEE SECRETARY HOPPER: Henry Jones?

COMMITTEE MEMBER JONES: Good morning. Here.

COMMITTEE SECRETARY HOPPER: Frank Ruffino for Fiona Ma?

ACTING BOARD MEMBER RUFFINO: Present.

COMMITTEE SECRETARY HOPPER: Lisa Middleton?

COMMITTEE MEMBER MIDDLETON: Present.

COMMITTEE SECRETARY HOPPER: David Miller?

VICE CHAIRPERSON MILLER: Here.

COMMITTEE SECRETARY HOPPER: Stacie Olivares?

COMMITTEE MEMBER OLIVARES: Here.

COMMITTEE SECRETARY HOPPER: Eraina Ortega?

COMMITTEE MEMBER ORTEGA: Here.

COMMITTEE SECRETARY HOPPER: Jason Perez?

COMMITTEE MEMBER PEREZ: Here.

COMMITTEE SECRETARY HOPPER: Ramon Rubalcava?

COMMITTEE MEMBER RUBALCAVA: Here.

COMMITTEE SECRETARY HOPPER: Shawnda Westly?

COMMITTEE MEMBER JONES: Excused.

CHAIRPERSON TAYLOR: Sorry, I was muted.

COMMITTEE SECRETARY HOPPER: Betty Yee?

COMMITTEE MEMBER YEE: Here.

COMMITTEE SECRETARY HOPPER: Madam Char, all is in attendance. Shawnda Westly excused.

CHAIRPERSON TAYLOR: Thank you, Pam.

So next order of business is election of Chair and Vice Chair. Election of chair, I'm going to hand over the gavel to David Miller.

VICE CHAIRPERSON MILLER: Okay. Thank you, Ms. Taylor.

Okay. I'll call for nominations for the Chair of the Investment Committee. I see Mr. Jones.

COMMITTEE MEMBER JONES: Yeah. I would like to nominate Theresa Taylor for Chair of the Investment Committee.

VICE CHAIRPERSON MILLER: Okay. I have Ms. Taylor nominated.

Do I hear any other nominations?

Any other nominations?

And a third time, any other nominations?

Seeing no other nominations, I think Ms. Taylor is selected by acclamation.

CHAIRPERSON TAYLOR: I think we still have to have a voice vote.

VICE CHAIRPERSON MILLER: Do we have to have a vote? Okay. So let's have a vote. Ms. Hopper, if you would call the roll.

COMMITTEE SECRETARY HOPPER: Margaret Brown?

COMMITTEE MEMBER BROWN: Aye.

COMMITTEE SECRETARY HOPPER: Rob Feckner?

COMMITTEE MEMBER FECKNER: Aye.

COMMITTEE SECRETARY HOPPER: Henry Jones?

COMMITTEE MEMBER JONES: Aye.

COMMITTEE SECRETARY HOPPER: Frank Ruffino for Fiona Ma?

ACTING BOARD MEMBER RUFFINO: Aye.

COMMITTEE SECRETARY HOPPER: Lisa Middleton?

COMMITTEE MEMBER MIDDLETON: Aye.

COMMITTEE SECRETARY HOPPER: David Miller?

VICE CHAIRPERSON MILLER: Aye.

COMMITTEE SECRETARY HOPPER: Stacie Olivares?

COMMITTEE MEMBER OLIVARES: Aye.

COMMITTEE SECRETARY HOPPER: Eraina Ortega?

COMMITTEE MEMBER ORTEGA: Aye.

COMMITTEE SECRETARY HOPPER: Jason Perez?

COMMITTEE MEMBER PEREZ: Aye.

COMMITTEE SECRETARY HOPPER: Ramon Rubalcava?

COMMITTEE MEMBER RUBALCAVA: Aye.

COMMITTEE SECRETARY HOPPER: Shawnda Westly?

CHAIRPERSON TAYLOR: Excused.

COMMITTEE SECRETARY HOPPER: Betty Yee?

COMMITTEE MEMBER YEE: Aye.

COMMITTEE SECRETARY HOPPER: Madam Chair, I have all ayes for the nomination of Theresa Taylor for the Chair of the Investment Committee. The motion was made -- would that be David Miller or Henry Jones?

CHAIRPERSON TAYLOR: Henry Jones.

COMMITTEE SECRETARY HOPPER: I did not hear a second on that.

CHAIRPERSON TAYLOR: Oh.

COMMITTEE MEMBER RUBALCAVA: I'll second. This is Ramon.

CHAIRPERSON TAYLOR: Okay. The second was Ramon.

David.

VICE CHAIRPERSON MILLER: Okay. Well, the ayes have it. Congratulations, Ms. Taylor. And I will return the gavel to you.

CHAIRPERSON TAYLOR: All right. Thank you, Mr. Miller. And thank you everyone for your confidence in me.

I am now taking the gavel to run the election for

Vice Chair of Investment Committee. And I am open to nominations.

Ramon.

COMMITTEE MEMBER RUBALCAVA: Thank you, Ms. Taylor and congratulations on your election as Chair. I would like to nominate David Miller as Vice Chair of the Investment Committee. Thank you.

CHAIRPERSON TAYLOR: Thank you. Mr. Miller has been nominated for Vice Chair of the Investment Committee. Are there any more nominations?

Are there any more nominations?

Third time, are there any more nominations?

Okay. I need a second for David Miller's nomination.

COMMITTEE MEMBER FECKNER: I'll second. It's Rob.

CHAIRPERSON TAYLOR: Rob seconds. And we need a roll call vote, Ms. Hopper.

COMMITTEE SECRETARY HOPPER: Margaret Brown?

COMMITTEE MEMBER BROWN: Aye.

COMMITTEE SECRETARY HOPPER: Rob Feckner?

COMMITTEE MEMBER FECKNER: Aye.

COMMITTEE SECRETARY HOPPER: Henry Jones?

COMMITTEE MEMBER JONES: Aye.

COMMITTEE SECRETARY HOPPER: Frank Ruffino for

Fiona Ma?

ACTING BOARD MEMBER RUFFINO: Aye.

COMMITTEE SECRETARY HOPPER: Lisa Middleton?

COMMITTEE MEMBER MIDDLETON: Aye.

COMMITTEE SECRETARY HOPPER: David Miller?

VICE CHAIRPERSON MILLER: Aye.

COMMITTEE SECRETARY HOPPER: Stacie Olivares?

COMMITTEE MEMBER OLIVARES: Aye.

COMMITTEE SECRETARY HOPPER: Eraina Ortega?

COMMITTEE MEMBER ORTEGA: Aye.

COMMITTEE SECRETARY HOPPER: Jason Perez?

COMMITTEE MEMBER PEREZ: Aye.

COMMITTEE SECRETARY HOPPER: Ramon Rubalcava?

COMMITTEE MEMBER RUBALCAVA: Aye.

COMMITTEE SECRETARY HOPPER: Shawnda Westly, excused.

CHAIRPERSON TAYLOR: Excused.

COMMITTEE SECRETARY HOPPER: Betty Yee?

COMMITTEE MEMBER YEE: Aye.

COMMITTEE SECRETARY HOPPER: Madam Chair, we have all ayes, Shawnda Westly excused. Motion made by Ramon Rubalcava, second by Rob Feckner for the Vice Chair of the Investment Committee, David Miller.

CHAIRPERSON TAYLOR: Congratulations, Mr. Miller, for your election to Vice Chair.

I believe that at this point now we are going to recess into closed session for Items 1 and 2. So at this -- before we go, I just want to note for open session, I have a medical procedure. I will be handing over the gavel to David for the rest of the day for Investment Committee. I will be back for all meetings tomorrow and the next day.

But at this time, Board members will exit this open session and connect to the closed session. To the members the public watching on the livestream, the open session Investment Committee meeting will reconvene following the closed session.

So thank you, everybody. We'll see you at -- well, David will see you in closed session. Thank you very much for electing me.

VICE CHAIRPERSON MILLER: Yeah. Thank you for electing me. I appreciate the support. And thanks -- thanks for nominating me, Ramon.

