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INVESTMENT COMMITTEE
THE RETIREMENT BOARD
COOK COUNTY AND FOREST PRESERVE
ANNUITY AND BENEFIT FUND
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STENOGRAPHIC REPORT OF PROCEEDINGS had at the audio meeting of the above-entitled matter, held at 70 West Madison Street, Suite 1925, in the City of Chicago, County of Cook, State of Illinois, on August 26,2020 , commencing at the hour of 9:30 a.m.

## APPEARANCES

BOARD MEMBERS:
Chairman Kevin Ochalla
John Blair
Stephen Hughes
Patrick McFadden
Joseph Nevius
Lawrence Wilson

ATTORNEY FOR THE BOARD:
BURKE, BURNS AND PINELLI, LTD.
BY: MS. SARAH A. BOECKMAN

## ALSO PRESENT:

Regina Tuczak, Executive Director
Margaret Fahrenbach, Legal Advisor
Fernando Vinzons, Director of Investments
Virgilio Calahong, Senior Investment Analyst
Caroline Vullmann, Deputy Executive Director
Michael Maratea, Director of Finance
Jodi Weinstein, Jr., IT Administrator

CALLAN ASSOCIATES
John Jackson
Ann O'Bradovich
Millie Viqueira
Sally Haskins
Barbara Bernard
Patrice Wisdom

MEKETA
Keith Beaudoin
David Sancewich
Ghiane Jones

RVK
Jennifer Sandberg
Tony Johnson
Cory Walsh
Lee Hansen, JP Morgan
Teddy Haines, FIN Daily

CHAIRMAN OCHALLA: This is the Investment Committee meeting of the Cook County and Forest Preserve District Annuity and Benefit Fund for August 26, 2020.

Can I get a roll call?
MS. FAHRENBACH: Trustee Blair.
TRUSTEE BLAIR: Here.
MS. FAHRENBACH: Trustee Hughes.
TRUSTEE HUGHES: Here.
MS. FAHRENBACH: Trustee McFadden.
TRUSTEE MCFADDEN: Here.
MS. FAHRENBACH: Trustee Nevius.
TRUSTEE NEVIUS: Here.
MS. FAHRENBACH: Trustee Ochalla.
CHAIRMAN OCHALLA: Here.
MS. FAHRENBACH: Trustee Wilson.
PRESIDENT WILSON: Here.
MS. BOECKMAN: For purposes of the
record, this is the Regular Meeting of the
Investment Committee. While safety precautions and
social distancing guidelines are being maintained, we have a quorum of members of the committee physically present for the meeting.

We further expect, consistent with the Open Meetings Act, that the trustees who are present will soon vote to allow other trustees not physically present to participate by phone.

Because of the uncertainty surrounding the Covid-19 pandemic, the Committee is going to adhere to the guidance provided by the Governor's August 21,2020 Disaster Proclamation, the Governor's Executive Order Number 52 , as well as the provisions of Public Act 101-0640.

For today's meeting, the public has received notice allowing the public to participate by video conference or to be physically present at the meeting.

In addition, the Fund is recording this meeting and a transcript of the proceedings will, after further approval by the Committee, be made available on the Fund's website.

May there be a motion pursuant to section 7A of the Open Meetings Act to allow trustees not able to be physically present to participate by
video and/or audio conference?
TRUSTEE BLAIR: I will make that motion.
CHAIRMAN OCHALLA: Is there a second?
TRUSTEE MCFADDEN: Second.
CHAIRMAN OCHALLA: Having been moved and seconded, all in favor?
(Chorus of ayes.)
CHAIRMAN OCHALLA: Opposed?
(No nays.)
CHAIRMAN OCHALLA: Thank you, very much. The ayes have it.

Trustee Wilson will be permitted to allow to remotely participate in today's meeting.

At this time $I$ would also ask if there are any members of the public that are remotely observing, would they please identify themselves for the record?

MS. TUCZAK: It appears that we have Lee Hansen from JP Morgan. We have Patrick Wisdom from Callan. Teddy Haines is a member of the public.

CHAIRMAN OCHALLA: Teddy Haines, would you identify yourself?

MS. TUCZAK: They have muted themselves.
CHAIRMAN OCHALLA: We will open the floor
to any public comment. Is there any public comment?

Hearing none, we will go to Item Number 1 is the approval of the May 27,2020 Investment Committee Minutes. Is there any discussion or do I have a motion to adopt?

TRUSTEE BLAIR: I will make the motion to adopt.

CHAIRMAN OCHALLA: Motion is heard. Is there a second?

TRUSTEE NEVIUS: Second.
CHAIRMAN OCHALLA: It is seconded.
Is there any discussion on the Minutes?
Any corrections, changes or suggestions that wish to be made?

Hearing none, all in favor?
(Chorus of ayes.)
CHAIRMAN OCHALLA: Any opposed?
(No nays.)
CHAIRMAN OCHALLA: The ayes have it. The Minutes are adopted.

Item 2 on the agenda would be our
Investment Consultant Search. We have three finalists today. The first is Callan and

Associates.
I would ask, obviously, if you have any questions whatsoever, please feel free to do so. But for any type of discussion amongst the Board, since this is a RFP process, we would hold that that in executive session and we will hold that later.

With that, would you go ahead and please begin your presentation?

MS. TUCZAK: Chairman Ochalla, Teddy Haines is with FIN Daily.

MS. O'BRADOVICH: Are you ready for us?
CHAIRMAN OCHALLA: We are.

MS. O'BRADOVICH: My name is Ann
O'Bradovich. I am with Callan. I am going to start out wishing everyone a good morning and we thank you very much for the opportunity to meet with you today.

We have prepared materials to follow your agenda. I understand we have 45 minutes. We will keep to your timeline. We do encourage you to ask questions at any time.

Let me introduce the Callan team that is going to be leading this discussion and I am going
to ask the Callan members to introduce themselves when they actually start their speaking parts.

We are going to start with Millie
Viqueira. Millie is a member of our consulting group and a member of our senior management. She is going to cover the organizational matters.

John Jackson, who is consulting on your account, is going to cover the investment consulting practice section.

Sally Haskins is going to address the alternative practice, including private real estate and private equity.

And then $I$ will finish up with the service approach and $I$ am going to be your timekeeper and John is going to be the page flipper as we walkthrough the presentation.

Before we launch in, $I$ just wanted to see if there was any questions outside of the agenda that we would want to make sure that we address.

With that, again, if anything comes to mind, please feel free to ask questions.

MS. VIQUEIRA: Good morning, everyone.
And while $I$ know that a virtual meeting is no substitute for being there in person, I am very
excited to be here today and have a couple of minutes to share some of the highlights at Callan, introduce myself and speak to you about some of the things that Callan has that makes us different from our competitors.

With that, before $I$ begin, let me just introduce myself and as Ann promised $I$ would do. Again, I am Millie Viqueira. I am an Executive Vice-President with Callan and I have been with the firm for almost 30 years now so $I$ have absolutely grown up and grown old building a career at Callan and having enjoyed every minute of it. In large part because I am fortunate enough to work with great people like Ann and John and Sally and others and have the opportunity to connect with so many wonderful clients like yourself.

I am thrilled to be here. Before I ask John to turn to the next slide, I want to thank you for being such a valuable client to us for so many years now. I know you have worked with us since 2011. We are exceptionally proud of the fact that we can not only bring in clients like you but work closely with you, do lots of good work, and hopefully after you have had time to review the
various candidates today, we will continue to build on that success and do some more great work going forward.

So with that $I$ am going to try and stay within my ten minute allotment. And, John, if you could flip to Page 5 of the deck.

I just want to highlight a few things that make us different. I know that you have worked with us for a long time. Many of you may know of this, but we find that often times we do a not a particularly good job of really tooting our own horn when we are working with clients. I want to touch on a couple of things that we believe really do make Callan very special.

First and foremost is really the independence and the stability of the firm. Those are two different things that $I$ think in this environment they are particularly important.

As you know, we have always been employee owned. When $I$ joined Callan 30 years ago, there were maybe ten shareholders. We committed a long time ago to remain independent and to grow our employee shareholder base. So right now we are fortunate enough to have almost half of our
employees own some piece of our company and we're committed to expand that.

So this year in the fall we will be increasing our employee ownership base from the current 93 to just under a 100. And we have every intent of every year combing through and offering our associates who have expressed a commitment to consulting and to Callan to offer them that opportunity.

So it has been a wonderful opportunity for our employees to be a part of Callan, to feel as though they are truly invested in what we do in our success and more importantly that we are all working towards the same goal to support our clients. At the end of the day that is the only reason that we exist and if we can't do that well, our existence would very much be called into question.

I also talked about stability. We have always managed the company incredibly conservatively from a financial perspective. Our growth chart is very modest. We have never taken on debt.

Again, in this environment $I$ am excited
to be able to say given all of the stresses that we are all working under for the last six, seven months we are financially stable. We have not had to lay anyone off. We don't have any plans to lay anyone off. We have not had to seek an outside partner or outside financing to keep our operations going and to continue to grow.

So much so that we are in a fortunate position of having added seven new employees since the beginning of this year.

All of those resources as you know are really geared toward supporting the work that we do for folks like you.

We have added people in the private markets group and in the back office in our operational area to make sure that we are working closely with all of you, that we are delivering the services that we need to deliver in a way that is timely, that is exceptional and that is best in class.

We talk a lot about experience and we have some numbers on Page 5. From my prospective, the fact that we have 400 clients is not particularly important. I think that what is
important is that we have a tremendous amount of experience working with a breath of client type and client sizes.

As you know, the public fund world has always been a very critically important part of our business. We have always been committed to serving clients like you. We understand the enormous stresses that you are under in terms of funding, in terms of growing and doing the absolute best work that you can to support your participants and your associates and your colleagues as they approach retirement. We get it.

Page 6 , which I won't flip to right now, certainly has a whole list of some of the clients that we work with, including those in the Chicago area.

We have 122 public fund clients.
Certainly, an enormous amount of experience. I think the important takeaway here is the average public fund size is 9 billion. We have funds that are much smaller and we have funds that are much larger. But the key takeaway is that we understand where you are coming from and we have the resources to be able to support you and understanding that
the larger pool of assets that we work with is very close to that average public fund size of 9 billion dollars.

We don't take for granted the size and scope or the importance of your work and your responsibilities in the greater Chicago area.

In terms of experience, going back to Page 5, John, please. So I mentioned that $I$ have been with Callan for 30 years and $I$ am not an anomaly at Callan. John and Ann are still relative newcomers at Callan and they have been with us for quite sometime as you know.

There are plenty of people at Callan who are really committed to the work that we do and supporting the clients that we work with over time. We're very, very proud of that.

The benefit to you is really that you work with a highly experienced team of consultants, who are stable. They understand your issues. They understand your culture. They understand some of the hurdles and roadblocks and goals and objectives that you have in mind and are able to provide not only that forward thinking solutions for those goals and objectives, but also understand where you
have come from and that historical prospective. We find that often is very, very important to the clients that we work with.

And then, lastly, $I$ will just touch on our resources. I know that you have lots of experience and lots of interactions with a whole host of people at Callan, including Sally, our capital markets team, our private markets team, our private custody team. Sobeit that $I$ just want to underscore that we get that the world is incredibly complicated and that we have to be positioned to address all of those needs in not just a professional manner but in an expert manner.

So we are super proud not only of people like Ann and John, but certainly all of the people that we have to support us in the work that we do every day, who partner with us every day to be able to expertly partner with you.

Research and education. After $I$ speak to this, I will let John pick it up. Research and education is one of the key tenants at Callan. We know that we have been fortunate enough to have several of you participate in the Callan College and many of our institute events.

We have worked hard again there to make sure that we have pivoted seamlessly to this virtual world.

We have a Callan College session scheduled for October. All being done virtually. We want to make sure that our clients understand what we are talking about. That they have a vested interest and they have an opinion in terms of what we are recommending and we work hard to make sure that we provide that to each and every one of you. We think that your work is better, is stronger, to the extent that we are all working in partnership.

And the last thing that $I$ will touch on in diversity and inclusion, $I$ probably should have talked about that when we talked about the employee makeup at Callan, but $I$ don't want to close without a comment there.

As you know diversity and inclusion has always been an integral part of what we do and how we are structured and we're proud that over half of our management committee is made-up of women and minorities. Most of our regional offices -- only the San Francisco office is run by a man. Every other one is run by a woman. We're very excited
about that.
We also recognize that can all change very quickly and that we, as a relatively small firm, we're not hiring dozens of people every year. We are hiring a handful of people every year and we have to keep our eye on that prize.

So we are going to continue to work hard, not only in terms of how we are structured, how we hire people, how we train people, how we promote people, but also how we partner with clients like you with some of the asset management community to make sure that that playing field gets more and more equal over time and that we are doing our part.

With that, I will pause. I am happy to take any questions you might have of me.

If not, $I$ will turn it back to John. But before $I$ do that, $I$ just want to thank you again for being such an important client to us since 2011.

MR. JACKSON: Thank you. John Jackson here.

I am going to spend a few moments talking about the investment consulting practice at Callan.

As you know, I am John Jackson and I am part of the Fund's sponsor group out of the Chicago office. I am one of the primary contacts with Cook County and have been with you all since 2012.

I have been working in the financial industry for about 30 years. 20 years on the institutional consulting side.

In that period of time, I have worked with a lot of public funds that experience the same issues that you face.

So, in fact, in your decision today you are encountering some of the same questions that $I$ did when $I$ joined Callan in 2012 in terms of why Callan.

Again, my reason for joining the firm was an organization that has a legacy of over four decades of focused consulting practice with the best resources that is only available to a large firm and yet we maintain a small firm philosophy of putting clients first.

With that $I$ am going to turn Page 8, this is the four pillars of our process. You will see the four boxes.

The top left strategic planning. We
think this is the most critical decision made by trustees in terms of establishing the success for a long-term investment program.

Asset allocation, liability, policy, constructing that is certainly the key. Once that is determined, the next step in the process is plan implementation. Filling out the boxes in the broad asset categories, if you will, determining what managers, what biases should be introduced with respect to the implementation.

This also includes ancillary services like who is your custodian. Are they providing the information in a cost effective manner as well as providing fee and cost surveys and analysis.

Then we drop down to monitoring and valuation. We have our own database. Again, the organization when it was founded in 1973 the bedrock was performance reporting and that continues to be the case. While we avail ourselves of publicly available resources, we think it's important to maintain our proprietary database.

And then lastly there we touched on research and education, which is an important component. We think it helps clients and helps
employees. No better way to be comfortable with this subject matter then have to present it to a group.

With that, $I$ am going to turn to the next slide. On Slide 9 , you see what has made us successful. Certainly, it is not a standalone effort. So when we are talking about working with our clients in collaboration that we can deliver customized solutions.

It extends not only to the client but organizational wide. While we have a good structure and a good culture, at the end of day our greatest resource are the people that go up and down the elevators every day and we have created a corroborative environment. We all work together well.