(Off record: 9:51 a.m.)

(Thereupon the meeting recessed into closed session.)

(Thereupon a lunch recess was taken.)

AFTERNOON SESSION

(Thereupon the meeting reconvened open session.)

(On record: 1:02 p.m)

VICE CHAIRPERSON MILLER: I think I will go ahead and call the open session of the Investment Committee to order. And, Ms. Hopper, if you would call the roll, then we'll see if we've got everybody.

COMMITTEE SECRETARY HOPPER: Theresa Taylor?

VICE CHAIRPERSON MILLER: Excused.

COMMITTEE SECRETARY HOPPER: Margaret Brown?

COMMITTEE MEMBER BROWN: Here.

COMMITTEE SECRETARY HOPPER: Rob Feckner?

COMMITTEE MEMBER FECKNER: Good afternoon.

COMMITTEE SECRETARY HOPPER: Henry Jones?

COMMITTEE MEMBER JONES: Excused.

COMMITTEE SECRETARY HOPPER: Matthew Saha for Fiona Ma?

ACTING COMMITTEE MEMBER SAHA: Present.

COMMITTEE SECRETARY HOPPER: Lisa Middleton?

COMMITTEE MEMBER MIDDLETON: Present.

COMMITTEE SECRETARY HOPPER: David Miller?

VICE CHAIRPERSON MILLER: Here.

COMMITTEE SECRETARY HOPPER: Stacie Olivares?

COMMITTEE MEMBER OLIVARES: Here.

COMMITTEE SECRETARY HOPPER: Eraina Ortega?

COMMITTEE MEMBER ORTEGA: Here.

COMMITTEE SECRETARY HOPPER: Jason Perez?

COMMITTEE MEMBER PEREZ: Here.

COMMITTEE SECRETARY HOPPER: Ramon Rubalcava?

COMMITTEE MEMBER RUBALCAVA: Present. Here.

COMMITTEE SECRETARY HOPPER: Shawnda Westly?

VICE CHAIRPERSON MILLER: Excused.

COMMITTEE SECRETARY HOPPER: Betty Yee?

COMMITTEE MEMBER YEE: Here.

COMMITTEE SECRETARY HOPPER: Mr. Chair, we have all in attendance with Theresa Taylor, Henry Jones, and Shawnda Westly having excused.

VICE CHAIRPERSON MILLER: Okay. Thank you, Ms. Hopper.

Our first order of business is Item 4, approval of the February 16th, 2021 Investment Committee timed agenda. What's the Committee's pleasure?

COMMITTEE MEMBER BROWN: Move approval.

VICE CHAIRPERSON MILLER: Okay. It's been moved by -- who was that?

COMMITTEE MEMBER BROWN: Ms. Brown.

COMMITTEE MEMBER FECKNER: Second.

VICE CHAIRPERSON MILLER: Ms. Brown.

COMMITTEE MEMBER FECKNER: Second.

VICE CHAIRPERSON MILLER: And seconded by Mr.

Feckner.

Okay. I will call for the question. Pam, would you please call the roll, Ms. Hopper.

COMMITTEE SECRETARY HOPPER: Margaret Brown?

COMMITTEE MEMBER BROWN: Aye.

COMMITTEE SECRETARY HOPPER: Rob Feckner?

COMMITTEE MEMBER FECKNER: Aye.

COMMITTEE SECRETARY HOPPER: Henry Jones, excused.

VICE CHAIRPERSON MILLER: Excused.

COMMITTEE SECRETARY HOPPER: Matthew Saha for Fiona Ma?

ACTING COMMITTEE MEMBER SAHA: Aye.

COMMITTEE SECRETARY HOPPER: Lisa Middleton?

COMMITTEE MEMBER MIDDLETON: Aye.

COMMITTEE SECRETARY HOPPER: David Miller?

VICE CHAIRPERSON MILLER: Aye.

COMMITTEE SECRETARY HOPPER: Stacie Olivares?

COMMITTEE MEMBER OLIVARES: Aye.

COMMITTEE SECRETARY HOPPER: Eraina Ortega?

COMMITTEE MEMBER ORTEGA: Aye.

COMMITTEE SECRETARY HOPPER: Jason Perez?

COMMITTEE MEMBER PEREZ: Aye.

COMMITTEE SECRETARY HOPPER: Ramon Rubalcava?

COMMITTEE MEMBER RUBALCAVA: Aye.

COMMITTEE SECRETARY HOPPER: Shawnda Westly.

VICE CHAIRPERSON MILLER: Excused.

COMMITTEE SECRETARY HOPPER: Betty Yee?

COMMITTEE MEMBER YEE: Aye.

COMMITTEE SECRETARY HOPPER: Mr. Chair, we have all ayes. Motion made by Margaret Brown, second by Rob Feckner.

VICE CHAIRPERSON MILLER: Okay. The motion carries. Thank you, Ms. Hopper.

Next item, 5, the Executive Report from the Interim Chief Investment Officer's briefing. And I'll turn that over to Mr. Dan Bienvenue.

INTERIM CHIEF INVESTMENT OFFICER BIENVENUE: All right. Thank you, Mr. Chair. Good afternoon. Good afternoon, members of the Investment Committee. And congratulations, Mr. Vice Chair. Sorry on your reelection as Vice Chair of the Investment Committee. And also congratulations to Ms. Taylor on her reelection as Chair of the Investment Committee. It's a pleasure to be with you here today, our very first Investment Committee of 2021.

And as we start the new year, I'm certainly hopeful that the vaccine will continue to progress helping us in this fight against the virus. Certainly, that's the case in terms of public health and safety. But in addition, it will be nice when we can have our Investment Committee meetings in person in the auditorium again as opposed to this virtual environment.

But until that time, and as we've done since the start of the pandemic, our top priority remains the health and safety of our team members and their families, all the while steering the portfolios, both the PERF and the affiliates, through these continued challenges and opportunities.

It's really hard for me to believe that we're nearing the one year anniversary of pivoting to this fully remote environment. I'm recalling, of course, that it was the weekend before March Board week of 2020 that we went remote, and, of course, we've been remote since.

And I really continue to be impressed by the ongoing communication, efficiency, productivity, and team work observed really every day across the enterprise under Marcie's leadership. And I'm also just so appreciative and proud of the hard work of our Investment team navigating the many hurdles and challenges we're facing day after day, both in the markets and portfolios, and also in the running of the business.

And I'd be remiss if I didn't thank you, the Board, also for the ongoing support that you've shown, certainly not only to me, but to the whole Investment

Office. We're working through all of these challenges together and your support, of course, is critical.

So before we turn to today's agenda, I wanted to quickly highlight the portfolio, as well as provide a reminder of the calendar year-end performance that Marcie covered at the education day in January. Please recall that for the one-, three-, five-, and ten-year returns through the end of December that we're above our assumed rate of return of seven percent, coming in at 12.4 percent for calendar year 2020, 8.4 percent for the three years to the end of December, 9.7 percent for the five years, 8.4 percent for the ten years.

Now that said, for the 20 year number, we remain below seven percent, coming in at 6.3 percent with this performance still reflecting the effect of the Great Financial Crisis. And having all of these varied numbers across the very time periods really just underscores our nature as long-term investors and our need to stay focused on the long term, given the alignment with our liabilities.

Now, frankly, we've started 2021 with continued buoyant equity markets with the S&P up nearly five percent, developed international equity markets up four percent, and emerging markets leading the way up nearly 11 percent. On the bond side, returns are more challenged, but that's what we expect from a diversified portfolio with treasuries off approximately five percent and spread products also being off about a percent.

So to me, all of these numbers just reinforce a few main things: First, our focus on the long term seeing across the short-term gyrations in markets; second, our focus on the total portfolio and the diversification of that portfolio as it's the total portfolio that pays the benefits; and third, our need to stay laser focused on portfolio positioning and performance, given the ongoing market volatility and the challenging environment that we're in.

Now, with relative returns, we continue to slightly underperform our benchmark over many time periods. And this remains a significant area of attention for the team and another reason why we continually need to stay laser focused on portfolio positioning and performance. And we'll certainly be taking a deeper dive into that performance in March when we cover the trust level review.

At the end of December, total assets under management for the Public Employees' Retirement Fund, or the PERF, is approximately $445 billion. And for the affiliates, it's approximately $24 billion, taking us to nearly $470 billion in total. And regarding positioning, equity risk continues to be the PERF's primary risk driver. And as Sterling and Christine will discuss ALM item, this is something we're looking very closely at.

Now we know that getting to our assumed rate of return requires risk taking, but we do want to be sure that we're taking risks prudently and only where we believe we'll be commensurately compensated for taking those risks.

And with that quick commentary, I'll move to an overview of today's agenda. We lead off with the action consent item, where we're requesting approval of the Investment Committee delegation. Now, please note that this is the same version of the delegation that was approved at the very last Investment Committee in November, but we have it here again to get into cadence with the delegations of the other Board committees.

Then we'll move on to our two information items that are on the agenda. First, and as a result of a request in November, Lauren Rosborough Watt from the Research and Strategy Group will provide us with a financial markets and economic update.

And then for the second item, we'll have Sterling Gunn and Christine Reese present the foundational elements of asset liability management. They'll provide us with a timeline, concepts, and framework as we kick-off our every four year ALM cycle. Please recall, of course, that one of our ten Investment Beliefs is the strategic asset allocation is the dominant determinant of portfolio risk and return. So this ALM work represents one of our most critical bodies of work together for 2021.

And finally before I close, I just need to acknowledge some very sad news from the weekend with the passing of one of the very talented investment thinkers in the pension industry, as David Villa, State of Wisconsin Investment Board, or SWIB, passed away over the weekend. David was both a talented investor and a caring human being and he'll definitely be missed.

Mr. Vice Chair, that concludes my opening remarks. And with that, I'll turn it back to you to take any questions or to take us through the agenda.

VICE CHAIRPERSON MILLER: Thank you. I'm not seeing any questions, so I guess we'll move on.

Item 6 is an action consent item for review of Investment Committee Delegation. What's the Committee's pleasure?

COMMITTEE MEMBER RUBALCAVA: I would move the motion.

VICE CHAIRPERSON MILLER: Okay. Moved by Mr. Rubalcava. Is there a second?

COMMITTEE MEMBER FECKNER: (Hand raised.)

VICE CHAIRPERSON MILLER: Seconded by Mr. Feckner.

Any discussion?

Okay. I'll call the question. Ms. Hopper, would you please call the roll?

COMMITTEE SECRETARY HOPPER: Margaret Brown?

COMMITTEE MEMBER BROWN: Aye.

COMMITTEE SECRETARY HOPPER: Rob Feckner?

COMMITTEE MEMBER FECKNER: Aye.

VICE CHAIRPERSON MILLER: Rob is an aye. I see him indicating.

COMMITTEE SECRETARY HOPPER: Okay. Henry -- Henry Jones?

VICE CHAIRPERSON MILLER: Excused.

COMMITTEE SECRETARY HOPPER: Matthew Saha for Fiona Ma?

ACTING COMMITTEE MEMBER SAHA: Aye.

COMMITTEE SECRETARY HOPPER: Lisa Middleton?

COMMITTEE MEMBER MIDDLETON: Aye.

COMMITTEE SECRETARY HOPPER: David Miller?

VICE CHAIRPERSON MILLER: Aye.

COMMITTEE SECRETARY HOPPER: Stacie Olivares?

COMMITTEE MEMBER OLIVARES: Aye.

COMMITTEE SECRETARY HOPPER: Eraina Ortega?

COMMITTEE MEMBER ORTEGA: Aye.

COMMITTEE SECRETARY HOPPER: Jason Perez?
COMMITTEE MEMBER PEREZ: Aye.
COMMITTEE SECRETARY HOPPER: Ramon Rubalcava?
COMMITTEE MEMBER RUBALCAVA: Aye.
COMMITTEE SECRETARY HOPPER: Shawnda Westly?
VICE CHAIRPERSON MILLER: Excused.
COMMITTEE SECRETARY HOPPER: Betty Yee?
COMMITTEE MEMBER YEE: Aye.
COMMITTEE SECRETARY HOPPER: Mr. Chair, I have a motion being made by Ramon Rubalcava, seconded by Rob Feckner for Item 6A, Review of the Investment Committee Delegation. And the votes are all ayes.
VICE CHAIRPERSON MILLER: Okay. The ayes it. The motion passes. Thank you, Ms. Hopper.
We'll move on to item 7, an information item on total fund, financial markets, and economics update. So I'll call on Lauren Rosborough Watt to present.
Welcome.
INVESTMENT DIRECTOR ROSBOROUGH WATT: Hello. Thank you very much.
INTERIM CHIEF INVESTMENT OFFICER BIENVENUE: Mr. Miller?
VICE CHAIRPERSON MILLER: Oh.
INTERIM CHIEF INVESTMENT OFFICER BIENVENUE: Sorry. I was just making sure we had Lauren

here, but it sounds like we do. Jared, thank you. You were ahead of me.

Just really quickly --

VICE CHAIRPERSON MILLER: Sure.

INTERIM CHIEF INVESTMENT OFFICER BIENVENUE: I'll just mention that this item is really intended to provide an economic and market backdrop within which we're taking -- undertaking our strategic asset allocation work in the ALM. Recall that a lot of what we're focused on today is the ALM and certainly the next item will be a deep dive.

So Lauren and her team are some of the people really thinking critically about the economy and markets and the risks and opportunities that those markets present. So Lauren, over to you to take us through the item. I just wanted to kind of give that preamble to let the Board know kind of the purpose of this item.

So, Lauren, over to you.

INVESTMENT DIRECTOR ROSBOROUGH WATT: Thank you, Dan. Hello, everyone. Before I begin, I did want to ask that if you see in the presentation, there are some charts that have no legends. There was an erroneous PDF originally outdated and the new one is currently available on the website. So please feel free to download the latest version.

What I'm going to do today is talk an economic and financial market update to the period to September -- from September 2020. And then in the March Board I'm going to talk around how economics feeds into risk and then through the ALM process.

You know, when we look back over the last five months, the U.S. economy has moved in a somewhat bumpy but still positive fashion. You know, thinking about the last three months of 2020, the pace of growth in many macroeconomic variables weakened as COVID-19 infection rats increased, both in the U.S. and also globally.

In the U.S., there were various compounding uncertainties, including, but not limited to, the expiration of the Payment Protection Program, or the PPP, the tenant eviction moratorium, Fed loan programs, and the cessation extended unemployment benefits.

This came at a time of heightened uncertainty surrounding whether there will be additional fiscal stimulus and more generally uncertainty surrounding the 2020 U.S. election outcome.

Now, credit to the dynamism of the U.S. economy, the U.S. had already bounced back dramatically from its Q2 decline. In Q2, it fell 31.4 percent quarterly on a seasonally adjusted annualized rate, and then bounced back in Q3, 33.4 percent. Now, by the end of the year, the

U.S. economy was a mere 2.4 percent weaker than the year prior.

Now I say year -- mere, because a lot of this is relative in comparison. For some other countries, the pace of the bounce back unfortunately has slowed. In the UK, it made -- an agreement with the EU in what we call the final Brexit out sort of at the last minute. But this cannot bring back the four years of uncertainty, constrained credit growth, and soft business investment as that negotiation was underway. UK GDP was recorded at nearly eight percent below its December 2019 levels in December 2020. Both the UK and the EU have seen second large lockdown. This has pushed out the recovery in both areas.

In Japan, it's entered a deflationary period as services prices weakened and are expected to remain weak under Japan's partial state of emergency. Further support is being considered. Specifically, the Bank of Japan has noted that it will debate further monetary stimulus in its March meeting.