In terms of customization, we don't have a cookie cutter approach. And you can see this in terms of the allocation that we developed for Cook County and Forest Preserve. You will see that the Cook County has an allocation of private equity, not so in the Forest Preserve. This is a function of the lower market value and a greater strain on liquidity that doesn't coincide with the very long
term private equity allocation.
Here we're looking at a spectrum in terms of how do we go about constructing the program and what are some of the high points that we need to focus in on. Certainly governance involves creating an investment policy system that memorializes all of the work that is being done. So it is a lot of documentation, documentation, documentation. We describe it as procedural due diligence.

An investment policy statement is created to reflect the roles and responsibilities of the members of the delivering team. Whether it is staff or trustees or consultants or investment managers or custodians.

Again, we think this should be a streamlined document that is not a handbook. Ideally we see it as everything that is contained within the IPS that has obligations are being carried through and are being performed as stated in the IPS.

We also like to see, again, the particular attention to the risk priorities but also some unique features of plans. Dedication to

ESG for diverse metrics.

I will turn next to asset allocation. As I said earlier this is a critical decision that we feel is made by trustees. Everything else falls after that. So the success of the program is primarily driven by this. We think that asset liabilities studies is appropriate every three or five years or so. Or whenever there is some event that is triggering maybe a significant change in the investment policy or something along those lines.

Certainly, we completed an asset liability study in 2017 that was approved by the Board and the Investment Committee and then we did an update last year with a specific focus on the allocation to private equity. Again, we put this in the context of the IGA to make sure that there was sufficient liquidity. We ran a couple of different scenarios just to determine whether the 4 percent target was appropriate and how we should manage the private equity assets going forward.

I will take a pause here for a moment and see if there are any questions.

Hearing none, $I$ will press on. And our
capital market assumptions, this information may look familiar. This is a very busy chart. A lot of information on it but this is a reflection on what was brought to the Investment Committee's attention in a presentation of Jay Kloepfer, who is the head of our capital markets group, in May of this year.

And, again, it was in the wake of a tumultuous first quarter and some of the questions that were being put forward by our clients are you revisiting your long term capital assumptions.

Just to recap, we prepare capital market assumptions each year on a ten-year horizon and certainly the lower subdued expectations that we are currently experiencing raise concern about meeting actuarial assumptions. But just to put in context why are we concerned about that? We look at historically long-term 10-year has averaged about 5.9 percent. As of a June 30 th of this year it was . 66.

Again, we think that we are long-term investors, but we also think it's important to revisit those expectations, make modifications and to talk about what we see in the current investment
requirement.
This is the chart that shows the 10 -year capital market expectations or assumptions, that was presented back in May. Again, this is looking out to 2020 through 2029.

TRUSTEE WILSON: I have a question. Can you give us an example where you have helped the government or recommended to a government that they change their actuarial interest rate assumption?

MR. JACKSON: Certainly, we maintain our independence, but in terms of the impact that has come about due the asset liability studies has been, first off, to make sure that our clients and we're all on the same page that the time horizon that actuaries typically work with is a 30-year timeframe. We're looking at a 10-year.

Some of the other underlying or under paying of our expectations are different from that of the actuary.

For instance, your actuary has an inflation assumption of 2.75 and then they build on it the real return to come up to a 7.25 percent expected return.

Our inflation assumption is shorter term.

It is at 2.25. There is a 50 basis points difference just in one of the underlying.

What we try to do is make sure that our clients understand the differences in our expectations and that which you might see from an actuary.

We have also seen that relative in this particular environment, even under the Callan construct, we have seen the expected return go down.

In fact, Jay Kloepfer did some work that showed if you were to go back to 2004 and look at our 10-year projections, you could have generated a 7 and a half percent return having 50 percent allocated to fixed income.

To do that today with the 2020 projections, you would only have 4 percent in fixed income, which we don't think is again a prudent practice to load up 96 percent on equity and alternatives.

So I guess what we are preaching caution with respect to overreacting to the current environment. We're very long-term investors so if there is a disconnect between our 10-year
projection and that of the actuary's 30-year projection, we tend to focus in on where we are different and why are we different? What is the prudent course of action?

That said, we have seen actuarial
assumptions coming down across the board. I saw a piece from NASRA, which is the National Association of State Retirement Administrators, showing that the median was 7 and a quarter for an assumed rate of return. Contrast that with what had existed a decade earlier, you were looking at north of 8 percent.

So we have seen this, Trustee Wilson, as a recognition overall that the market returns are going to be more subdued for at least the next decade. But as we look out 30 years, you may see a return to a more historical market. Certainly a higher expected return than the 10 -year period. Does that answer your question?

TRUSTEE WILSON: I think I heard a little somewhat, just to make sure $I$ understand. So essentially you wouldn't have a role in the process, but if you were in the process your comments would be what your position would be and
how you would add to the discussion. Is that about right?

MR. JACKSON: Certainly, we are a
participant of the discussion as we try to take a view that in the next decade certainly returns are going to be more subdued than historically has been experienced so from that standpoint we participate in the discussion. We advise our clients and again I see it as a circle in terms of the client, the actuary consultant, all talking about what is the likelihood of meeting that actuarial assumption over the next ten years.

Certainly, we do the scenario. We are able to educate and provide information for our clients. To say, okay, if we are going to modify the actuarial assumption, by what degree do we do it and why do we do it and what are our expectations for the long-term

TRUSTEE WILSON: Okay. Thank you, John.
MR. JACKSON: Sure thing.
With that, $I$ am going to turn to the implementation here. And, again, these are what sets Callan apart is that our organization has focused in on consulting and investment research.
$\square$
As a result of that, instead of funds sponsor consultants like myself having investment manager research responsibilities, we have individuals at our firm that are dedicated to nothing but. It is a career path in itself. We have 52 specialty consultants that specialize in different areas of investment manager research.

With that, we have done about 880 manager searches as a result of that in the last five years, that is approximately 175 searches a year. We are certainly well aware of the managers that are in the marketplace. We understand the pros and cons of the strategies. We conducted over 2500 manager meetings per year and that has been going on in the Covid environment as well as we do it virtually.

So, again, the takeaway here is that we do have a proprietary database. We use public data bases to supplement that. We don't have a cookie cutter approach. We conduct every search de novo and certainly with the level of public fund clients we have we work with RFP construction and valuation and monitoring the results that come out of there from the recommendations.

Again, the takeaway here is large firm, dedicated resources, a lot of experience.

How do we evaluate? We evaluate on two fronts; qualitative and quantitative. Again, on the right-hand side, these are the quantitative slicing and dicing of the numbers and in all candor a lot of this information can be generated and currently being purchased through a public data base.

But it is the qualitative information on the left side that we think distinguishes Callan to be able to understand what are the five P's. The philosophy, the process, the performance, the people and then the portfolio construction.

So we can appreciate the idea here is that there may be periods of time where a manager may underperform and then the question becomes it's more heart than science in terms of why did they underperform. It is expected for poor performance given what their mandate is and what is their DNA. That leads us down the path of if a manager is going to be terminated or hired that they are put in place for the right reasons.

So with that, I have touched on these are
the individuals. You can see there's a lot of shiny faces here. I will highlight the experience front. So when we look at Amy Jones, she is at the top left, she is the co-manager of the Global Manager Research and two individuals to the right, that is Mark Stahl. Both of these folks have over 30 years with Callan so give you some sense of the continuity, the depth of Callan, and the experience that we have with respect to this group.

With that, $I$ am going to turnover to my colleague Sally Haskins, who you know well, to discuss alternatives and consulting clients.

MS. HASKINS: Nice to see and hear everyone today. I am Sally Haskins. I have been working with your plan for the past nine years. And, in fact, when we pitched the business initially for you, it was one of my first pitches with Callan so $I$ certainly didn't want to mess it up and I don't want to mess it up today.

I have been doing this for 30 years. I am going to spend some time talking about our alternative practice, which involves a lot of the private market stuff that we do with you and then also hedge funds. So to be clear it is real
estate, private equity, infrastructure, timberland, farmland, private credit, and hedge funds, that is what we call alternatives.

And this is kind of a boring story with Callan. You heard it from John and Millie and Ann and it is the same in this area in that we have a lot of people that are doing this with a lot of experience. And we're advising clients from placing a lot of assets in each of these areas.

That is important for you because you have active programs in real estate and private equity and in hedge funds. So I think you should be comforted by the fact that we do have large teams. And, importantly, as you will hear in couple of minutes, we continue to build on those capabilities because these are areas that are very complicated and they continue to be more and more, more investment products and managers in the area. So we have had to build our teams to make sure that we are adequately resourcing or around the growth in the managers universe so we can help you build portfolios that really work and that you understand. So that is really all that the teams listed.

So you see us when we came in but there is as a whole host of people working in the background to support your portfolio. And, in fact, it is 26 of us and then we have a people in database and operations and systems and $I$ don't know how those people do what they do but they produce the numbers all the time and help us with searches and valuations so that is terrific.

We would like to have you meet all of them but that's not possible. You can only just get to listen to me today.

John, if you could turn to 19. This is the team. This is our real assets team. This is the team that Avery and meet with every day. It is a huge privilege. The average experience level on our team is over 15 years. Most people have been through a couple of cycles. Some of us have been through more cycles then we probably thought we could go through when we started in the business, but that historical and institutional knowledge plays out every day when we are working with you. Because a manager comes in and we can say, hey, you know what, we knew you when you were down the block and you didn't treat the clients so well.

Therefore, maybe we don't want to work with you now. That is what we try to assess the good, the bad and the ugly.

Briefly, on this page, you see Barb
Bernard, who is one of the main contacts along with me on this account.

I will tell you that every person on this page has touched your account in the past year. So that is why we take a team approach to your relationship. But, like $I$ said, what do we do on this team? Real estate, infrastructure, timberland and farmland, we brought in just to highlight our infrastructure, we brought in Jane Mende a few years ago. She has a huge expertise in infrastructure and as we think about that potentially for your portfolio $I$ look forward to bringing her on and having you meet her and have some discussions around infrastructure.

So what do we do? We do more searches and evaluations. It seems like we're always busy because all these assets and all these other asset classes, are great asset classes, and our clients are very active in this area. So we usually place about 5 billion into the market so we are in the
field and all the managers know us. They find us and then we bring those investment ideas and products to you all.

You have seen that in your portfolio. Because we started with a very small portfolio, with a small craft of managers, and involved in doing some of that. It wasn't a great portfolio and now you have a terrific portfolio so this is what we do.

Going on to the next page, please. So this is a team that we have built out substantially from when we started to work with you nine years ago. You know Gary, on the right-hand side, and Jim McKee I believe. But this is the private equity, private credit and hedge fund team.

I just want to let you know that we have added Catherine Beard on the page in private credit and she works out of the Chicago office. She has 27 years of experience and then also Andy Maday and he came from IMRF. So those two people are representative of the quality of people that we are able to bring in. Andy has plan sponsor and a lot of equity experience. Catherine has spent most of her time in private credit. You will get to know
her better as well. And then the team is lead by Pete Keliuotis, who is responsible for running the team and the resources and he also has got 30 plus years of experience in consulting and in private equity.

So we are doing direct investments in direct funds and then also we continue to do fund-to-funds to support all types of programs.

Again, this is, like $I$ said, $I$ am in private equity. I only work with only infrastructure. These people are super smart. And it's my pleasure to be able to talk about them today.

Some of the things they have been doing is they are now in the go-to third-party due diligence for CalPERS, which is a good name, and we are doing work for them on the real estate side. They are also working with clients similar size to the Richmond Retirement System is someone that they are working with and helping to build their program. Look at all of the beautiful faces. I know that they look forward to being with you in-person at some point as well.

So I think that is about all I have to
say about the team. I know we're tight on time but I just want to underscore again their experience. Same thing. 15 years of experience. And when you think about the private asset classes, you really need people that have been through cycles and everyone on the real asset side and everyone on the private credit side or most of the people have done that.

And we're all pretty good explainers of these things, that is the other thing $I$ am proud about it. These are pretty complex areas and we have to be able to come in and talk to you so you can make a sound investment decision and help you understand what is going on. Hopefully, we have done that in the past.

MR. JACKSON: Thank you, Sally. I am going to take back the mantle for just a moment to talk about performance monitoring and education again. This is an important role and certainly we can customize the information. Whether it is the quarterly committee reports or the staff report that we produce each quarter, monthly reports.

We have got individuals that have a great deal of experience in the leadership positions.

But $I$ would be remiss if $I$ did not identify someone who, Ann is going to show you in one of the charts on the service team, Ann D. She's out of our Chicago offices, and she has 28 years of experience on the performance benefit front. She works with your custodian, your investment managers, to make sure all the numbers are prepared timely and correctly and she just does a phenomenal job.

With that, $I$ am going to turn it over to Ann to discuss our service with her.

MS. O'BRADOVICH: Thank you, John.
I want to do a little time check. We have about ten minutes to go. Is that about right?

MS. TUCZAK: Yes, that is about right.
Maybe a little bit less. A minute to two less.
MS. O'BRADOVICH: I will talk fast.
I am Ann O'Bradovich. My background I started back in the early 80 's as a plan sponsor working with investment committees on the defined benefit plan for Household International, Household Finance, if you remember that, an old Chicago firm. And then $I$ moved to Kemper and worked in their institutional area and for a money manager and that was a fascinating experience learning how money
managers operate, how the portfolio managers operate, how the research folks work, how the trading function works and all the interplay that goes on with investment managers.

Those experiences led me to the
consulting role in 1993 when $I$ jump shipped and became a consultant.

I am most proud that I am still today working with clients that $I$ met in 1993 . And when I made the decision to move to Callan the biggest important decision in my mind was Callan's clear commitment to focus on clients.

I can tell you that now that $I$ have worked with Callan for ten years that clients do come first at Callan.

Which brings me to Page 24 , where we talk about the service team that we put together for Callan. John and myself lead this pyramid for you. We are supported as we have been talking about by many people.

And if you start on the left-hand side, with the strategic planning folks, that is Jay Kloepfer on the planning implementation side, that is the global manager research folks that John
talked about and Sally is a part of. And the long-term valuation, Ann $D$ sits in our Chicago office and does all your reporting for you both total funds and private real estate. And then, of course, education and research.

Many of you have participated in our Callan Colleges and we encourage you to continue to do that. It is very, very important.

And the gray bars in the middle, that is a peer group review where we make sure that you are not getting just the Ann and John and Sally show. Everything that we bring to you goes to a peer review across all the consultants and research folks within Callan. So that you get the benefit of the Callan thought process and experience and approach for everything that we bring to you.

On Page 25, this is just a list of the experts within Callan that have worked on your account in just really the last year or so and the thing $I$ want to bring out is on the right-hand side is the experience. We have all been talking about that, but you are getting a significant amount of experience and expertise that we bring to you. And we don't have a $B$ team at Callan, it is an $A$ team,
and we bring that to you.
On Page 26 and 27 , one of the questions was what are some of things we're thinking about for you in your portfolio and the evolution of your portfolio is very important to evolve and keep heading and try to make that goal of the 7.25, which is in the upper left-hand side.