--o0o--

INVESTMENT DIRECTOR ROSBOROUGH WATT: So the next slide you can see that as we look forward from an aggregate perspective, you know, the outlook for the U.S. does look promising. The joint partisan COVID releaf bill that was announced in December, provided a total of 908 billion U.S. dollars of direct transfers enhanced health and education aid.

Financial market prices were further boosted in January reflecting the anticipated 1.9 trillion U.S. dollar fiscal stimulus announced by the newly inaugurated President Biden. Together, if passed, will equate to over ten percent of U.S. activity or GDP.

Consequently, the anticipated boost to GDP over 2021 has brought GDP growth expectations higher. You know, today, the average analyst expects GDP to reach pre-pandemic levels by Q3 2021. And you can see that in the charts, where it's one quarter earlier than previously forecast. And indeed, some analysts forecast the U.S. will reach this level by the second quarter of this year. As result of this optimism, the S&P 500 is 17 percent above its levels at the end of Q3 and the ten-year treasury yield is six-tenths of a percent higher.

The shift higher in yields of interest rates and steeper yield curve that's the difference between long-dated interest rates and short-dated interest rates reflects both rising growth expectations, or aspirations, but also rising inflation expectations.

Part of this increase in inflation, as seen by the seven-tenths of a percent increase in the five-year break-even interest rate is responding to an arithmetic bounce back following the March 2020 decline. Part of this also result of supply-side constraints pushing up specific sectors, such as shipping costs and commodity prices, and part of it is anticipation or perhaps speculation over the inflationary impact of further U.S. fiscal spending. You know, these are the aggregate macroeconomic data and the current asset price response.

I want to end now focusing on the human side of what we experienced in the past year. You know, while the aggregate numbers look good, there are and will be, you know, notable sector adjustments occurring within economies. I'm just thinking around restaurant, accommodation, retail, some of the changes that we've seen over the last year.

Many people have withdrawn from the workforce. Fed Chair Powell reported last week that five million people have been unable to work starting the pandemic. Permanent job loss is smaller than the 2008 recession, but a substantial proportion of those unemployed have now been looking for work for 26 weeks or more. So it's important not to discount these factors, in particular, as the pandemic has a disproportionate impact on specific cohorts of households, businesses, and individuals.

Finally, recall, these data are all in the backdrop of rising COVID cases and the rates of infection have now largely reversed. So once again looking forward, some of the positives that we have is the vaccine development. You know, it was extraordinary last year the speed and a huge testament to the global commitment to curtail the spread of the virus. It's an additional reason for the optimism surrounding the outlook.

There remain risks as always, including a slow down in the rollout of the vaccine or a mutated virus impacting the livelihood. But there are upsides too. The U.S. households have a savings rate of nearly 14 percent of personal disposable income, which if deployed, could further assist in an economic recovery.

I'm happy to take any questions.

VICE CHAIRPERSON MILLER: Okay. I'm not seeing -- oh, there we go. I see the first question is from Director Rubalcava.

COMMITTEE MEMBER RUBALCAVA: Thank you, Mr. Miller. Thank you Lauren for the presentation. Although it was concise, just two slides, I thought it helped with your amplification and it also helped the introduction but then this is just the backdrop. And I understand that. And I think we were trying to convey a positive outlooking -- outlook -- positive outlook. And you did talk -- my questions were going to be what's not in -- not listed as the bullet points. But in your presentation, you did talk about the human side, you know, permanent job losses -- permanent job losses less than the last recession and also the support impact.

And that's what I want to talk to and maybe ask if it's -- what impact you think it's going to have and whether there will be more opportunity later on in March or something to get a bit more detail. For example, I wrote it down on the back of the envelope literally. I saw in an article about this Citicorp study and they're saying that racism has cost the U.S. in the last 20 years about a loss of $6 trillion. And so unless we tackle that, I think that's going to be a trend going forward.

You mentioned disproportion -- disproportionate -- uneven impact. And there is an uneven recovery. You mentioned this some -- you know, not everybody can work from home. And not everybody can -- is going to get their job back or is getting their job back. You sort of mentioned that. And so I think that's going to impact our outlook, I think. I think you're talking about this K recovery. I'm still not sure what the K means. And you did mention the stimulus pack -- the stimulus initiative new administration.

But I think there's another side as to what's going to happen at the regulatory side, the SEC. I mean, there's been a clamoring for more accountability, more disclosure from the various sectors moving the economy.

So I think that's going to impact -- I think that will be part of the backdrop and expectations going forward. And also one thing that I don't think was said either by you or in the bullet points is climate change. I mean, that's something I think we can -- we see a lot of movement from many parties, including the new administration, that will be happening. And that definitely will impact the economy. I think I saw an article. CalSTRS is under engagement philosophy with, I think, it was ExxonMobil, or MobilExxon. I can't...

So anyway, I was wondering if you could speak to why those elements were not included and what -- what impact you think it will have on the economy going forward, and particularly for our work at CalPERS?

Thank you.

INVESTMENT DIRECTOR ROSBOROUGH WATT: Thank you. I think exceptionally pertinent points given where we have been and where we look like we are now, when we look forward. You know, it's one thing when we talk about macroeconomics, macro meaning large. And we tend to, as economists, think of the aggregate, so the overall level. But of course as you rightly point out, this sort of -- this looking at the top level doesn't talk around some of the changes that we're seeing underneath.

You know, the academic literature historically has focused on this aggregate level. And I recall back in 2018, we presented some material to the trust level review around the inequality. And what we have seen, the data has showed us inequality across countries has narrowed in the last four decades, but inequality within economies has been widening. And so the pandemic, you know, the global pandemic not just in the U.S., has certainly brought these trends to the forefront.

In terms of where we go and what this means, so thinking about your regulatory question, some of that is unknown for now. But certainly when we do have greater clarity, we can come back and provide you with some more information at that point.

I think quite heartening in particular is the fact that the Federal Reserve has clearly stated that inequality has held back the economy. You know, Fed Chair Powell in his Q&A -- his speech and Q&A last week said that the Fed is undertaking vigorous research to understand the situation. So they're currently assessing the situation and what some of the drivers of these trends have been, and how best to respond to it.

And also, both the Trump and Biden administrations have made it clear that supporting those most affected by the pandemic, you know, to weather the storm as it were, is a key focus. So in some respects, you know, it's heartening to know that policymakers are aware of this issue, unlike in previous recessions, and have publicly stated that they intend to attest to it. We don't have great detail, at this point in time, about the direction of that going forward.

INTERIM CHIEF INVESTMENT OFFICER BIENVENUE: And, Mr. Rubalcava, I think the only thing I would add to that, as you can tell by Lauren's commentary, it is unequivocally on our radar screen. We certainly know that the pandemic has had disproportionate impact on women, people of color. This is something that is definitely on our radar screen that we're -- that we're watching, and to Lauren's comment, and we certainly know that it's on policymakers' radar screen, which is good, because it needs to be addressed within our country.

I'll also just really quickly comment, just because I can't help myself, the K-shaped recovery, basically the way these recoveries, economists -- and I was an economics undergrad -- economists like to give them letter shapes. So something can be either V-shaped, in which case it spikes down and spikes back up. It can be U-shaped, where it goes down and stays down for a while and then come back up. It can be swoosh-shaped, which is what we've been talking about, where it kind of goes down and then it kind of starts to bounce and then flattens.

The K-shaped really speaks to just kind of the disparate response. And that is both within companies. There are some companies like leisure companies that have been just thoroughly disrupted and may or may not ever come back. And then there's others like the, you know, technology and communications companies that have bounced back strongly. So that kind of represents a K-shape.

And the same impact can happen on people where --

COMMITTEE MEMBER RUBALCAVA: So it's like a W that it's upside down? Why isn't a W then? That's what I always -- that's what I thought it was --

INTERIM CHIEF INVESTMENT OFFICER BIENVENUE: I think it.

BOARD MEMBER RUBALCAVA: -- but I wasn't sure.

INTERIM CHIEF INVESTMENT OFFICER BIENVENUE: A W is kind of double dip, right? So -- but a K is where basically some really bounce back quickly, but some are down and stay down, and so it doesn't bring them back. And that's -- that's -- again, that's the rationale for the K-shaped.

The last thing I'll comment on is on the climate change, and to your question in how this impacts the portfolio. This is unequivocally part of the -- a part of the work that's being undertaken with the ALM. That will be both within benchmarks of say public equity, and real assets, and the like, but then also sort of how do we think about that in aggregate in terms of the ALM. So the -- so all of this will be part of the ALM process.

COMMITTEE MEMBER RUBALCAVA: Thank you. Appreciate the comments to my question -- response to my questions. Thank you.

VICE CHAIRPERSON MILLER: Okay. Next, we have Controller Yee.

COMMITTEE MEMBER YEE: Thank you, Mr. Miller. Thank you, Lauren for the insights.

I have two questions. You spoke about the role of federal aid. And I wanted to get your thoughts about the impact of a, well, I guess, long talked about, but still not quite firm infrastructure bill that may be forthcoming from Washington. And just if you have any thoughts or insights about if that is imminent and what potential impact that may have.

INVESTMENT DIRECTOR ROSBOROUGH WATT: Of course, thank you. Sorry. Was that both a question from -- sorry, you said you had two questions.

COMMITTEE MEMBER YEE: Yes, and that second question was just additional insights in terms of whether you have any thoughts about how the Fed is expected to respond to this persistent low interest rate environment that we continue to find ourselves.

INVESTMENT DIRECTOR ROSBOROUGH WATT: Okay. So let me answer -- thank you very much for your question. You know, I put on my economist hat and answering these questions, you know, within that framework. The first one with respect to infrastructure, you know, the details haven't been hashed out, so I can't talk specifics. But, in general, infra -- infrastructure spending tends to increase the capacity in an economy. So -- and increasing the capacity or the supply increases what we call potential growth, so the rate at which the economy can grow over time that moves higher and faster. And that moves higher and faster without eliciting inflation pressure, because you're not hitting up to these supply constraints.

So unequivocally, depending on how it's deployed, of course, but in general infrastructure spending increases supply in the economy and therefore potential growth and also economic growth. So those are all positive factors for the economy.

With respect to the Fed in its response to the low interest rate environment, the Fed has made quite clear that it does not anticipate tightening policy. It does not anticipate reducing the pace of quantitative easing, so actively declining the size of its balance sheet any time soon.

And once again, I point back to the comments in the Q&A that Powell made last week. It was -- I thought it was very insightful. And, you know, the work that they're doing on -- with respect to inequality said it wasn't until -- post the 2008 recession, it wasn't till 2015, 2016, when some of these measures of inequality started to improve, in other words, to narrow. So it was very much not at the early stages of the recovery, but later on in the stages of the recovery.

One interpretation of this -- and, of course, we don't know, but one interpretation of this is that the Fed is more likely to want this econo -- economy and the economic growth to continue before starting to tighten policy or to start to slow it down. And that's akin to the discussion around inflation's mandate. It said that it wants inflation to be around two percent on average. And it's happy for inflation to run slightly higher. And that in itself speaks to the same effect of helping to assist the economy to move beyond the early stages, and certainly not stymying or slowing the economy down too early.

COMMITTEE MEMBER YEE: Thank you, Mr. Miller. Thank you, Lauren.

VICE CHAIRPERSON MILLER: Okay. I'm not seeing any further questions. And so thank you very much for a very insightful presentation and discussion.

And I'll kick it back to Dan to introduce our next item, which is asset -- asset liability management timeline concepts and framework.

INTERIM CHIEF INVESTMENT OFFICER BIENVENUE: All right. Thank you, Mr. Miller. And Mr. Rubalcava, I have to mention that Anne just reminded me that some of our federal priorities that we discussed on Thursday at the Board meeting include some of these inequality questions. So this will be a discussion at that -- at that point too. And thanks to Anne Simpson for the -- for the reminder.

All right. I see we've got Christine Reese and do we have Sterling Gunn with us yet? And if not --

VICE CHAIRPERSON MILLER: There he is.

INTERIM CHIEF INVESTMENT OFFICER BIENVENUE:

There he is. I see Sterling. All right. Excellent.

So as mentioned, the ALM, or asset liability management, work that we're doing this year really is one of the most critical bodies of work as the strategic asset allocation really does drive our returns. So this is really a critical body of work for 2021. And Sterling and Christine are really going to just take us through the timeline, some of the concepts and the framework as we triangulate our way to a new strategic asset allocation. So I believe Christine is kicking this one off, so Christine over to you.

(Thereupon a slide presentation.)

INVESTMENT DIRECTOR REESE: Thank you, Dan. Can everyone hear me?

(Heads nodding.)

INVESTMENT DIRECTOR REESE: Okay. Great.

So good afternoon, Mr. Vice Chair and members of the Committee. Christine Reese, CalPERS team member.

And as Dan mentioned, with me today is Sterling Gunn. He's the head of trust level portfolio management and implementation. We're pleased to be here to discuss this asset liability management agenda item.

And before we move into the slide presentation, I am going to provide some background and context around asset liability management, or ALM for short, and Sterling will then present, and then I will close out.

So asset lia -- asset liability management is a very detailed review of our assets and liabilities with the objective of balancing the expected future costs of liability payments with the expected future value of the assets in order to achieve long-term fund sustainability.

The study will include the pension fund, which we know of as the PERF, as well as the Affiliate Funds, some examples being the Judges' and Legislators' defined benefit funds, and the CERBT, which is an OPEB fund, and the newest trust CEPPT, which is a pension prefunding trust

The Investment Office and the Actuarial Office partner closely together throughout the ALM study, which is conducted every four years and takes approximately 18 months from inception to implementation of a new asset allocation.

Throughout this time, we also work closely with other CalPERS teams, such as the Financial Office, Stakeholder Relations, and Public Affairs, and others to deliver a really comprehensive ALM program. We will have several ALM-related Board presentations and a workshop, as well as stakeholder webinars throughout the year.

With this item, we will cover the ALM concepts, framework, and timelines, and future con -- future topics, excuse me, will focus on risk, capital market assumptions, reviewing the candidate portfolios, portfolio recommendation and selection, and then implementation plans.

So with that introduction, I will now turn it over to Sterling.

MANAGING INVESTMENT DIRECTOR GUNN: Very well.

Thank you, Christine. And thank you members of the Investment Committee for this opportunity to speak with you today.

So today's session is about building a shared understanding of the CalPERS asset liability management program, including, you know, its objectives, its purpose, and the framework that we're proposing to achieve accomplishing that purpose.

I should also mention that several of us this is our first experience with CalPERS asset liability management process, including myself. This process is our opportunity to review and potentially revise both the policy portfolio and discount rate. As Dan mentioned earlier, this is one of the most important investment decisions that we can make as an organization.

Now, today's session is the first of several sessions, as Christine mentioned. And today, we'll just deal with the conceptual framework of the ALM. Our framework starts with CalPERS objectives, as laid out in the Constitution of California. The framework also considers the economic, demographic, and market factors influencing these objectives and how the uncertainty of those factors creates risk for our stakeholders.

Now, since meeting the objectives requires trade-offs, the framework will develop several candidate portfolios, each striking a different balance between the objectives and the risks. And finally, since our liabilities are long term, our assumptions and candidate portfolios will be designed to align with our long-term liabilities.

At the end of the process, we can then choose a portfolio we believe, from all the candidates best aligns with meeting our objectives while also complying with our risk appetite. Now, if I were to choose a theme for this year's ALM, it's dealing with uncertainty and with uncertainty comes risk. So a lot of the ALM program focuses on risk and on trying to deal with uncertainty on preparing ourselves for what could happen and unless about predicting what might happen.

So again, as I mentioned --

INVESTMENT DIRECTOR REESE: Sterling, could I --

MANAGING INVESTMENT DIRECTOR GUNN: Yes.