And as Jay has talked, and we have talked, that it is going to be a challenge in our view given the capital markets.

And a couple of the ideas is to access in your portfolio maybe a little less public exposure and a little more private exposure.

So the chart is a little busy in the center. On the right-hand side it lists the asset classes that you are invested in. The first column shows your existing target, which you should recognize. And the next column for consideration are some of the ideas that we would have you incorporate in an asset liability study, which would be in the next phase.

Some of the things that we are thinking about that we like to educate you on and consider are in private credit, a little more in private
equity, and some private infrastructure. These may be alternatives that you can add a little bit of expected return.

You can see in the gray area underneath that the four year consideration has an expected return of 6.58, which is a little higher than the one that we have for your existing target. But, big but, there is nothing free in investment management, that comes with additional illiquidity. We are very concerned and very cognizant of the cash flow demands of this portfolio. So while these are opportunities to maybe increase the return and maybe the actuarial assumptions, it comes with an operational and logistical issue and we need to be very mindful.

These are ideas but we don't just jump to the new best shiny objects that are out there. It is easy to come up with investment ideas. It is not so easy to incorporate them in a practical and operational reality that you live in.

Page 27 , just summarizes what $I$ said, but in addition the other ideas we've been talking about is how we will continue to support and encourage and grow your emerging manager
opportunities.
You have lost the Progress Trust so the idea is to look at the marketplace, the fund-to-funds, and perhaps add another one. Not so much as large as Progress was in your portfolio before, but as an incremental idea.

And the international manager we have been talking about for a while and we are now doing it. The RFP went out and we're in the process and really excited and hoping we can find some good emerging managers in that area.

So in the private credit that we talked about and in some of the private real estate that we talked about and the private equity that we talked about, our teams has been looking at calendars and sourcing of the emerging managers. This is an area that emerging managers are growing and so we think there's a really good opportunity to support this effort by using those kinds of strategies.

To just kind of close out, $I$ am going to circle back to Millie's comments. We are focused in our consulting. We are independent. We control our resources so that we can deliver to you when
you need it the expertise and the ability for you to make good decisions on behalf of your members and participants.

On Page 29, this is the highlights of all of the work that we have been doing together since 2011. There was a national cadence to the work that we do.

We started out with reviews,
improvements, building PE programs, building real estate programs and then we sit back and we do another review, an asset liability study. We look at each asset class. We hone in each one of them to make them better, more efficient, we reduce fees, simplify the structure, make sure we're getting every dollar we can out of the program. And more recently we revisited the asset liability study. We continue to work on private equity. And then, of course, Covid. The most important thing that happened in Covid is we're able to address you to make sure that you double down and reinforce the long-term investment policy strategies that you have in place and you kept with that through the market tank in March. You stuck with it as scary as it was and you benefitted from the rebound.

That is the focus and probably the most important thing that we can do is to help you through these kinds of problems. And all the while doing the block and tackling of the every day reporting, meeting capital market projections.

Any questions? I went through that pretty fast. I have 30 seconds $I$ want to just on your agenda is to talk about fee proposal. We proposed a fee. We took up a slight reduction from the prior year and then moved on from there. We think this is a fair fee, a mutual benefit for both.

With that, $I$ want to double down on Millie and John and Sally and say we would be honored to continue to work with you and for your participants and the members of this Fund for the next five years. Thank you. We will take any questions.

TRUSTEE HUGHES: I have a question, Ann. From when you thought perhaps you wanted to consider transitioning to private infrastructure, can you give some examples of that? Is it tollways and skyway? What would be like some concrete examples of that?

MS. O'BRADOVICH: Sure. And we would do an entire education session on that. Jan is just awesome. But that is bridges, airports, parking, the Indiana Skyway. It is all those kinds of things. And it is not only in the U.S. it is significantly internationally in terms of growing and emerging countries that are building literally the infrastructure. We are talking bricks and mortar here. And they are private funds.

Sally, you may want to add to that.
MS. HASKINS: I was just going to say in the presentation, on Page 49, we have a list of what infrastructure is.

We're doing a lot of work right now on renewables as well. And Covid has also given us an opportunity to see all these things perform in kind of a down market and what really is sort of stable infrastructure and stable cash flow.

And you can imagine things like airports have not been as stable as people thought they might be and it also is a good way to look about and think about sustainability. Between real estate and infrastructure there is a lot of things happening in the ESG.
$\square$
Part of the reason we have Jan on our team and we're recommending that you think about infrastructure now is that infrastructure was pretty new. I mean, it kind of started in 2008 or 2007 I guess in the U.S. when institutions started investing in it.

So, yes, that is a while ago now but now we are seeing people have track records over time, right. And we can properly assess those as well as what has happened in the asset level.

And then we are also seeing, and there is a calendar in here, too, because the asset class has grown and people have track records, there is people spinning out of firms and so there are emerging managers. And right now there is a couple of women owned firms and some other things. There is a lot happening in infrastructure.

It is hugely complex and that is why we look forward to having Jan come in and discuss it with you because she has really been working on it in the asset classes.

CHAIRMAN OCHALLA: Kind of touching on that, too, what Steve said, do you have a group that is looking at your assets or your investments
combined with a broader look at the overall long-term economic picture when it comes to this Covid crisis?

Because I mean I think there is going to be things in the economy that are not going to come back to the way they were, but $I$ think there is also other opportunities out there that this pandemic will show and getting a handle on some of that ahead of time may put an investor in a position to really be somewhat ground breaking on that. Is that happening in the field that you know of?

MS. HASKINS: Absolutely. So that is led as a firm wide initiative by the capital markets group. That is kind of the big picture across all asset classes. And then within each global manager research groups on the public equity, public fixed income and in the private side that Sally just went through, we have what we call key areas where we have identified areas within each of the asset classes both private and public that we think are going to be either hurt by Covid or are going to be maybe helped.

And, basically, what we are seeing is the
trends that have been in place for quite awhile Covid has just accelerated those trends.

For example, retail. Retail was dying and Covid just accelerated that. John is showing you an example of some of these key area that we have that are constantly looking at every different aspect and then we assign each research person to go in and find those kinds of strategies that our clients like you can actually invest in.

MS. O'BRADOVICH: Just to give you a concrete example, one of the things we were discussing on our Monday morning team call this past week was what is happening in apartments and what is happening in the residential real estate market because we are starting to see in big City apartments people weren't paying their rents and are still paying their rents. But now you may have noticed people are moving all over because they can, right.

So the residential real estate market, single-family, just hop all over. And I live just outside of Minneapolis and we are seeing it there.

My point is that people are moving and that impacts how people are using real estate. So
one of the things we were discussing even prior to Covid was where people want to be, what cities are going to be interesting, and we were discussing it prior to Covid because of affordability. People couldn't afford to live in the large cities anymore because properties were too expensive to rent or buy.

Now Covid has accelerated that and we think there is a second tier of cities that people will go to and that is what we want to get kind of more ahead of.

I think that is just another example.
Retail is very obvious one. There is a lot of stuff going on swirling on that we have to be smart about.

CHAIRMAN OCHALLA: Thank you.

MR. JACKSON: Are there any other questions? Okay. If there aren't, thank you, very much for your time and we will see you in a little bit for your quarterly report.

CHAIRMAN OCHALLA: The Meketa people are next. We want to welcome you. The next presentation is from the Meketa Investment Group.

We will give you about 45 minutes or so
and you can begin whenever you're ready.
MR. SANCEWICH: Thank you. We will get started. We are pulling the presentation up.

First of all, we want to thank you for the opportunity to present to you and the Trustees and your staff today.

On behalf of Meketa and my three
colleagues on video today, we apologize for not being there in person.

Certainly these are challenging times for all of us and we hope to attend a board meeting at some point in the near future.

Hopefully you will walk away with who Meketa is, who the team would be that would be servicing you and not only the Cook County but also the Forest Preserve Fund.

On the video screen today, you have myself, David Sancewich, I am a principal. I would be one of the lead consultants for both portfolios and I am shareholder. I have 20 years of investment experience.

I'd like my colleagues to introduce themselves. Ghiane, you can say hi.

MS. JONES: Good morning. I am Ghiane

Jones. I am Senior Vice-President and a consultant at the firm and $I$ would also be one of the lead consultants working with the Fund. I have been in the industry for 14 years as well.

Now I will hand it over to Keith.
MR. BEAUDOIN: Good morning, everyone.
My name is Keith Beaudoin. I work alongside of Ghiane here in the Chicago office. I have been in the industry for a little over 25 years now. I am thrilled for the opportunity and look forward to an interactive discussions.

MR. SANCEWICH: As Keith mentioned, we are spread across the country. Keith and Ghiane are located in our Chicago office, which $I$ guess is about a mile or so away from your office, and I am based out of Portland, Oregon, where I am today.

Just looking at the Agenda your staff sent over, as much as we're trying to get to know you, this is an opportunity for you to get to know us. We encourage you to ask questions at any point during the presentation. If you have a comment or question, please throw that out.

We took the Agenda your staff gave us and we changed it up a little bit. We want to spend


#### Abstract

time upfront talking about the proposed plan for the Cook County PP portfolio.


I will say that the recommendations and opinions we have would carry over to the Forest Preserve Fund, but just for argument sake we focused on the larger PP fund for today.

Who is Meketa? Getting started, number one, we have significant public fund experience. We have been doing it since 1978 so roughly over 70 years of experience serving public funds both big and small.

Roughly 25 percent of our client base are plans with about 200 to 400 million dollars in assets. We have a low client to consultant ratio, so every RFP, every client that we talk with, we take consideration on the workloads so that we are able to give each client a customized solution and at the time that they need to manage their systems.

Thirdly, we act as an extension of your staff. If you hire Meketa, you are essentially hiring 200 employees who would work very closely with your staff to implement every aspect of the portfolios. Both the Cook County $P P$ and the Forest Preserve plan.

We focus on diversity not just within the organization and our leadership ranks, but within our investment managers, with our thought process, with the teams that we put together. We will show you on a slide coming up the diverse team we put together for you, if we are lucky enough to work with you moving forward.

While it is not on this page, $I$ would say a fifth bullet point for us is we are advocates for our clients. We talk at state legislatures, city councils, county supervisors. We get up in front of the Illinois state hearings and diverse hearings to talk to our Illinois plans once a year when those arise.

We are willing to work for our clients and represent them as plan sponsors and on behalf of trustees and fiduciaries.

Just on a snapshot on the next page, as we mentioned before, we have 42 years of experience. We have roughly 216 clients. We have two lines of business. One is our nondiscretionary general and private market practice. The other is our discretionary assets.

When $I$ say discretionary, that is OCIO.

We do not lend money. I know Ghiane will talk in a little bit more detail about that.

We're not running money but we do have a OCIO practice which is about 17 billion dollars and today we are at 1.5 trillion in nondiscretionary assets.

208 employees. 141 investment
professionals. Of that makeup, 66 consultants. Three of them on the video today. Keith, Ghiane and myself. We act as consultants for various plans, including several in the State of Illinois. Illinois SURS, which we will talk about later. 41 analysts our investment operations on the bottom of the page.

The only other thing $I$ would add we work with a large variety of clients, not just public fund focus. We do have clients that are corporates. The Dallas Foundation, Taft Harley and some non-profits.

So Meketa we have seven offices. You may have seen it in the RFP. Just to highlight, we have seven offices. One in Boston. We have our office in Chicago, which two or three of us will be working out of. We have an office in Miami. An
office in New York. An office in Portland, Oregon. San Diego, California. And we have two or three individuals work out of the London office.

We are a full service client. What does that mean? You can see on the left-hand side of this page our general consulting services involve everything from policy design all the way up to custom ESG, education and review. And it is highlighted at the bottom, we are big advocates of client education. We like to educate our trustees and staff on everything we are doing. We are very transparent but we are involved with the entire process.

On the right-hand side, we highlight we have a very robust private markets group. Real estate, private equity, infrastructure, commodities, everything to do with the private markets, private credit. We have a robust team of individuals to help us with that and help these two funds.

With that $I$ will turn it over to Ghiane to tackle Page 8.

MS. JONES: Again, thank you.
As I mentioned earlier, organizational
diversity is a top priority of Meketa. Currently almost 60 percent of our employees are women or minorities. Also women and minorities comprise 27 percent of the leadership team and 46 percent are shareholders.

You will see on the bottom left that since 2015 the Fund has made significant progress increasing the number of women and minority shareholders at the firm.

Although we have made strong progress, we know that there is still more work to do. We will continue to focus on increasing diversity at all levels of the firms.

ESG is also a priority at Meketa. On the right-hand side, you will see that we are a UNPRI signatory. Really what it means is that we are public committed to adopt and incorporate ESG issues into investment analysis and decision making processes.

What this means for you is that we have the ability and the resources to work closely on developing custom policies and programs if necessary.

And to David's point earlier, client
education is for us and we actually hosted a client conference on the ESG topic last year as well.

Next slide, please. At Meketa our goal is to avoid conflicts of interest. What you will see here 100 percent of our revenue comes from our investment advisory services. We don't sell any proprietor products. We don't engage in soft dollar arrangements.

Next slide. As mentioned earlier, we have a very deep public fund expertise. We were hired for our first public fund over 20 years ago and now we advise on over 1.3 trillion assets for 81 public funds around the country.

Next slide. We are proud to work with some of the largest public funds in the country. As you will see here, in addition to some of our local clients like Illinois SURS, ISBI, we also work with some of the large public funds on the east and west cost. That includes CalPERS, CalSTRS State of Connecticut and Maryland State Retirement.

And the benefit for Cook County is that we collaborate internally. We're able to bring you some of the industries leading best practices from some of the largest public funds in the country.

Next slide. We opened our Chicago office here in 2015 and now there is 12 professionals onsite. We advise on over 23 billion in assets for 18 clients throughout the State of Illinois.

And amongst the three of us, like I mentioned, we work locally here with ISBI, SURS and also the Regional Transportation Authority.

Chicago in general is a very important growth area for Meketa. We are focused on expanding our office here and our presence overall.

Now I hand it back over to David.
MR. SANCEWICH: So that kind of rounds up our summary of Meketa. I wanted to see if there was any questions from the trustees or staff that we could answer about who and what we are.

We are 100 percent employee owned. Every employee who currently works for the organization, which may differ from some of the folks you are talking to.

MR. BEAUDOIN: Well, if there aren't any questions, we will move forward in the presentation.

One of the things we were asked by your staff was who is going to be responsible for
serving these two portfolios. Who is going to be the ones who show up at your meetings. Who is going to be talking with your staff on a daily basis?

We put together a team of four individuals, that would be the client servicing team, in addition to the two manager experts.