INVESTMENT DIRECTOR REESE: May I interrupt just for a moment. I'm sorry. Could we advance the slide?

MANAGING INVESTMENT DIRECTOR GUNN: Not yet. Almost there.

INVESTMENT DIRECTOR REESE: Okay. Sorry.

MANAGING INVESTMENT DIRECTOR GUNN: Yep, so we could have stayed where we were, but that's fine. So anyways, as I mentioned, the ALM is about making choices linked to the sustainability of the PERF and of the affiliated plans. For CalPERS and the affiliates, sustainability is defined by these objectives that we have in the Constitution of California. So let's go to the next slide.

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MANAGING INVESTMENT DIRECTOR GUNN: And I just want to mention one item here, a transcription error on my part. It say since, "Prudent person in a like capacity". That should read, "Prudent person acting in a like capacity". So my apologies for that transcription error.

So the Constitution first reminds us of our fiduciary responsibilities and to conduct ourselves as a prudent person acting in a similar capacity. I just wanted to mention, the ALM Policy and process are an important way we help fulfill those responsibilities.

Now, of the other Constitutional objectives, and there are quite a number of them, four have direct bearing on the asset liability management process. And they are paying benefits both now and in the future, minimizing employer contributions, maximizing the rate of return on the portfolio, and minimizing risks of loss.

Now, all of those objectives depend on long-term economic, demographic, and market outcomes, again none of which are certain. So given this uncertainty, there's a risk of failing to meet one or more of these objectives.

In addition to these risks, some of these objectives are achieved at the cost of others. And this is why I mentioned earlier about the need to make trade-offs, just as a simple example, if you look at the fact we have to maximize returns and minimize risk. There's a trade-off there. The more you want returns, the higher the risk will have to be. So this is like a push-me, pull-you effect happening there. And we have similar kind of interactions with the other objectives as well.

So the ALM framework is designed to help us understand the nature of these trade-offs between the objectives, and again to strike a balance, like choosing a portfolio that both meets the objectives in a balanced way while still having acceptable risks.

So let's discuss the policy portfolio and its role in our investment strategy. Can we go to the next slide, please.

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MANAGING INVESTMENT DIRECTOR GUNN: So there are three components to an investment strategy. And we will be developing the long-term component of the policy portfolio for both the PERF and the affiliates. Now, as I mentioned, the choice of policy portfolio is the single most important investment decision we make. And it's designed to meet the long-term actuarial needs of the plan.

Our policy portfolio is designed to harvest the scalable long-term risk premia, such as the equity risk premium or a term premium. But the idea is these returns arrive in bunches. You know, you can go years without receiving much of a premium and other years where the premiums are very, very high. So a long-term investor needs the patience to simply sort of harvest these returns over decades and generations. And that's the purpose of something like our policy portfolio.

So in that sense, the policy portfolio is sort of the least sensitive component to current economic and market conditions. Yes valuations may be very, very high today and interest rates may be very, very low, but over time, those things are less important.

So the second part of our strategy then is knowing that that long-term path can be bumpy, because of what's going on in the short term, that we may have to alter the portfolio in sort of the medium term to manage more current type events going through the business cycle.

Now, it's not often we have to do that, but under, for example, extreme conditions, we may consider altering our risk profile. We may decide we could do with a little less risk over some period of time.

Another example might be if interest rates are incredibly low. And though it might be attractive in the long run to hold very, very long duration bonds, it may be that, in the more moderate term, we may make a different choice and then ease our way into what we prefer for the long run.

So then a third component is simply being opportunistic. There will be opportunities that come, where maybe there's a mispricing in the marketplace, some kind of a dislocation and we want to take advantage of that, and with the belief that we can add value. So the third component is sort of being ready. And, you know, if you think about how we have an opportunistic -- opportunistic strategy today, and its purpose again is to find these opportunities when it makes sense to invest in them in hope of adding value to the portfolio over the medium to long term.

Okay. Let me return now to the ALM process and expand on its objectives.

Next page, please.

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MANAGING INVESTMENT DIRECTOR GUNN: So the ALM objective is fairly simple for the PERF and each affiliate choose a portfolio and a discount rate. And the portfolio should have a reasonable expectation of meeting plan objectives and acceptable levels of risk. So to better understand again the trade-offs between objectives and risk, we will develop several candidate portfolios. Each candidate portfolio will have its own asset mix, its own risk-return profile, and its own balance between the various objectives.

Some of the candidates will also include leverage, some will not. And the idea again is to explore different possible portfolios and their level -- their appropriateness for the fund going forward.

And I want to just speak back to an example of, you know, just different expected returns. So differences in expected returns lead to differences in return volatility, differences in discount rates and so on. But depending on their needs, stakeholder preferences for these portfolios will differ. Some stakeholders, for example, have a strong preference for low contribution rates and so they're willing to accept a higher level of risk in contribution volatility, for example.

Now earlier, I mentioned that the ALM would help us deal with uncertainty. So what about this process? Historically, the ALM would propose a policy portfolio, and a discount rate based on a set of capital market assumptions, or CMAs.

As an example, a portfolio may even design, assuming long-term equity returns, of seven percent. Forecasting, however, is more art than science and offers no guarantees. So, in fact, one thing we know about any forecast really is that it's likely to be wrong. The only question is we don't really know how wrong.

And also, seeing as how an assumption might be wrong, we are likely to be disappointed. So an important part of the ALM process is measuring the extent of our potential disappointment. So to measure potential disappointment, the ALM will test the sensitivity of all the portfolios and plan sustainability to changes in the capital market assumptions.

To measure that sensitivity, we will construct a number of different scenarios, each having its own economic, demographic, and market assumptions. Each candidate portfolio will then be run in each of the scenarios, and the performance of all the portfolios compared. And the candidate portfolio with the best record will likely be chosen as the policy portfolio.

I ask you to maybe think of this analogy. Formula One racing, they very -- they have different race courses and each course having its own unique features. We also have several drivers. Each driver having strengths and weaknesses. And over the season, every driver will race on every course. And at the end of the season, based on points or however you want to score things, there will be a champion. That champion is likely to be the most consistent driver, even if they didn't win all of the races. So the ALM process is a bit like that Formula One season with just a few differences. First, we use simulations to test our portfolios and then we pick a policy portfolio to run in the real market.

So if I were to think about the Formula One, it would be a bit like having all the drivers run simulated races. And after all the simulated races, picking one driver, and then having that driver race on a course they have never seen before.

However, like the Formula One champion, our policy portfolio is chosen because of its overall performance in a range of scenarios and not just because of its performance in a single scenario.

Okay. So let's return to CalPERS' objectives, paying benefits, minimizing employer costs, maximizing returns, minimizing losses, and consider the risks to these objectives.

If we could go to the next page, please.

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MANAGING INVESTMENT DIRECTOR GUNN: Now, different stakeholders have different views on risk.

Beneficiaries for example are concerned about the certainty of their benefits. Employers are concerned about the level and variability of costs and their capacity to pay those costs. Employees are concerned about both level of contributions they may make and also about the certainty of their feature benefits. So all these stakeholders have some perspective on risk, but their emphasis can vary.

Our choice of portfolio has to consider all these perspectives and strike a balance that manages these risks appropriately.

Now, there are several risks to the objectives that I mentioned. One, a loss of liquidity. Without liquidity, we can't pay benefits. We mitigate that by maintaining sufficient liquidity. We have processes in place today that now monitor our liquidity and make sure we can pay benefits.

If contribution rates are too high, an employer's capacity to pay may be challenged. So that risk is mitigated by trying to drive higher expected returns. If returns are highly variable, annual contributions, although the expected outcome may be okay, may very tremendously and be too -- and those variations may be too extreme for employers. So this risk is mitigated by having a lower volatility, by having a less risky portfolio.

CalPERS strategies may be too complex or exceed our capabilities. It's not a risk we often think about, but organizations do think about these things and this risk is mitigated by basically sticking to our knitting, and developing specific capabilities, and being prudent in our risk taking.

We have long-term systematic risk factors, which over the long run offer us returns, but over the short term can be very bumpy, so we'd be prudent in our risk taking by making sure we can manage extreme bumps.

There's the risk that an extreme drawdown may diminish our capacity to mitigate future contributions. Think of the asset-to-liability ratio, currently around, what -- around 70 percent. An extreme drawdown could reduce that level significantly. Those funds are there to pay future contributions. So an extreme drawdown again can sort of impair our ability for it to pay future contributions. So again, that's mitigated by prudently managing risk.

And finally, sensitivity to assumptions. And we're going to mitigate that risk, of course, by looking at different scenarios, and again weighing and judging portfolios not by a single set of CMAs, but by a range of CMAs and finding a portfolio that we think is most consistent, or perhaps in a different way, least disappointing in terms of its potential underperformance.

Now, as mentioned earlier, the policy portfolio and the discount rate are the most important investment decisions we make. They are both key tools for managing these risks. In the following slides, just a quick summary of some of the key trends from the last 60 years or so.

So if we could go to the next slide, please.

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MANAGING INVESTMENT DIRECTOR GUNN: Now, this is a pretty busy chart, so just let me highlight a few features. On the left, the left axis measures ten-year rolling returns or the -- or the discount rate, but it measures rates. So this goes from zero percent to 14 -- to 16 percent.

On the right axis, it is the percent of the portfolio that is invested in risky assets. Currently, you can see it's around 65 percent and it's been at that plateau for about the last, oh, 25, 30 years.

So let's just talk about a few features and trends that are worth noting on this slide. So if we were to look at the treasury returns, which is the black dotted line, in the 60s ten-year rolling treasury returns were deemed adequate to fund the plan. We had no risky assets.

Since the 80s, however, if you look at that black dotted line, we can see that the treasury returns have been trending down. These are ten-year rolling returns.

Another trend. Since the late 60s, the allocation to risky assets has increased. And in the, oh, mid-90s or so, it plateaued around 70 percent. Bounced around a little bit, but it's basically been pretty steady since the mid-90s.

And that increase in risk assets was in part due to offset the declining treasury returns, so was the pursuit of earning greater returns by investing in risky assets.

Another trend, since the late 90s, despite a fairly constant exposure to risky assets, the ten-year polling PERF returns, which is the green line, has also trended down. One last trend, since the early 90s, the discount rate, which is the gray line, has declined, which keep in mind that the discount rate is forward looking. So it reflects the fact that expected returns in the future have been declining over time.

So just to summarize, for the last 30 years or so, our steady allocation to risky assets has been accompanied by an overall decline in returns. This decline in returns, if it continues, creates a number of challenges, including the potential need for increased risk taking and/or further declines in the discount rate.

Now, we'll revisit these trends in March when we discuss risk in more detail.

Next slide, please.

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MANAGING INVESTMENT DIRECTOR GUNN: Now, this slide summarizes some of the trade-offs I mentioned earlier. An example I've provided here is -- considers two different portfolios. So let's just focus our attention to the portfolio -- or to the table on the right knowing that the figures on the left are just trying to illustrate these things, if we were to see a chart.

So first, we have a portfolio of 60 percent equities and 40 percent bonds. It offers modest expected returns with moderate return variability. Next to it, we have a portfolio of a hundred percent equities, so it offers higher expected returns in the long run, but also a higher return variability and a higher potential for extreme drawdowns. So those are our two portfolios.

The choice of portfolio has implication for our contributions. So think, first of all, about higher expected returns will lower long-run, expected contributions. That's a good thing. Will stakeholders valuing lower contributions will prefer the hundred percent equity portfolio, but they have to accept both the higher variability of annual contributions and the potential for larger extreme contribution increases as the things fluctuate year to year.

Now, higher expected returns create more variable contributions and higher potential for extreme contributions. Those stakeholders -- sorry. Where -- stakeholders preferring lower contribution variability on the other hand will have to accept lower expected returns. And they would prefer the 60/40 portfolio. So they would pay a little bit more on average in contributions, but they would avoid perhaps the extreme fluctuations, that those who invested in the hundred percent equity portfolio are likely to experience.

So again, come September, the ALM will provide candidate portfolios representing a range of choices. The choices in the example here are very stylized a 60/40 portfolio and a hundred percent equity portfolio.

The portfolios we offer in September will probably be a little more sophisticated involving a wider range of asset classes, possibly using some leverage.

Now, if we could just skip to the guiding principles slide, which I think is two slides forward.

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MANAGING INVESTMENT DIRECTOR GUNN: Thank you.

So I'll just quickly go over. These are

principles that will guide the ALM. A number of them are actually related to our Investment Beliefs. The first is risk is multi-faceted. Different stakeholders are concerned about different risks. So the ALM must consider all these risks and choose a policy that strikes an acceptable balance.

Risk is more certain than returns. So as a result we tend to manage risk, taking risks that we believe will, over the long run, have a reasonable expectation of rewarding us.

Reality is going to differ from our capital market assumptions. So to be prepared for reality differing from our assumptions, we will test different assumptions. We will, at the end, have to choose one set of assumptions, but we'll have a better understanding of the sensitivity of our choice if these assumptions vary.

Discount rates are linked to risk. We saw that in the 60/40 versus 100 percent equity portfolio to some extent. As we've seen, the same level of risky assets though, has seen a decline both in actual returns and a decline in the discount rate. So our candidate portfolios will likely show some combination of reduced discount rate and/or increased risk.

Our port -- we build our portfolios based on risk and assess the return implications, including the level of expected contributions and potential for extreme fluctuations in contributions. And last, we'll choose a portfolio with acceptable risk compli -- implications and reasonable expectations of returns.

So I think, at this point, I just want to summarize some key points about the ALM. First, the choice of policy portfolio is our most important investment decision. Second, the ALM process guides and informs our choice of policy portfolio, balancing multiple objectives linked to plan sustainability.

And third and last, the ALM process helps us understand and prepare for a range of outcomes.

So I think, at this point, I can hand it back to Christine who will tell us a little bit more about the details of the program itself.

INVESTMENT DIRECTOR REESE: Yes. Thank you, Sterling. If we could go back to page eight.

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INVESTMENT DIRECTOR REESE: Perfect. Thank you.

So the ALM Program is a very large comprehensive body of work that involves many different teams at CalPERS. And so in developing the program, we've built a structural framework to manage the components and deliverables and the work is well under way.

So to ensure we align our objectives and understand our accountability, we've developed a strong governance program that includes a multi-team oversight committee and a project management structure to manage the resources, deliverables, and timelines.

Our research and analysis will include a variety of scenarios of possible actuarial and investment outcomes to incorporate the uncertainty of the future, which Sterling mentioned. In the risk analysis, we will incorporate the multi-faceted nature of risk. We'll measure that risk and balance risk one against the other. In the portfolio construction component, that's the process wherein we build and test the portfolios to produce the recommended candidate portfolios that we will bring forward later in the year. And then throughout the ALM program, we will have a focus on both education and communication with goals of a shared understanding, as well as to gain feedback and input throughout the process.

If we could move to slide 10.

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INVESTMENT DIRECTOR REESE: So here, we have the timeline. And this prospective timeline is a summary of each of the framework components and essentially lays out the ALM analytical work-product effort, as well as the communication, and education touchpoints.

I'd like to note a few points. First, the ALMAC, which is in the legend is our ALM Advisory Committee, which I referenced in speaking with regards to governance. And second, I just wanted to point out that we do -- although we do have stakeholder webinars scheduled, they aren't all represented here, so we will -- we will go ahead and add those.

So this -- the timeline will ultimately go through mid-2022. This is what we've got mapped out so far for this year. And as we pro -- as we proceed through the program, we will continually come back, and update, and reference this timeline and show our progress as we go.

So that closes out our presentation and we are happy to take any questions.

VICE CHAIRPERSON MILLER: Okay. Thank you very much for the presentations. Let me see if I have any new requests to speak. It looks like Director Ortega.