As you see on the left-hand side of this page, myself and Ghiane would act as lead consultants. We would be the two that are responsible for servicing the account and attending the meetings.

Secondarily, we have Keith Beaudoin and Ally Wallace Stone. Ally works out of our Boston office. We do utilize a team approach just to pay someone who wants to actually take $a$ vacation and get on an airplane, we have a team member that can cover an issue that may come up if we are unreachable.

Our plan is to have two to three individuals at every single one of your board meetings so that we are having overlapping continuous coverage.

As Ghiane mentioned, all three of us,
including Keith, work with plans in the State of Illinois. Myself and Ghiane are leads at the Illinois service plan. Ghiane also works with Illinois State Investment Board or ISBI and Keith has a member of local Taft Harley plans for the Chicago, Illinois area, including Ally who also serves as a lead on his team.

On the bottom of the page, we have two subject matter experts. Judy Chambers. She is a private equity and infrastructure expert that works out of our New York office. She would be responsible for managing and talking to you about your private equity assets.

And then over on the right-hand side is Christy Gahr. She works our real estate group out of our Boston Office and serves as a real estate liaison for the plans.

The take away here is every single one of the members on this service have a minimum of 12 years of industry experience so we have a vast industry knowledge to talk to you and the trustees.

With that $I$ wanted to kind of change pages a little bit. We looked at both of your portfolios and we kind of went through and said
what are some of our best ideas that we have not only the Cook County pension plan but the Forest Preserve Fund to some degree.

These are in no way a hard set on we are going to implement them. This is the way of the world but it is some things that we would like you to think about as trustees and staff.

We would like to see both of your portfolios be invested best in class structure and best in class implementation.

And none of these suggestions or observations are meant to criticize anything that has been put in place to-date but let me walk them through a little bit.

Looking at particularly the larger Cook County portfolio, our first observation is you have multi-asset classes and no defined role. That is much like many pension plans across the country.

Over time you kind of learn as trustees and consultants and managers that if $I$ throw in another asset class in the portfolio and then continue to diversify myself in these various segments. But what we have come to realize is that these segments have a lot of overlap in a certain
way. I will look at that in more detail on the next couple of pages.

Last second point, you have numerous managers which we argue is over diversified. So you over time hire one manager, you hire another manager and find out that 20 or 15 percent or 30 percent of what they are doing is the same 30 percent of what another manager is doing. There is a lot of over diversification in our initial observation of your portfolios.

Third observation, desire to take on risk and enhance return, but we didn't see much downside protection. You can argue with me that your hedge fund-to-fund program is implemented to do that, to give you equity like returns for bond like volatility. But $I$ would also say in a period like March, 2020, or even the global financial crisis, they did little to nothing to give you true downside protection. So we would like to at least educate or talk to the Board about implementing that in the portfolio.

So with that, some action ideas we'd like you to consider. We have implemented some of these with several of our clients so we know that these
work.
Number one is think about investment beliefs. I don't know if you talked about this your current consultant or your current trustees, but what do you believe in? How is the portfolio constructed? Why is it constructed that way?

Educate the Board, staff on a functional risk based portfolio. What $I$ mean by that is come up with a simplified structure. I want to know what my portfolio is going to give me in return and I want to know what is going to protect me when returns are negative.

So if you think about a 60/40 portfolio, 60 percent equities, 40 percent bonds, that is the kind of education discussions you should have with the Board. How do I simplify it? How do I explain it? How can $I$ put this together so we are making better decisions and helping this portfolio achieve its objectives.

Third point, eliminate your hedge fund-of-fund program. It is expensive. Don't be swayed by the term but it is a bit old school. 2007 and 2008 hedge fund-of-funds were the way to get downside protection but they are expensive.

They are not liquid, and guess what, over time you will find that they don't perform like they should.

Fourth bullet point. Consider exposure to infrastructure. We have private credit in there. We know that 1 percent of your contributions come from the Cook County sales tax. If that dries up or slows down for the next 12 months due to the pandemic and due to Covid, will you be able to pay benefits? Where can you get cash distributions? Infrastructure and private credit could be one of those areas to throw cash off to the plan when you need it.

Lastly, let's talk about
streamlining your emerging manager program. You have a policy in place. You have your mandate in Illinois to put an emerging manager program in place. How are you trying to do it? Are there ways to make it more efficient? What are the objectives? Ghiane, will talk about 16.

TRUSTEE HUGHES: David, I would like to ask a question. Sorry to interrupt. When you talk about over diversification of managers within each asset like class, can you elaborate on that? It
sounds like you find that there is a redundancy in what they do or --

MR. SANCEWICH: That's right. An example would be you hire two managers. Let's think about U.S. equity. If you have, for argument sake, say three managers; large, mid and small. Guess what? Large cap, mid-cap and small-cap, the managers are going to be buying things that the other managers are buying.

So you have got managers in mid-cap buying large cap stocks. Large-cap stocks buying mid-cap stocks and visa versa. You are doubling down on things that you don't necessarily know you're doubling down on.

A portfolio of your size, you really should be taking advantage of your economy to scale. So larger mandates with fewer managers and really defining the role of class and the managers that you are putting in place, that is a large part of the work.

TRUSTEE HUGHES: Okay. Thank you.
MR. SANCEWICH: Any other questions?
Okay.
CHAIRMAN OCHALLA: I'm sorry. What would
you -- if you are talking about eliminating the hedge fund-to-funds, what is your idea for the old school defensible work that you talked about? What would be in place for that? What ideas do you have for that baseline protection that they had offered in the past?

MR. SANCEWICH: Right. Essentially what we would be recommending and educating you on is putting in a risk mitigation class. This is a strategy or a class that is designed to protect you what markets go haywire.

I can tell you from a real world example, in March, 2020, when the $S \& P$ was down $10,20,30$ percent, $I$ had a client with a risk mitigation strategy that was up 12.5 percent during that same timeframe.

I will flip ahead real quick because you asked. This risk mitigation class and the hedge fund-of-fund program, Ghiane will talk about it. Ghiane, why don't you jump in this page on 20.

MS. JONES: As David mentioned, we think risk mitigation can really increase the downside protection within the Cook County portfolio.

It typically consists of several
diversifying strategies that are liquid. The asset classes will all be custom designed for the Cook County portfolio.

On this slide, we highlight a few strategies that could comprise that risk mitigation portfolio, but it will be completely custom to the risk tolerance for Cook County and the overall objectives.

So you see here, for example, just to highlight one of the strategies, the long duration treasuries.

Essentially what you will find is in this environment, like what we have seen with COVID-19, investors flocked to those high quality treasuries.

Typically long duration treasuries have become that safe haven asset class that rapidly appreciates on a priceless like environment. So that would be a potential component of a risk mitigating class.

However, like I mentioned, it is all custom. We would certainly want to do a deeper dive on the portfolio and have conversations with the Board about what makes the most sense in the composition there.

MR. SANCEWICH: Just to sum up on your question there, if you're doing risk mitigation strategies they should be cheap, they should be liquid and they should be ready to invest.

So at the end of March 31, 2020, this portfolio would have outperformed and would rebound back in equities and that would have benefitted your return. And we wouldn't implement anything without true education on this.

TRUSTEE HUGHES: I am still not clear how that works. You have investments sitting there already or are you moving investments there? I guess $I$ don't quite understand how you would implement this.

MR. SANCEWICH: So I think to answer your question, we would design an entirely new class. We are going to -- let me take one step back. I think this will be more clear to you.

On Page 17, just to show you what we're looking at, your portfolio allocation -- I apologize. I realize the targets have changed. But you have got this portfolio on the left-hand side which is a bunch of stuff. U.S.,
non-U.S., U.S. private equity, real estate, fixed
income, hedge funds. But if you say what are my risks? How is the portfolio going to respond? 90 percent of the Cook County portfolio is going to respond when equities are up and when equities down, that is a fact. We know that what 90 percent of your portfolio is going to do.

What we're saying with mitigation move more to this structure on Page 21. Page 21 is you take the framework on the right-hand side, which is U.S. international equities fixed income, and you move it over to the buckets. I have my risk bucket that we call broad growth. I have my risk mitigation strategy, my risk class, which is diversifying the portfolio protecting me on the downside. I've got a class that is protecting me from inflation. Giving me inflation protection. Inflation takes off. And then I have a stable return for fixed income which is largely just short duration treasuries.

Our recommended structure is the structure on the right. It is much easier to understand than the structure on the left, not only for you but for your staff and your beneficiaries.

I know it's going to give me a return. I
know it is supposed to give me downside protection. I know it is supposed to give me inflation and give me more fixed income exposure.

It is a different way of thinking about your portfolio than what you have done probably over the past 5, 10,15 years.

I hope that answers your question.
TRUSTEE HUGHES: Yes, thank you.
MR. SANCEWICH: Understanding, I know we have said it five or six times, this all requires education to what is broad growth and we wouldn't implement any of this without any education and transparency with your staff and your board. Some things you should be thinking about as Trustees.

And I just kind of keep moving for time sake. One of the things we argued, particularly with your equity portfolio, is you have U.S. equity and international equity. We really think you should think about a global equity allocation. Calling it global equity. What $I$ mean by that is, again the numbers are a bit out of date, but your portfolio is exposed on the right-hand side. You have passive and active, international and U.S. You have about 20 mandates.

If $I$ were to ask you about a stock like Toyota, Toyota is headquartered in Japan but they have a global presence. They have factories in U.S. It is a global economy.

Moving to the structure on the right-hand side is something we should consider, which is fewer mandates. Getting paid for active management where it is being rewarded and adding passive where it is rewarded as well. So simplifying the portfolio and taking a more global exposure.

And then, lastly, we brought up
infrastructure. Infrastructure is a class we'd like to re-educate you on. It has a large portion of cash that flows off of it. Particularly, if you can get an infrastructure that is already established, it provides cash and distributions when you need it. It certainly can help supplement your portfolio in times of stress.

We went through that pretty quickly. Any questions on what we put forward so far?

Keith, why don't you jump to Page 25 and we will talk about out consulting costs. Switch gears a little bit.

MR. BEAUDOIN: Sure. So to highlight
some of the challenges we see in the current environment as well as over the next 5, 10 years or so.

These really only serve to emphasize the importance of the core beliefs we laid out here on 25 and 26 . We hit on it before, but we promise we will be proactive in bringing the best ideas and develop across our client base to you and into your portfolio. We will take time to educate you on any questions and concerns you have regarding any of the recommendations that are made.

We will diversify and construct an efficient portfolio for each asset has a specific purpose. We will find the right managers to fill those mandates, meet your objectives, and we'll work to minimize costs.

That quickly covers the consulting investment question.

If you don't have questions there, I will direct your attention over to Page 27. Ghiane hit on this earlier. We are a full service investment consultant. We don't stop there, though. We again seek to view ourselves as an extension of staff. We work with you to help insure the Fund continues
to operate effectively.
If there are no questions at this time, we will turn it over to Ghiane to discuss some of the components of our services.

MS. JONES: Thanks, Keith.
Slide 28. These are the comprehensive initial fund review. After acquiring a new client, our initial fund review is the very first thing we do. It is a unique process. It illustrates our comprehensive approach to investing.

If you look on the right, you will see the RFI as we call it, is a whole diagnostic of the Fund, where we have everything from the various attributes of the Fund's, the governance structure, like the Investment Policy Statement, to the Fund's asset's allocations and operations.

Once we have an in depth understanding, we deliver a detailed report of our recommendations, which include our best ideas for the Fund, which is Cook County.

And generally the review is consisting of conversations that we are having with both staff and the Trustees and the final result really helps us establish our work agenda for the next few
years.
Next slide. Here you will see that we are proactive about staying in front of our clients with timely research and ideas using a variety of communication tools. We regularly produce White papers, we host webinars, and we provide continuing investment education at meetings with our clients.

And one example of our efforts recently is the macro commentary we've been producing covering this COVID-19 crisis.

So our Global Macro Investment Committee, which Keith is a part of as well, they are publishing research on a weekly and monthly basis to help our clients stay up-to-date as the COVID-19 crisis is evolving.

Slide 31. This slide highlights our analysis capabilities. As you can see here, it really has more robust systems in place to provide Cook County with a fund reporting both monthly or quarterly. We can customize the reports to meet your needs.

Typically reports include a macro outlook of the Fund's asset allocation, performance, individual manager reviews and current topics such
as education, but it can be customized to meet your preferences.

Now I will head back over to David.
MR. SANCEWICH: Any questions so far?
One of the items that your staff asked us to talk about is the current market and how we see it. We have been talking to our clients about some things that we should be thinking about as Trustees moving forward for both of the pension funds.

The first bullet point, the coronavirus pandemic, COVID-19, has a greater impact on people's lives continues and will continue to have a great impact on people's lives since anything before World War II.

The current market environments are nothing like 2008. Don't let anybody fool you that that they are not. We are spending a lot of time talking to our clients why the stock market is at an all time high in a recession, unemployment is still at 10 percent and some of the long-term uncertainty we see.

We know that the total effects are here for the long-term. In addition to Covid, in addition to the unemployment rate, we also have an
election issue, which on November 4 th will decide which way we're going to move forward as a nation and also as a globe for the most part.

The other point which we highlighted earlier, what worked ten years ago is not going to work ten years going forward. Your hedge fund program, again not to beat it up, but that worked ten years ago, that was the way to go ten years ago but ten years forward you need to think about things that are liquid and we need to be more strategic in our investments.

Some of these challenges you already know. You are dealing with zero negative interest rates across the globe both in the U.S. and internationally.

You have high valuations. Markets are at an all time high. You have a need for liquidity. Where are you going to get money from if things tighten up. You have political risks. There is no point where there is not a country at war or there is a Democrat arguing with a Republican. You will have potential deflation or static inflation environments. A lot for a Board of Trustees and consultants to try to deal with in their
portfolios.
What can you do? Again, to try to highlight what we said earlier. Take a barbell approach to your asset allocation. Understanding what we did for your return and take on risk. Understand what is going to give you diversification and provide that. The barbell is one half diversification and risk mitigation so minimizing that exposure to equity like securities. The other half is you have got a return objective of 7 percent plus, that is private equity and stocks and even high yield fixed income.

Continue to accept risk. You are a long-term investor. You need risk to make returns. Use low rates to your advantage so take shorter duration investments in your fixed income.

Be opportunistic and strategic. If you have private credit allocation, an example would be investing it in a distressed private manager today. There are a few managers that have wonderful opportunities.

Real estate. We noticed you have an allocation to REITS. They are an opportunity to real estate both good and also on the downside. So
you need to understand what real estate is going to give you.

Lastly, keep an eye on your portfolio construction. The current plan has 90 percent exposure to the returns of asset. That may be okay with the Trustees, we need to understand that and we need to understand our ranges and our targets as we move forward with all of this uncertainty.

Keith, do you want to take 37?
MR. BEAUDOIN: David touched on a lot of these points. Again, if you take a step back, we can think about where we are at today and where we might be going.

There is a lot of uncertainty that David touched on. So what we want again remember and be cognizant of is we are long-term investors so we are going to structure the portfolio based on sound financial theory and tenants. Have the appropriate balance of risk and return eventually, that is going to help us navigate through some of this uncertainty.

We also want to obviously prudently diversify and think about those risk mitigating strategies and how they might benefit the funds.
$\square$
There is going to be times again when it makes more sense to assume a little more risk. You want to be patient. Stick to our strategic allocation and invest in the opportunities when that risk reward shifts in our favor.

David touched on those. Happy to discuss any of the points that David made in the previous couple of slides or these.

It is a nice segway into our thoughts on plan design and implementation, which begins on Page 39.

Again, the asset allocation as you know has the greatest impact on the risk and return profile of the plan. As such, we devote considerable resources and time to our clients to give the best advice. The markets are ever changing so we continue to involve our knowledge in the tools that we employ, not only to keep up with that change but to be in front of it.

If we look at Page 40 , it highlights some of the tools that we utilize to help our clients think about the asset allocation and the risk of the plan. We don't believe risk can be summarized like in standard deviation, nor does that mean a
lot when it is by itself.
What we want to do is we want to employ additional methods and metrics and help our clients think about those asset allocations and think about the risks in the plans.

We listed some of these things here. We generally start with a means optimization, which is likely what you are used to seeing. Risk means optimization is relatively straightforward. Easy to understand. However, there are drawbacks and to help fill-in some of holes or makeup for some of those shortcomings of MVO, we use some of these other tools listed here. Scenario now is stress testing, economic regime management. These help our clients take a step back and get a more holistic view of any of the asset allocations we might recommend to give you a better understanding of how they might work in different economic environments, that is really the way we approach at a high level.

The next several slides contain some information that is in our standard packet. We won't reveal them here today. This is a pretty robust packet, when you see the whole one, that
will help you better think about those asset allocations and the risks of each of them and the recommendations.

If there is no questions, we will turn it over to Ghiane to summarize our thoughts on manager research as well as monitoring.

MS. JONES: Slide 46 . You will see we have a robust manager research team. It consists of over 45 dedicated professionals who cover every asset class within both the public and private markets. This team will serve in a specialist capacity.

They typically spend 100 percent of their time solely focused on researching and monitoring managers for our clients. We leverage and work with our research specialists on your behalf to assist us with any manager searches and also some of the manager due diligence and monitoring activities for the Fund. It's important to also highlight that.

In new manager searches, the research team will include diverse managers. They also incorporate these key factors into their investment analysis.
$\square$
On the research team, we offer providing education at your board meetings as well. So we are providing ways to work with this group, they serve as specialists to supplement our work.

Slide 47. Here you will see the work chart for the Public Markets Manager Research Team. David sits on the Market Security Investment Committee. So you will see that is the committee governing the public markets research group and a committee of senior professionals that provide oversight of our public markets group and they also approve any new investments for our clients.

The next few slides highlight our research and monitoring process in even more depth, but I will pause here and see if you have any questions on research.

I will hand it back over to David.
MR. SANCEWICH: I would just add on Page 50 we understand and we know the state statute requirements on minority diversity. That is embedded in our manager research process. We work with our analysts to find minority diverse firms and we have done that with SURS and a few other Illinois plans.

With that, we were asked to spend one minute on our fee proposal on Page 52.

The fee proposal is a flat fee. It is a retainer fee for both portfolios. It is our full service with everything listed above for strategic and investment policy, additional services, asset liability studies.

We will say that we don't like to lose on fees so if that becomes an issue during the discussion process, we'd be to happy negotiate our fee.

And with that, $I$ wanted to turn it over and see if there is any questions.

TRUSTEE HUGHES: Walk us through how a new client -- what your transition approach is with a new client.

MS. JONES: Typically, it is a 90-day plan where we essentially look to gather all of the necessary information from all of the vendors of the plan. So that could be your custodian, all of your asset managers. Typically that happens within the first 30 to 60 days.

From there, then we will head first into our initial fund review and start analyzing all of
the existing investment and managers within the portfolio working alongside our manager research team of course. That is when typically we try to have that initial fund review delivered to both staff and Trustees.

Throughout that 90 -day process, it is a complete process of conversations with staff. Understanding what are the priorities for the Trustees because we want to make sure that we are acting as an extension of staff and partnering and prioritizing what the group is finding most important and relevant.

So that is the initial fund review work. Throughout that time we are working with staff and reporting. Reporting can be done pretty quickly in two to four weeks and that is all about us gathering the data from all of your vendors like $I$ mentioned. Custodians, actuaries, and feeding that information into our investment metrics reporting system.

So it is a pretty smooth process and we can work as quickly or as efficiently as needed for staff and the Board.

TRUSTEE HUGHES: What is the typical

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transition between the incumbent and the new
consulting firm, does that go well?
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MR. SANCEWICH: You are asking about how the transition would go from the incumbent to a new consultant.

I will say generally all the consultants in the industry play nice. I mean consultants are very good and us as well. We have lost business in the past, we gained business in the past. We work with the incumbents to understand who the contacts are, to give you data that they maybe run internally that's not available to upload that into our systems.

And typically the incumbent will assign an analyst on their end to work with an analyst on our end to make sure that they are talking. And sometimes we have to get staff involved if there is missing pieces or something not being resolved. Generally, it is a very, very smooth process.

TRUSTEE HUGHES: Thank you.
CHAIRMAN OCHALLA: You are aware of kind of our unique funding structure at the moment in association with other Illinois pension funds?

MR. SANCEWICH: We do. Actually, we will
say congratulations for being one of the higher funded plans within the State of Illinois and certainly in the City of Chicago.

The other Illinois plans we work with, SURS and ISBI, they are not as lucky. They are in the 45 to 47 percent range given the day in valuations and their contributions are much more dependent on state legislature being issued then Cook County, which has to put it bluntly the luxury of having the 1 percent sale tax solely to the safety of both plans.

CHAIRMAN OCHALLA: I was in reference five year IGA that has been going on to actually get us to that level, that has not been part of the actuarial funding that we have seen in other Illinois plans, and that is contingent upon who is sitting across the street.

MR. SANCEWICH: We are aware of it. We haven't had a chance to have detailed discussions with the staff about it. I know with the initial conversation $I$ had there is some uncertainty on where that lands over the next 12 months. Which means we need to spend some time talking to you about what that funding looks like and where your


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cash flow is going to come from in a worst case scenario.


CHAIRMAN OCHALIA: Okay. Thank you.

Are there any other questions?

If there are not, we want to thank you very much for your time and we thank you for the presentation. I think we got the answers we were looking to get. We appreciate you coming in today as it is.

MR. SANCEWICH: We really wish we could be there. On behalf of Ghiane and Keith and myself, we really appreciate the opportunity. We would be very honored to have the opportunity to work with you all. I think we have some value to add.

If $I$ can just sum up in 30 seconds, we would be your staff extension. We have a little presence in Chicago. And we have an opinion and we will give you an opinion and we are going to give you recommendations. We feel that is what you are hiring us for.

If there is anything we can do in the interim, we are happy to do that. We appreciate your time. Thank you.

CHAIRMAN OCHALLA: Thank you for coming in.

Our next presentation is from R.V. Kuhns. MR. WALSH: We go by RVK.

CHAIRMAN OCHALLA: Okay. You have about 45 minutes. Please, go ahead, whenever you are ready.

MR. WALSH: We are very happy to make this presentation. We have many topics we have listed in our presentation but we are open to hear any questions that you may have for us throughout the presentation. We do want to move along as efficiently as possible as well.

With that, $I$ will turn it over to Jen, to make our opening comments.

MS. SANDBERG: Thank you. We can start with a quick introduction for the team members with RVK joining virtually today and then we can spend a little bit of time talking about the firm.

I will kick it off. My name is Jen Sandberg. I am a consultant and shareholder based in the Chicago office. I have been with the firm 14 years. I spent 8 of those years in RVK's Portland headquarters. The last six years have
been here in Chicago.
I lead a mix of the firm's both defined benefit and defined contribution plans across the public and private and have held every role from analyst to consultant with the firm. I am very familiar with the full workings of RVK's consulting scope of work across a variety of roles. I am excited for the opportunity to present RVK's services to you all today.

MR. JOHNSON: Tony Johnson. I have been in consulting for over 25 years. I was with Mercer originally many years ago. Then $I$ joined the City of Philadelphia's Pension Fund, where $I$ was the CIO for a number of years. I worked for a private equity advisory firm for several years and then $I$ joined RVK where I lead currently the Chicago office.

Jen is also in the office with me as well. Both of us are shareholders of the firm. I also sit on our Board of Directors.

MR. WALSH: Cory Walsh. I am also in the Chicago office. I have been in the consulting industry for around 8 years. I jointed RVK back in October of 2019. Prior to RVK, I was working at

Callan. I was doing a couple of different roles. I started consulting asset managers, helping them think about how to position their portfolios, position strategies for institutional investors. So I have a really interesting prospective on the other side of the industry.

Then I had the opportunity to work with that organization and run what is called the Callan Institute, which is the educational research distribution and generation division. I am very familiar with how that process is run and $I$ have a very keen eye for how they differentiate across the industry.

Upon completing my MBA from University of Chicago, I made the decision $I$ wanted to work with strategic investors directly and found an opportunity at RVK to work with Cory and Jen here, in Chicago, and have been scaling up rather quickly.

I work with a variety of clients, including foundations, healthcare organizations, public defined benefit plans, corporations and defined contribution plans as well.

And I am looking forward for the
opportunity to present to you today.
MS. SANDBERG: From Page 4, I will give a quick history of the firm. RVK was founded in 1985. It is a 100 percent employee owned firm by active employee shareholders. The firm has no asset ownership. We don't expect that business model to change any time soon.

Additionally, RVK's only line of business since 1985 has been non-discretionary consulting services both on a retainer and project basis to clients. So the firm's only line of business and only source of revenue is advisory consulting.

We think that that is unique and a differentiator for RVK in that it allows RVK and our consulting professionals to sit side-by-side with our clients at the board table in that we have no other financial arrangement or competing interest that might sway our recommendations that we make to clients.

Our recommendations are solely in your best interest because the firm has no other source of business than providing advisory consultants to clients.

Additionally, the firm is -- the equity
ownership of the firm is more than 50 ownership held by women and minorities.

As Tony mentioned and $I$ mentioned, we are shareholders of the firm. The firm's ongoing commitment to maintaining a diverse ownership base continues as we as an organization evaluate key consulting professionals for equity owners on a semi-annual basis, that is something we are proud of and continue to focus on.

The firm's consulting client base is a diversified mix.

The chart on the bottom left of Page 4 certainly represents a large segment of RVK's client base as defined benefit and the two biggest segments beyond that are both defined contributions and operating with our clients.

On a government basis, some of the statistics for government clients for RVK are on the right-hand side of this page. On a retainer basis, that is about 870 billion dollars in assets under advisement.

The firm advises public plans across a variety of asset sizes. Certainly the sweet spot is about 10 billion or higher. We advise a good
mix of government clients across the asset structure.

Any questions on the firm?
On Page 5, I think the key takeaway from this page is that RVK approaches consulting as key oriented across everything that we do.

So certainly the client facing professionals here representing RVK are those folks that you would interact with on a daily basis but we are supported by full resources of the firm. Manager research, our asset liability team, our investment operations solutions group, any key specialty practice areas would be at your disposal.

So, for example, if we are working
through a manager search process, it is likely that someone from the asset class where we are evaluating would be an additional team member for the duration of the search.

For example, if we are working on a large cap equity search, specialists would join the team for the duration of the search process, work very closely with the consulting team and staff and then attend board meetings when recommendations are made and managers are presented.
$\square$ Those resources are fully available to our clients and so we represent the client base component and are certainly supported by a number of professionals across the board.

MR. WALSH: I will pickup on this next
page. In addition to the team approach, the approach to consulting, the key tenets that we have as our consulting service are on this page.

You will notice the first line of the page has to do with a customized approach. And I think that is something that really differentiates RVK and as we go through this presentation there are a few references to that whether it comes to our asset allocations or how we closely work with clients, our manager structure, or even our research and education approach. It is customized and very specific work that we do with any of our clients. Under that, there are really four tenets of our consulting philosophy. The first one has to do with sound governance. We believe that pension fund management has to again with sound governance and we play an active role with that. It is really the purview of the institutional investor but we provide a lot of education and research with
government practices that we then share and try to help our clients with the decision-making process. The next one would be asset allocation. There is a lot of research out there that shows asset allocation is the primary driver of returns for portfolios, which is one of the reasons why we spend such a significant amount of time making sure our capital market expectations are thoughtful and as close to accurate, whichever measure you use for accuracy, in the assumptions that you like. We will get into the details a little farther in the next session around asset allocation.

The third would be cost. Cost is
certainly important to institutional investors.
Whether it is one of two avenues. Whether it is focusing where resources make the most sense through the use of active management. Or if it is the liquid portfolios. Or if it is simply focusing on small cap emerging markets or areas where we believe that we might be able to add more value to the extent that resources may or may not be a constraint and a thoughtful approach on that makes a lot of sense.

The other is around cost savings for
investment management teams. We have negotiated and leveraged RVK's skill with several institutionalized managers out there that have actually designed custom shared classes for RVK. We have leveraged RVK's skill in our wide client base and passed those costs to many of our clients so they can take advantage of that as well.

And then the fourth really has to do with mindset around our consultant philosophy services. Not only do we view ourselves as a trusted advisor, we also view ourselves as an extension of staff.

I think that is important when you think about how closely we have relationships with the staff. The level of comfort for them to be able to reach out to us and toss ideas around and then we can do the same and vice versa. Or if it is an idea that generates from staff and we customize research and education with the Board that can be very helpful as well.

Those four pillars $I$ think really define our consulting philosophy of services.

At the bottom of this page here, we'll see our core investment consulting services. There is nothing that is going to be earth shattering
here. As Jen mentioned, our sole line of business is non-discretionary investment consulting so we don't spend a limited time on this. This is all that we do.

We believe we have a very deep level of expertise in all of these core investment consulting services that help benefit our plans.

Let's move to the next page. Here we talk about how we work with clients to build more specifically both new clients and clients all on an ongoing basis.

At the outset of the relationship, we will review all the documents, review the IPS. We will recommend enhancements to those. We will review all managers under review and make recommendations on those.

We will implement a consulting review cycle after that. Up until we get to that consulting review cycle, there is a very high level of engagement between RVK and the staff of the Fund.

We have constant calls with them making sure that we are tailoring our approach to the specific needs and then we also welcome
recommendations from the Board as well.
Then once we have a consulting review cycle, we tailor to our clients. They can look different from client to client, but it is really trying to accomplish one of two things.