COMMITTEE MEMBER ORTEGA: Thank you. Thank you, Mr. Miller. Thank you very much for the presentation.

I was wondering if you could talk a little bit about the assumptions information that will be provided as part of the process and just thinking about seeing ten-year projections or assumptions that -- or projections that we see about -- about the -- the entire portfolio proposal, the scenarios for the entire portfolio. Will we see projections for each of the capital asset classes as well, so we'll be able to see kind of the detail behind some of the assumptions that build each of those portfolios?

MANAGING INVESTMENT DIRECTOR GUNN: That's a very good question. The answer is, yes, you will see the details. It's actually important, rather than just having some numbers, to understand what's the -- what's the story, what's the investment thesis behind the proposals that we may come forward with. So the expectation is each asset class should have a compelling reason for being included in the portfolio. And we'll get into those come June. June -- June is all about the capital market assumptions that we will be using and so you'll hear quite a bit about that.

You will also hear an awful lot about the level of uncertainty, right? So again, if we have projections that will go out 10, 20, and 30 years, a lot can happen or nothing might happen in the next 30 years. And even though we do not know the exact causes, we will test different return assumptions, different risk assumptions and see how those portfolios play out. So there will be a lot of information about the asset classes come June.

COMMITTEE MEMBER ORTEGA: Okay. Thank you.

Mr. Chair, if I could ask one follow-up?

VICE CHAIRPERSON MILLER: Certainly.

COMMITTEE MEMBER ORTEGA: I wondered if you have considered anything that looks like kind of an interactive type of information that's provided. I know some of the other large investment funds have those types of tools on their website, so you can look at, you know, sort of in an interactive way, what happens if you make different mixes of assets. And I ask the question I think a little bit about the tool that the actuarial staff have put together for members to be able to look at, okay, if they make higher contributions, what does that do to their rates?

I think it might be something to consider about whether or not you would want to make some of this information that's available as part of the process, allow people to see, okay if they -- if they had a thought about how to do something, you know, they'd have some ability to sort of test those mixes of portfolios themselves.

MANAGING INVESTMENT DIRECTOR GUNN: Okay. I think -- I hadn't actually considered that at the moment, but we'll talk that away. There are a lot of moving pieces and we'll see what we can do. I don't -- I can't tell you a timeline right now until after we've talked to people about what would be involved in doing something like that.

COMMITTEE MEMBER ORTEGA: Thank you.

VICE CHAIRPERSON MILLER: Okay. Next, I believe we have Director Middleton.

COMMITTEE MEMBER MIDDLETON: Thank you. And, Sterling, and everyone, Christine, thank you for a really good presentation and very clear as to where we were going. And in asking this question, I'm not advocating any particular position. But one of the things that we know from those of us who are employers that are paying the costs is the impact that PEPRA is going to have for us is still somewhat delayed. And in the near term of the next few years, costs for employers are going to continue to go up. But as we start to get out a decade or more, the impact of the PEPRA reforms will significantly help in terms of the cost structure.

As we start to look at the ALM process, is employer costs and the differences of costs over time for employers something that will be a part of your analysis?

MANAGING INVESTMENT DIRECTOR GUNN: So that's a good question. And I don't know, is Scott actually here today or no? Because perhaps Scott could speak to that. I'm still pretty new at how CalPERS works here, but Scott I'm sure can give you --

INTERIM CHIEF INVESTMENT OFFICER BIENVENUE:

Yeah. Let me -- let me see if I can jump in here.

CHIEF EXECUTIVE OFFICER FROST: Yeah, let's see if we can get Scott in. That would come up on the L side of the ALM, Lisa, with the liabilities. And the actuaries have created a couple of good graphics, because, you know, certainly our employers are asking this question repeatedly and I think he would be the best person to respond, if we could get him moved forward.

COMMITTEE MEMBER MIDDLETON: All right. Thank you.

INTERIM CHIEF INVESTMENT OFFICER BIENVENUE:

Yeah. So, Jared, if you have Scott Terando in the attendee queue, if you could pull him forward to the panelist queue, that would be great. And while that's happening, and Ms. Middleton, I can tell you emphatically that that is part of the -- you know, as Marcie mentioned, you know, the "A" is the assets, the "L" is the liabilities, the -- you the "M" puts them together under Michael Cohen's leadership and all of those will come together.

And Ms. Ortega, kind of back to your question around CMAs. You know, as Sterling mentioned, we definitely plan to bring capital market assumptions in June and those will be expected returns, those will be expected volatilities, and then those will be expected to -- sort of, you know, covariants is the way that assets move relative to each other. But then very importantly, like Sterling said, those are point estimates. And we know that, you know, investment management, unlike management of a lot of companies where it's very deterministic, you do 20 things and you get an outcome, investment management is much more probabilistic. And so we -- so what you'll see in this process will be sort probabilities on, and as Sterling said, kind of the -- you know, the probability of being disappointed. So you'll see all of that.

And candidly, the idea about having an analogy to the Pension Outlook Tool is terrific idea. Not one that I had thought of. No promises whether we can fire something up like that in time for this, but we'll certainly take a look at it. And it looks like Scott has joined us, so Scott maybe I'll turn it over to you to see if you can --

CHIEF EXECUTIVE OFFICER FROST: Scott -- yeah, did you -- did you understand the question Scott or did you hear the question?

CHIEF ACTUARY TERANDO: Yeah, I heard the question. And, you know, I think Sterling and Dan covered a lot of it. What I'll add is, you know, similar to the -- when you look at the -- like the Pension Outlook Tool, you know, one part of that is the -- you know, the stochastic simulations, where we look at a number of different investment scenarios. And, you know, all those scenarios are related to, you know, our current asset allocation.

During the ALM process, we're going to be performing that under the various different asset -- or different candidate portfolios that are developed from the Investment Office. So we will be looking at, you know, the variability of contributions and chance of higher contributions. You know, those are -- on some of the risks that, you know, Sterling talked about, you know, when we look at the risks, you know, we're looking at, you know, several risks. And the contribution risk and the volatility of those contributions are some of the risks that we're looking at.

And so we're going to be looking at the variability of those types of factors on several employers throughout this process and then presenting those so the Board can see under certain scenarios, you know, some candidate portfolios may have, you know, higher expected returns, but, you know, how much variability in terms of employer rates will that relate to or impact. And we'll have that displayed throughout this process.

COMMITTEE MEMBER MIDDLETON: Thank you. That's helpful. We simply know the pain is hitting us at the front end of this process. We hope the reward comes later, but we've got to be able to endure the next few years.

VICE CHAIRPERSON MILLER: Okay. Thank you. I'm not seeing anymore questions or requests to speak. But I want to check now and see whether we have any public comments, staff, Mr. Fox? Anyone in the queue for public comment?

MS. SWEDENSKY: David, I don't see anybody.

VICE CHAIRPERSON MILLER: Oh, was that --

MS. SWEDENSKY: It's Cheree.

VICE CHAIRPERSON MILLER: It's Cheree. Okay. It doesn't look like it.

Again, thank you for outstanding presentations. Continuing the trend, the team put together a great presentation. Christine and Sterling, thank you for your insights and your responses to our questions, and great presentation. If there's nothing else, I think that pretty much covers it.

And we'll adjourn this open session of the Investment Committee. I don't know if -- I just want to make sure. Are we going back -- going back to a closed session? I mean, to an open session or are we done for the day, I think? I think this is a wrap then. So without objection, we'll adjourn for the day and we'll see you all tomorrow.

Thanks, everyone. Great Job.

(Thereupon California Public Employees' Retirement System, Investment Committee meeting open session adjourned at 2:10 p.m.)

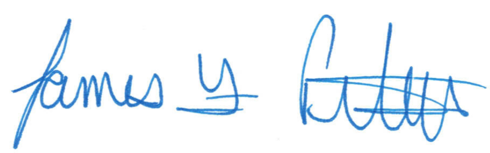
CERTIFICATE OF REPORTER

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, 2021.



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