One, it is intended to be iterated in nature so we have a process built in and we are constantly working through that process. It is also intended to be adaptive. That helps us make sure that as opportunities arise or circumstances change, that we can be flexible in nature. We can also look for opportunities to provide leadership both from RVK and within the portfolio as well through this process.

So there are four pillars to this process. The first is governance review and that is where we look at things like vendor contracts, investment policy statement review. We move on to portfolio design. Asset liability studies. Asset allocation studies. Spend quite a bit of time working with clients. And manager selection. Look at the manager structure. The individual managers and how they are performing and how we think they contribute to the portfolio. And this is the area
where we spend a significant amount of time on the programs as well.

And then the last pillar is our feedback group to make sure that all of the things that we have done to this point are working as we have intended them to and we look at the performance and see if there is anything that we need to adjust within the decision-making process.

With that, absent any questions on our process, $I$ will hand it back to Tony to go over the next slide.

MR. JOHNSON: Thank you. Any questions so far?

I want to make sure that $I$ have time to transition into the next session, which Cory walked through the fiduciary cycle.

But for our first cycle with you as consultants we will likely stick to the board of events that we're showing here with RVK first starting off confirming your investment objectives. And then us testing the reasonableness of those objectives against your asset allocation and running an asset allocation study and then figuring out together on a corroborative basis what the
optimal approach is to kind of achieve those objectives.

So the two middle boxes you see here, employee design and manager selection, $I$ will first talk about employee design and Jen will talk about manager selection process after that.

I will move forward to Page 10 here.
This gives you the hierarchy of investment decisions in terms of your portfolio.

So the first business for us when we engage with you would be to establish the direction of your funds that they are headed in and also try to figure out the guardrails that are needed to keep your funds on track to meet your objectives.

What do I mean when $I$ say the direction of your funds and the guardrails? That means we are going to work towards determining what both of your funds, both funds are, what their tolerances are for downside risk or their capacity to withstand certain capital losses in the event of a market downturn.

We look at that in the context of the cash demands that are also on the plans as well. We do that by going through an asset liability
study, which is the first column that you see. That asset liability study then feeds into helping us to determine what that asset allocation should be for the programs. We will get into a little bit what an asset liability study is in a second.

For the asset allocation study, we use our proprietary capital market assumptions that we create every single year on an annual basis and we update every single year and we apply to the model.

These assumptions that we are putting together are a multitude of asset classes project out the expected return and risk for asset classes over 10 or 20 year period.

We use those inputs in our model to run multiple combinations of allocations for you that we would walkthrough with you to figure out which allocation best fits your objectives.

Now, of course, these asset allocations runs will produce an expected return and expected risk. But there are two other statistics we think are important to come out of this study.

One is a liquidity contract. It is an another proprietary RVK method that we use to measure the amount of liquidity that is in your
portfolio. We define that by the percentage of those assets to your portfolio that are accessible to you to be able to liquidate within a year's time or less. Anything beyond that, maybe two years or more, we consider to be non-liquid. We think that is a pretty good measure. It is a great measure for those plans that have larger alternative investment allocations that you do. But for a plan like yours, that may be a bit more stressed in its fund status, $I$ think that is a really good measure for us to provide to you in that report.

The other part of that statistic we think is important is the portfolio data. That is something measured with the degree to which your total portfolio is moved in tandem to a degree with the U.S. equity markets. That is important because although you may have discrete allocations to U.S. equity and non-U.S. equity, there are times you will have other pieces within your portfolio that actually have equity data built into them. So measuring the total Fund's equity data is important.

What you don't want, particularly funds that are a bit challenged or stressed, you don't
want to have unintended volatility in that portfolio that is linked to the volatility in the market. So measuring that and counting that the asset allocation process we think is extremely important part of that.

Think of this as building a house. You set the foundation with the asset liability study and an asset allocation study.

The next part is we build-out the rooms.
You can see the columns there on your asset allocation study. The next seven columns there show we look at things like U.S. versus non-U.S. On the alternative side, we think about things like -- let's use real estate, for example. Core real estate is relatively liquid. Think about a combination of how we should build out those rooms with your portfolio.

Then we move towards filling out the furniture. Putting that into the rooms. That furniture is the next column over. You look at large cap, small cap. We think about semi-liquid versus illiquid. You figure out what the allocations should be and then finally we put the people into the house.

In this case we think about people it is really managers. What we are doing is going back to the first part of this chart and saying what structure benefits our objectives and how are we trying to build the composites within each asset class and then we are going to fit those managers that best fit those objectives.

So we are looking for not just a diverse line of managers that tend to not overlap or complement each other, but we are also looking from a diversity standpoint from an ethnic, gender and racial standpoint as well.

This is the hierarchy of how we would move about through filling the portfolio. What I will do now is walk through the pieces of it. We walked through an asset liability study. Here we walk through -- this slide talks about what we think about in an asset liability study. What we think about, not just the asset allocation but how do cash flows impact the type of allocation that you think about going forward for your programs. It is an important part.

We talk about guideposts and guardrails.
The guideposts that we put here saying under
extreme conditions what would a very conservative portfolio -- how would that perform given the return that you have and given the cash demands that you have to pay benefits. How would a very aggressive portfolio react from a return and risk standpoint also given the demands. We think that is important.

The charts on the bottom are examples of the outputs that we have produced from an asset liability study.

I can tell you these are the not the same charts we produced for you back in 2016 when this board engaged us to do an asset liability study.

These are examples but $I$ can say that the actual work we put together show a much more sobering picture than we're showing here in these examples.

I walked through asset allocation before and I talked about the hierarchy here. It talks about the different levels of the analysis that we do when we put together an asset allocation.

Primarily focusing, we look at what happens to this portfolio in the event of a downturn in the marketplace. We think that is a very important
part of when we think about asset allocations. What happens on the downside. We don't want to anticipate to any greater extent than necessary on the downside of a portfolio.

So these type of analogies gives us the "what if" scenarios that help you with an optimal asset allocation.

Lastly, this section is risk management. Now this summarizes what we put together on risk management. It also articulates our philosophy around the pension. It is not just risk measurement. Risk measurement is just a component of risk management.

When we think about risk management for a program, we think about it in three ways. One, we think about it in identifying what risks could possibly affect this portfolio. We can't think of all of them. You think of as many as you can. What risks could possibly affect this portfolio and what actions should we take in the event that those risks become true.

We do that because we want to make sure that at the point at which a risk presents itself, we want to make sure there is a plan of action to
act immediately as opposed to waiting days or weeks to act on that event. Articulating and documenting that is critical.

The second part has to do with monitoring your IPS and your manager contracts and making sure that your total portfolios are in compliance with your IPS, that your managers are in compliance with their contractual agreements in the strategies in which you hired them. Deviations from those can often wreak havoc on portfolios and so managing that is important from a modeling standpoint.

The last leg is actually measuring the risk. Those are the statistics that we took from the data, standard deviations, information ratio. Those are all the statistics that go into a report that you can see to make sure that you understand the risks that you take in the portfolio. You make certain assumptions and make sure on an ongoing basis that you are managing to be within the ranges of what is expected from that standpoint.

So that is our approach to this
management that we think is a very important part from a documentation standpoint, your policy and also from your implementation standpoint in your
performance.
I will pass it on Jen to discuss our management research process.

MS. SANDBERG: I think $I$ will start by saying the RVK has a dedicated team of professionals focused on manager research and their only responsibility is meeting with and evaluating investment managers for our client's portfolios.

RVK research folks do not have a dedicated client consulting responsibilities so that they can focus one hundred percent of their time on their asset class expertise.

The team is entirely based in Portland, Oregon and is organized by asset class specialty. We have an equity team, a fixed income team and an alternatives team.

Equity we think, regardless of whether or not you are buying or selling equities, it is still an equities security.

And then RVK's private market team covers every major area of the private markets. From private equities, hedge funds, real estate and liquid alternatives.

On this page, I don't think there is
anything earth shattering about RVK's manager evaluations or process.

Certainly we are looking for stable firms that work together either under the current organization or have some rapport working together in previous roles and then evaluation of the specific investment process.

Also evaluating managers for whether or not they recognize plan review appropriate to closed products in terms taking on new assets and we think that is something we think is important to be mindful of and to monitor.

It is easy to see investment managers to turn into asset debtors to the detriment of performance and current investors that we are mindful about.

RVK'S research team was pulled together from managers, rank managers, either positive or negative and currently are either in the process of or have not completed full due diligence on a manager or market research.

The next slide. Our search process and this is not completely isolated to public markets. We work for private markets as well. It's


#### Abstract

customized based on the desired search and procurement process.


RVK's research team can do everything from RFP to a formal publicly posted RFP's. And we work with staff through RFP development and distribution and then work through the evaluation and screening process to make recommendations to both staff and then present candidates for interviews to the Board. This process is fully customizable, depending on the asset class and the mandate that is being considered.

On the next page, $I$ think the takeaway that is important we certainly recognize -- in the Chicago office we are certainly familiar with the minority emerging manager programs that are present in most of Illinois. This is certainly something that we have great familiarity with. We certainly recognize it is an area where we are increasing our focus from the manager data standpoint.

RVK's research team has more than 300 managers that we track in our internal data base. RVK's clients have exposure to 38 different diverse firms which represents 20 billion dollars in client assets placed.
$\square$
We recognize that this is an area that is increasingly focused both for Illinois public pension plans but institutional investors across the board.

I think we are seeking to improve our process and be more inclusive in every search that we do. While this is certainly top of the line for Illinois based funds, we think it should be top of the line for everyone so for all institutional investors so it is something we continue to improve our focus on.

And then for private markets some statistics here on RVK search process. I don't think there is anything, other than working with managers every day of the year. Taking the in-house and on-site meetings virtually every business day of the year.

From a private market perspective, I think the key take-aways for RVK's approach to illiquid investing is that we take a top down view. We start with reviewing the asset allocation process. Tony mentioned that when you work through asset allocation be mindful of liquidity or illiquidity, based on plan funded status and payout
ratio. Evaluating the appropriate level of illiquid exposure is kind of our starting point from an approach to an illiquid manager research.

Once we have fully vetted the appropriateness of making private market commitments, we go through a study with clients which seems to kind of map out dollar commitments over a number of years on a forward looking basis and then we work with clients on a forward looking calendar. Who do we know that will be coming to market this year or next year and how could we appropriately time the pacing of commitments to private market investments to insure that our clients have access to the best investments available within the private market space.

The final step in that process is due diligence and reviewing the fit of the particular investment idea within the construct of private equity and private real estate, private credit, in the asset class.

We are always looking for the best ideas in the market and making sure that those investment ideas provide complementary exposure to the needs that are already in the portfolio.

Any questions on manager research?
The last slide here is on manager termination, which $I$ think is an interesting discussion with plan sponsors. I think if you view a long-term investment, for instance, you see shortened. So when we start talking about terminating a manager plan, we really try to be thoughtful about what is driving the desire to terminate. We try not to terminate on performance alone. Poor performance is typically a symptom of other problems. So we like to evaluate what is happening with the investment shop before we make a decision. Has there been a change in the team or the investment process? Or is the reason for terminating simply because the plan has a better place for the dollars needed to reallocate dollars and a disappointing performer could be a way to reallocate dollars.

We like to be thoughtful and work through that process with clients to make sure the process in the decision-making that goes into the termination of a manager is really thoughtful.

I will turn it back over to Tony to talk about specific plan observations.

MR. JOHNSON: Page 22, this is our summary of your plan. The key take-aways on this page that we note are statements from the actuarial's valuation report.

The first one that is important not necessarily in order which is consistent on this page, but relates to your contribution policy. Again, we don't have the most updated contribution policy that has been instituted. We apologize. We based this in terms of what we read in terms of what we had.

The contribution policy comments that they made is that this is insufficient to fund both plans in an actuarially sound manner. That is a very powerful statement to make.

The next statement in the report stated that the projected date of potential insolvency was 2037 and 2038 for the two plans, which is amazing, pretty far out, not really that far out in the distant future.

So when we think about a program that has insufficient contributions coming in that is projected to be insolvent. Insolvency in this term means pay as you go status of the Pension Fund. We
switch our mode of thinking from asset allocation to the risk. It is a different mentality but it is a realistic thought of how to approach the structure of your portfolio.

So the direction I talked about earlier states that if that is true, if their assumptions hold true, it is a different mindset.

If the contribution policy were to improve dramatically, that is a very different story.

I can also tell you that you cannot at this stage, based on what we read in the actuarial report, you cannot invest your way out of this. So adding more risk in order to get more return is not possible.

In the report that we did for you many years ago, we showed that you would have to, on a consistent basis for the next 20 to 30 years, earn about a 12 percent return on the portfolio year over year over year in order to keep at least the minimum funding status that you have today. There is a low probability of being able to produce that type of return for any portfolio on a consistent basis year after year. There has to be growth in
the market.
Even after the assumed rate of return that the actuary uses of 7.25 percent year over year using that as a return hurdle even that is going to be a bit of a challenge. I will show you in a second why that is going to be a challenge. The returns they are using in order to have the contribution level are saying it is not sufficient. The glide path we think about, we think about in this portfolio, that means moving from a growth oriented portfolio mindset to a more conservation mindset is exactly the way that you have to start thinking about the portfolio after a number of years.

You can hold that growth tilt that you have in your portfolio today, but in the next seven years or so you have to start thinking about shifting more to a conservative balance which then speaks to trying to lengthen out the amount of time you have to pay assets and benefits.

I will focus on the employees and officers fund, the Forest Preserve Fund, is a similar conclusion.

We ran your asset allocation through our
models using our capital market assumptions.
If you look on this page, you will see in the middle box on the left side, it shows the expected returns and risk.

What is important is the compound return. The compound return applies the expected risk and states what is the realistic return based on an expected volatility that you can expect in this portfolio.

What we are showing here is 5.8. What is meaningful about that is a couple of things. One, your actuaries is assuming a 7.25 percent return on a going forward basis.

Your portfolio, based on our assumptions, is expecting a 5.8 percent return on a going forward basis. That is called an actuarial gap, which means that the assumptions that the actuaries use are not realistically linked to the actual projected portfolio returns.

You could increase this. You could say maybe RVK is a bit more conservative with their capital market assumptions. We can up that from 5.8 to 6.3 or 6.5 and still a bit of a difference between what is expected in this portfolio and what
the actuary is showing and what they are expecting from that portfolio, that is significant.

We also think this is important because you do need to be a bit more conservative in your portfolio. As we show you on the right side, when we stress tested your portfolio, we look at the bottom where it says Monte Carlo Results. It says maximum drawdown within any one year period for the next 10 to 20 years. What could that maximum drawdown be? It shows about 23.5 percent or about a quarter of your assets to be lost in a particular downturn under a worst case scenario.

For clients who have a very long run plan, and many pension plans do have an infinite run plan, because they are ongoing open systems. You probably could withstand that level of a loss. If you look at the bottom, it says on recovery about four years.

For a plan like yours, again holding it true to if the actuary is somewhat accurate, there is a finite for this plan before it comes pay as you go. A four-year recovery could be damaging to this program. They have not allocated or accounted for the fact that you can have a devastating loss
to the portfolio. They are projecting 7.25 percent every single year. But with a downturn like that, it can actually shrink the number of years down that you have to look at pay as you go.

Again, it is a conversation that we would have. It must be a conversation that we would have in front of you at a real meeting, not so much in the presentation. We want to make sure you understand that there are different mindsets for asset allocation to think about for the Cook County Funds.

TRUSTEE WILSON: Tony, this is Lawrence Wilson. Thank you for that information.

Can you tell me what RVK's role has been in either talking to actuaries about their rates or with the client? Particularly those who have the funding stress we have.

And then the second question, do you have any clients that have actuarial rates under 7 percent that you can share?

MR. JOHNSON: The clients are public funds plans that $I$ can share with you. For the actuaries, we often do speak to plan actuaries. We don't set that rate, that is a Board set rates,
that is not within our purview.
The qualifications that we have is we show them the data that we show, that we just showed you. And say here's what the realistic view of this portfolio. Does that seem reasonable for the rates that you're putting forward and recommending to their clients. So we help inform them on what they are looking at.

Actuaries often look at over a 50-year period. Their time horizon is a fairly long one so those returns may extend for that time period. Thinking about you and thinking, yes, maybe your runway is 18 or so years. But the thought that you have to become much more conservative in half of that time which means that your return expectations has to be even lower than what you are seeing here to have a magnitude affect on the portfolio. So showing an actuary that is important. We have done that for other plans as well.

As a result, we have seen other plans of ours that are below 7 percent. The City of Jacksonville. They have two plans; their police and fire employees. Separate plans but both are below 7 percent. Many plans tack on about 7
percent.
But the challenges as you probably know with that is unless you have where the comptroller has the ability to tax the counties in order to put in contributions, most of those contributions come from general pool legislative bodies that have to allocate to other services around the county or state or the city, what have you. And so that juggling is very difficult. We understand the challenges that are faced there.

The reality is that this could become a much bigger problem if you turn to pay as you go system. Because on the contributions that you owe, you're now paying the current benefit payments that are due today. You are actually paying a lot more under a pay as you go system.

TRUSTEE WILSON: Okay. Thank you.
MR. JOHNSON: Towards the end of our presentation we are going to talk about research and leadership. I will turn this over to my colleagues.

MR. WALSH: I will pickup from here. So
I will spend a few minutes on some of our additional value added services that we provide.

I have had the opportunity to work with education and research programs in the past. I have seen different models employed. There is really two models that $I$ think is in the spectrum. Some are on one end, some are on the other end.

One is that it is a widely distributed research and education model. I think that has a lot of benefits to organizations in terms of scale and ability to produce materials and inevitably there is going to be some things that are going to be really valuable to clients.

The other model which is a really
customized more focused approach to research and leadership and that is the one that RVK spends quite a bit of time on.

We do do distributed papers. There will be a couple on this page. Factor Investing. At the point in time last year when the yield curve converted we distributed a paper around that and what it means for the portfolios.

But the customized work that we do, is really there $I$ think to help investors and answer their specific questions.

I will give you a quick example. There
is a client that Tony and $I$ share that instead of taking the majority of the risk within their equity portfolio has opted to increase the risk within credit a little bit more for various reasons that are beyond the scope of this conversation.

But the implications that surround that decision $I$ think are a lot different than they were seven to eight months ago or even in February of this year prior to the coronavirus crisis.

We are in a world much more driven by a monetary policy and fiscal policy today. And so the research that Tony and $I$ conducted was around the Federal Reserve actions, what they have done and provided some broad education around how to understand models and the thought process upon the Federal Reserve approaches setting their policies.

They use that as a leverage point to try and understand what they might be doing going forward. That is one piece of customized research and education that was leveraged across a couple of other clients but that's not something that you can see on the paper but we feel it is far more impactable to our client.

And one additional example is for an

Illinois based public pension plan, we produce quarterly pensions trends. And there we spend five to ten minutes at the beginning of the meeting talking about things. An example is the public pension problems from the coronavirus crisis and the extent to which those were the case. Equity backed performance through recessionary periods. Growth versus value. Non-U.S. equity versus equity. Equity market concentration. And then part of the coronavirus crisis we did a piece on bond market liquidity that turned out to be actually a very timely educational piece that as the Board was thinking about but the activities that were going on.

Let's turn to the next page, $I$ will talk a little bit about the customized performance reporting that we do.

Our performance reporting group that is comprised of 31 professionals. All of those professionals are in-house. We don't outsource our performance reporting services.

That does two things for us. The first is that it allows us to do quick delivery. And the second is that allows us to incorporate virtually
unlimited customized reporting.
I have several clients and not a single one of them have the exact same structure to their performance reports. That shows you the extent to which we want to customize this feedback, too, as I talked about earlier to the needs of the plan to make sure that we are staying on track for programs like ESG programs or even risk management programs and that is where this type of capability comes in.

On the next page, this is our investment operations solution group. Most consulting organizations will have a group like this. This is a group that handles our third-party administration searches, transition management events, security lending, things of that nature.

We work with all of our clients on $a$ retainer basis, but also have several project clients that we are engaged with in on an independent basis.

We recently we had the opportunity to work with several high profile international clients.

This group is led by Jonathan Kowolik.
He has a strong reputation and is really a master
of his profession. We are very fortunate to have Jonathan leading those efforts for us and helping our clients in that capacity.

I will turn it back over to Tony and Jen.
MR. JOHNSON: I wanted to add one thing to your question about our help with the actuary.

RVK has been instrumental sitting
side-by-side with the client and talking to legislative bodies about the health of pension funds and the effect of trying to pursue a return strategy as opposed to a contribution strategy. That actually has been effective, so we are skilled at doing that.

We have both your lead here, I have done it, and also the president of the firm, who is on our asset liability study team, has also done it as well.

We do have capabilities in-house to sit with you to help state your arguments to those who are providing the contributions.

TRUSTEE WILSON: Sounds good.
MS. SANDBERG: We are mindful of the time so we want to spend a minute talking about what we think differentiates RVK.
$\square$ This slide $I$ think summarizes what we view as our value proposition quite nicely. The two bullets I think are most important and most impactful to clients, certainly the depth of our research and our expertise within public plan consulting matters. But $I$ think our commitment to the no conflict of interest policy that our recommendations are always in your best interest, that the firm chooses to rely on ourselves directly with plan sponsors for a reason and that is to make sure our recommendations come from a place that is to the full benefit of your plan. And I think that is unique and it is something that the firm continues to stand by which makes it I think a great working relationship with clients, that our advice is always viewed through the lens of what would be best for the Board and for the ultimate beneficiaries of the Fund.

The last bullet point on this page, which is our team consulting model, that we do everything as an organization and we think that benefits RVK professionals internally. It also is a direct benefit to all of our clients that the institutional transfer of knowledge across
consulting professionals and experiences in serving multiple clients across public and private space. We think it is beneficial to all of your clients.

So our engagement with plan sponsors as a team $I$ think is something that we view very positively and think this is a unique differentiator for RVK.

Are there any questions that we can answer for you?

CHAIRMAN OCHALLA: Very briefly, would you just go over your fee structure and what a transition would look like, if we were to bring you on?

MS. SANDBERG: Certainly.
Our proposed fee is on Page 31, the number is apparent there. RVK views the retainer consulting engagement as an all inclusive, with the exception of a couple of specific services.

In this case, we only do custody search as a standalone service. The reason we think that custody searches are a standalone project is because typically you don't do a custody search on a regular basis. We think that if a client has the desire to conduct a custody search that is a
project that they undertake once every seven to ten years or less frequently. But otherwise we view the consulting engagement as holistic. That our incentives are aligned to provide the best client service to our clients as we possibly can and that we are not to provide manager services for a fee or ala carte services for any additional fees. We think the flat retainer that we propose most aligns our relationship with most of our clients.

CHAIRMAN OCHALLA: Thank you.
MS. SANDBERG: The other comment this includes an asset liability study at the outset of the relationship.

CHAIRMAN OCHALLA: Thank you. And then the other part of that was what you would envision a transition process would be, if we were to bring you on.

MS. SANDBERG: I think we take pride in being as up to speed as quickly as possible. I think we have a transition slide that Tony can bring up here.

Typically we start with a kick off meeting and develop a work plan that is the corroborative effort between what RVK views as kind
of a key kick off objectives reviewing government policy, asset allocation, those type of things. And then having an open conversation about what your priorities are so that we can make sure our priorities list are one in the same.

Typically the first month to three months is on boarding and document review and document signature so we can have access to all of your plan information and get the data aggregation process rolling. We conduct an asset allocation study and have that conversation with clients at the very beginning of the relationship and then the implementation follows.

Let's have a conversation about asset allocation and $I$ think in your case we would look at the liquidity profile or illiquidity profile of the plan.

If we have specific recommendations that is an open dialogue we would like to have right away with every client relationship. If there are potential changes, we work through those on kind of a month by month basis. Whether that is investment policy revisions or asset allocation changes or asset class structure reviews. And so that is
typically the first 90 days. There is a lot that goes on in the first one to three months.

I would also say the first 18 months or so is very active and very engaged as we typically work through every facet of the portfolio. It doesn't necessarily mean that we think we should come in and make changes to the portfolio but we think it is important to review every single asset class and construction of that asset class and confirm goals and objectives for each piece of the portfolio at the beginning of the relationship and then kind of transitioning to a bit more monitoring and let's talk priorities as we work through the on-boarding process. That is kind of how we view on-boarding clients for the first call it quarter or six months.

CHAIRMAN OCHALLA: Thank you, very much. MS. SANDBERG: You are welcome. Any other questions?

CHAIRMAN OCHALLA: Anybody else have any other questions?

Hearing none, thank you, very much for your time this morning.

MS. SANDBERG: Thank you. We appreciate
the opportunity.
CHAIRMAN OCHALLA: Let me pose this to the committee here. Do we want to go into an executive session here today to make a recommendation to the Board? Or, we are going to discuss this in a week anyway, since we only have six members here. Or, do we want to hold this and have the discussion at the full board meeting next week? What is your consensus on that?

TRUSTEE MCFADDEN: Then we could have the time to digest all this.

TRUSTEE WILSON: I suggest an executive session, even if we don't come to a conclusion, at least to talk about the pros and cons since $I$ think the RFP evaluation I thought was a protected conversation at least on some level. Is that correct or not?

CHAIRMAN OCHALLA: Yes, Trustee Wilson. So with that advisement at this point, is there a motion then to convene an executive session pursuant to Section 2-(C-7) of the Open Meetings Act, 5 Illinois CS 122(C-7), to discuss the sale of purchase of security investments or investment contracts. Roll call is required. Do I have a
motion for that?
TRUSTEE MCFADDEN: Moved.
TRUSTEE BLAIR: Seconded.
CHAIRMAN OCHALLA: It has been moved and
seconded. Roll call vote, please.
MS. FAHRENBACH: Trustee Blair.
TRUSTEE BLAIR: Aye.
MS. FAHRENBACH: Trustee Hughes.
TRUSTEE HUGHES: Aye.
MS. FAHRENBACH: Trustee McFadden.
TRUSTEE MCFADDEN: Aye.
MS. FAHRENBACH: Trustee Nevius.
TRUSTEE NEVIUS: Aye.
MS. FAHRENBACH: Trustee Ochalla.
TRUSTEE OCHALLA: Aye.
MS. FAHRENBACH: Trustee Wilson.
PRESIDENT WILSON: Aye.
(Whereupon, the Board went into
executive session off the record.
No action was taken in Executive
Session.)
CHAIRMAN OCHALLA: We are out of the
executive session.
Pursuant to the investment consultants
search conducted as required by Section 1-113.4B and Section 1-113.4D of the Illinois Pension Code, 40 ILCS 5/1 113, Point $B$ and $D$.

In accordance with the Fund's Procurement Policy, it is moved that the Investment Committee will, in its consistency with its discussion in closed session, make a recommendation to the Board for the Fund's investment consultants to effectively start January 1,2021 subject to successful contract negotiations.

It is further moved the Executive Director, the Fund's staff, be authorized to take all actions reasonable necessary to effectuate this decision. Is it so moved?

TRUSTEE MCFADDEN: I'd like to make that motion.

CHAIRMAN OCHALLA: Is there a second?
TRUSTEE MCFADDEN: Can I just interject a little tiny thing?

CHAIRMAN OCHALLA: Sure.

TRUSTEE MCFADDEN: I'd like to make a motion that we are doing what the Chairman said but to put it in a couple words we are sending a recommendation to the Board. It's up to the Board

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to decide what they want to do.
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CHAIRMAN OCHALLA: Consistent with our discussion in the executive session.

TRUSTEE MCFADDEN: Right.
TRUSTEE BLAIR: I will second that.

CHAIRMAN OCHALLA: It has been motioned and seconded. All in favor?
(Chorus of ayes.)
CHAIRMAN OCHALLA: Any opposed? (No nays.)

CHAIRMAN OCHALLA: Hearing none, the ayes have it. That recommendation will be forwarded to the entire Board for next meeting.

The next item is the second quarter performance review.

MR. JACKSON. Thanks. Good afternoon. I am going to pull up the performance report to share.

MS. TUCZAK: John, I want to make sure you heard we are going to lose a quorum at two o'clock so $I$ know we have quite a few things to cover. I want to make sure you are aware of that from a timing perspective. We don't have a whole lot of time left.

MR. JACKSON: One of the action items $I$ guess that we were going to discuss was with respect to the interim investment management considerations for JP Morgan. But, if you like, I can move pretty quickly through the second quarter performance. Devote about 20 minutes going through that, if that sounds feasible. Or, if you would prefer, we can go right to Item 4B, if you would like, as well as the real estate.

CHAIRMAN OCHALLA: I think let's talk about what actually took the worse hit first while we have a quorum and then we can go back. Does that make sense?

MR. JACKSON: It does.

CHAIRMAN OCHALLA: Okay. Let's talk
about the bad news first.

MR. JACKSON: I am looking at, Mr. Chair, I think that the real estate review may require action by the Committee and does not go into executive session. Do you want to do the real estate portfolio review first?

CHAIRMAN OCHALLA: Yes, please.
MR. JACKSON: Okay. That is going to be Sally Haskins and Barbara Bernard. Let me bring up
that presentation.
Sally and Barbara, I have the presentation cued up, if you would like to take it from here.

MS. BERNARD: Sure. Good afternoon,
everyone. My name is Barbara Bernard and I am a Senior Vice-President with Callan. And as you know Sally and I have been here the past couple years leading the account.

It is nice to see everybody. I wish we could be there in person.

What I thought $I$ would do here is make a couple points about the market and move into the Cook County review, the Forest Preserve review, and then touch a little bit about part of incoming growth.

We originally thought we would have 30 minutes to do so this, but do $I$ need to cut this down a little bit or can you give me some guidance, please?

CHAIRMAN OCHALLA: Yes, I think you need to cut it down $I$ think by half because we have three actionable items we have to get to before we lose a quorum.

MS. TUCZAK: One thing I can mention, we can talk about it later, if we want we can move the performance report to the board meeting next week, if that is something you want to do.

TRUSTEE MCFADDEN: I think next week is okay.

MS. TUCZAK: We could do the performance report as part of the board meeting.

CHAIRMAN OCHALLA: Let's do that.

MS. TUCZAK: Thank you.
CHAIRMAN OCHALLA: Let's do real estate then we will do the investment manager because we have another action on that that we have to do.

MS. BERNARD: Okay. Thank you.
CHAIRMAN OCHALLA: Thanks for your flexibility.

MS. BERNARD: Things are different than they were last year. I was thinking about when Sally and I did the review last year. We said that the real estate markets were healthy. We were in the 11th year of an economic expansion. Returns were moderating but we were in a healthy real estate environment and that has changed since the pandemic as everybody knows.
$\square$
The U.S. is now currently in recession with economic growth not expected to come back to pre-Covid levels probably until at least 2021.

The unemployment rate has elevated to 10 percent in July but that is down from 15 percent in April.

And real estate transactions came to a halt in March. They are starting to fallout as of third quarter very slowly but $I$ think that the important point to emphasize is the short-term impacts on real estate and property fundamentals are better understood but the long-term secular trends is what is changing and is really unfolding right now. And it is something that Callan works on daily with speaking with managers, trying to help understand what is happening in the property sectors and what is changing to help guide our clients.

I will touch on a couple of points on the market. If you turn to Slide Number 4, please. On the top right-hand, you will see a chart that shows the real estate market for Odyssey benchmark returns and the public equity index returns over the past ten years. And the impact of the pandemic
is really reflected in the second quarter results for private real estate. As you can see there has been a modest decline to income returns while appreciated really has declined much more significantly.

Looking at the chart in the middle of the page, the hotel and the retail sector depreciation was quite significant at 16 percent for hotels and close to 5 percent for retail. On the other hand, industrial continues to perform quite well.

Negative returns are expected for the third and the fourth quarter for the core funds as managers continue to evaluate the real estate and write down the return.

On the other hand, the public market real estate performance has rebounded in the second quarter achieving a 11 percent return following a decline of about 23 percent in the first quarter.

If you turn to Slide 5, this shows the biggest rate by property type and a live growth.

The vacancy rates for all property types have and will be impacted. We saw a sharp uptick in vacancies in the apartments from a 6 percent to about 7.4 percent.

In terms of the net operating income, it
fell sharply in the second quarter across all of the property sectors. It was really most prominent in the retail sector, which fell from a negative 1.5 in Q-1 to a negative 32 percent in Q-2. That was followed by apartments, which fell from a positive 4.5 percent to a negative . 1 percent.

The supply in the real estate markets was pretty much in check prior to the pandemic and construction has really come to a halt for new projects and it is very limited to the condition of existing projects.

Slide Number 3 shows transaction activity and transaction volumes were very healthy before COVID-19 but they have really come to a halt at the onset in March.

As you can see for 2020, through 2020, transaction volumes have been about 30 percent of what they were in total in 2019.

Cap rates have remained steady at around 5 percent. Pricing discovery is still occurring and there really has not been too many transactions.

So if you would please turn to Slide 10,
we can start with the review of the Cook County report.

Slide 10 shows where the real estate portfolio is in relationship to the policy. The target asset allocation for real estate is 9 percent of plan assets with a range of 5 to 13 percent.

The chart shows that the market value for real estate portfolio is 856 million dollars, which is 8 percent of total plan assets and then incorporating the additions of unfunded commitments the real estate portfolio is 9 percent of planned assets.

The pie chart below breakouts the real estate structure showing that the real estate portfolio is in line with policy. 72 percent is invested in core, 18 percent is invested in non-core and 10 percent is invested in REITS.

Turning to Slide Number 11 , this shows the investment positions by manager on an invested basis which is the pie chart on the left and on a committed basis which is the pie chart on the right.

The two new core positions are shown this

Year. Clarion Lion Industrial Trust was fully funded and Artemis Income and Growth has started to call capital.

These two positions -- first of all, the core positions are in the crosshatching and Clarion is shown in the crosshatch orange and Artemis is shown in the crosshatch brown.

I do want to point out that JP Morgan's Strategic Property Fund currently exceeds the 30 percent single manager policy concentration by 2 percent on a funded basis but then on a funded and vested basis it is in line with the requirements.

The noncore funds pursue value added distress strategies and are diversified by the property type and geographic diversification, except for the two Mesirow funds. They invest solely in multi-family apartments in various select markets.

Turning to Slide 12 , this shows the diversification of the real estate portfolio for the private real estate portfolio by geography which is the top chart, and by property type which is underneath. And what it does it compares it to the Odyssey benchmark.

Starting with geography, over half of this portfolio is concentrated on coasts. The Pacific and Northeast. And these cities are very attractive from a prime real estate investment perspective because they have high barriers to entry. The markets are highly liquid and the demand for real estate in these markets are typically financial services and technology job growth.

> In terms of property type diversification, the recent funding of the Clarion Lion Industrial Trust addresses the portfolio's underweight to the industrial sector, which is expected to serve the portfolio very well because the industrial sector has a positive outlook and is outperforming all other sectors.

Turning to Slide 13, Slide 13 shows the investment returns for both REITS and the private real estate portfolio over trailing one, three, five and nine and a half year period.

So beginning with the REITS, the REITS portfolio exceeded the benchmark in each period and particularly over the last year by 330 basis points. Adelante significantly outperformed the
benchmark in the last year by over 318 basis points and by 179 basis points over the trailing three year period.

Moving to the private real estate, private real estate comprises the core and the core positions. The total private real estate returns have exceeded the benchmark across the trailing periods as well and that is largely due to the non-core portfolio and the non-core is riskier than core and these investments are meant to be return enhancers.

Just focusing for a minute on the core positions, JP Morgan has had moderate returns over the past years due to it is underweight to industrial and overweight to the retail property sector, but it has outperformed the Odyssey benchmark for the last one and three year periods.

Turning to Slide Number 14, please.
Slide Number 14 focuses more broadly on the non-core portfolio and the Cook County non-core portfolio is well-diversified across the vintage years.

The LaSalle Income and Growth VI and CBRE VII are two funds that will liquidate in 2021.

And the LaSalle funds have two remaining properties that were under contract in March, but due to the pandemic these sales fell through, despite one of the sales having a 10 million dollar non-refundable deposit.

So LaSalle has decided to hold these investments for another year due to the fact that the pricing environment is expected to be much better next year.

CHAIRMAN OCHALLA: Were those assets in Dallas and one in Southern California, like a community center or something?

MS. BERNARD: One was an office building and the second one was a multi-family building in Texas.

CHAIRMAN OCHALLA: Okay. Thank you.
MS. BERNARD: Now the LaSalle fund was on track to meet its return objective for the Fund, but given what has happened in the marketplace and the expectation to sell next year, they feel they are not going to get the good pricing they were going to get prior to COVID-19 and they expect the Fund to probably end up with a 11 percent return total return where their target was a 12 percent
return.
Now the CBRE VII has one investment remaining and that is a hotel in the San Francisco Bay area. The hotel is open and operating as rooms only but the occupancy has been very low.

This was a business branded as a business hotel but given that there is no business travel the occupancy has been low. However, I talked to CBRE about this hotel and what they are seeing being managed and what they are doing is they are seeing an uptick in occupancy due to the leisure market. So that is what they have been targeting for this hotel and occupancy has picked up to about 15 percent.

They plan on putting it on the market next year but they do believe that the pricing obviously is not going to be as good as if they would have sold it pre-Covid and they feel that the returns of the Fund are going to end up with about a 10.5 percent where they were on track to meet the return objective prior to that.

The next five funds, which include
Mesirow, Angelo Gordon, Blackstone, Mesirow Fund III and CBRE VIII, are all in the valuation stage
of the investment period so they are implementing their business plans. They are selling some assets but it is really too early to say what the outcome of the performance is going to be because there is still a lot of work to do on their portfolios.

In speaking to the managers, they are optimistic. If you look at these investments, they have a very limited exposure to retail and hotels, which have been the most hard hit in the pandemic.

And then that completes us with the two remaining 2019 vintage funds; Blackstone and LaSalle Incoming Growth Fund VIII. And these two funds are very early in their investment period and these managers feel that the pricing is actually going to be stronger post-pandemic and that they have a lot of good opportunity to take advantage of the dislocation in the marketplace and they expect higher returns at this time.

MS. HASKINS: Barb, we are short on time here so maybe we should just with the Chair's approval get to the punch line in terms of what we would like to -- what we plan to do or recommend for next year. Is that alright with everyone?

CHAIRMAN OCHALLA: Yes. As much as I
hate to do that, we can't proceed on anything without a quorum so if you have a recommendation.

MS. HASKINS: And then we need to discuss the request for Artemis. We will try to do that in about five minutes or so. Both of those things.

MS. BERNARD: Let's move to Slide 28, which outlines our conclusions for 2020. In summary, our conclusions for the Cook County plan is to achieve the objectives for core. Really no new commitments are required to be meet the targets. However, we continue to assess the needs for core in 2021. We will also monitor the JP Morgan core concentrations relative to meeting the 30 percent single manager limit.

To achieve the non-core objectives, the recommendation is to commit 30 million dollars to an investment in 2020 .

The Mesirow funds are two funds in the portfolio that have performed very well. And residential apartments have a very strong outlook so what we are planning on doing is going to diligent to Mesirow IV and coming back with a recommendation.

To achieve the REITS objectives, the
objectives for the REITS portfolio, no new modifications are required, the non-strategy position was sold down in the first quarter and what we plan on doing is monitoring the Adelante for organizational concerns that Callan has and has outlined in the past.

MS. HASKINS: I just want to highlight the also on the non-core is that we will work with the emerging manager committee to look at ways to increase MWDBE managers concentration in your real estate portfolio.

We have a forward calendar and there is quite a bit of the managers and so we like to find searches around that. So we will continue to do that and we may bring back the idea of the search just for MWDBE real estate managers.

I don't want to lose sight of that because we always have our eye on the ball there.

MS. BERNARD: The searches take time so what our thought was is to implement the search this year for a 2021 investment.

CHAIRMAN OCHALLA: But that is not a recommendation that you need from us at this point to do that?

MS. HASKINS: Correct, that is not an action item. Now we are going to turn to Artemis.

MS. BERNARD: Yes.
You do need an action item on Artemis.
In 2019 Cook County committed 50 million to Artemis Income and Growth.

CHAIRMAN OCHALLA: What slide are you on?
MS. BERNARD: They raised 600 billion dollars of six limited partners and the Fund has --

CHAIRMAN OCHALLA: Barbara --
MS. TUCZAK: Hold on. We need to catch up here.

CHAIRMAN OCHALLA: What slide are you on?
MS. BERNARD: We are on the memo. I'm sorry.

MS. TUCZAK: There is a Artemis memo.
MS. BERNARD: In 2019, Cook County made a commitment of 50 million dollars to Artemis' Income and Growth fund. The Fund has raised 600 million dollars from six limited partners, including Cook County. The total fund size was targeted at 1 billion dollars.

Since April 19th when the fund closed, Artemis made investment in five assets for 180
million dollars and for about 29 percent of the total committed capital.

As a result of this pandemic, Artemis wrote down those five investments to approximately 6 percent. And so because of that the Fund is having challenges from other investors that are very interested in focus strategy and in the Fund because there is a lot of uncertainty in the market and they just don't know quite how to write those investments.

What Artemis has recommended doing to increase the Fund's size is to create a co-investment vehicle, which would basically be a new fund, that would invest side-by-side with the existing fund. And the Fund would not be permitted to raise any more than what the existing fund would have been able to raise and that is an additional 400 million dollars.

There's a lot of investor interest.

There is 80 million dollars that would be committed to the co-investment vehicle by investors. They have approval from their investment committees and there is another 70 to 120 million dollars of interest from investors that would like to
potentially invest in the co-investment vehicle.
Now the benefit to the existing fund to do this is that there would be a larger pool of capital for investment and that would create greater diversification of the investments within the fund and dilute potentially impact of the existing five investments already made.

The existing fund is permitted to have a co-investment vehicle but Cook County would have to waive the right to invest in the vehicle in order to implement this new fund.

So Callan is recommending that Cook County approve the general partner's request to waive the right to the co-investment fund as long as the new fund would be capped at 400 million dollars and then the two funds would invest proportionately with the remaining capital in the fund.

Also, too, lastly, the fees in the new fund and the existing fund would be identical.

CHAIRMAN OCHALLA: Is your recommendation then to --

MS. BERNARD: Move forward with this.
That would be subject to legal review.

CHAIRMAN OCHALLA: Okay.
MR. JACKSON: This basically allows the Fund to get more capital and that way we can invest in bigger and better deals hopefully.

MS. BERNARD: Yes. There would be more diversification among the investments.

CHAIRMAN OCHALLA: What are the fees on it now and what would you anticipate the fees being on the new? I don't have the numbers in front of me. Do you know?

MS. BERNARD: I don't remember off the top of my head what the fees are. The fees on the sidecar would be identical. I am sorry I don't remember what the fees are for the incoming growth.

MS. HASKINS: We can look it up here quickly.

CHAIRMAN OCHALLA: If you can, I know we will be back next week. You can have that information next week, if that is okay with the Board.

Based on that is there a motion to follow Callan's recommendation and move that the Investment Committee recommend that the Board waive the Fund's right to Artemis' Income and Growth fund
limited partnership agreement co-investment or a sidecar provision. That the Executive Director and Fund staff be authorized to take all actions reasonably necessary to effectuate and communicate the same, subject to final legal review of all relevant documents. Is there a motion?

TRUSTEE NEVIUS: I will make that motion to adopt Callan's recommendation.

CHAIRMAN OCHALLA: Is there a second? TRUSTEE BLAIR: I will second it. CHAIRMAN OCHALLA: Having been moved and seconded, all in favor?
(Chorus of ayes.)
CHAIRMAN OCHALLA: Any opposed?
(No nays.)
CHAIRMAN OCHALLA: Ayes have it and it is so recommended.

There is another recommendation of the real estate we were talking on the Forest Preserve side about Clarion Lion Industrial Trust. Do you have anything more on your real estate here? If not, can we move to that, since we need to move an action on that as well?

MS. BERNARD: It is on the Forest

Preserve. So the market value of Forest Preserve is 14.3 in real estate so it is below the target by 9 percent.

So the recommendation for Forest Preserve would be to invest an additional 2 million dollars in Forest Preserve and that would do two things. It would correct the underweight to the industrial property, the industrial property concentration, and it would also bring the total Forest Preserve portfolio up to an 8 and a half percent of total plan assets.

Now Clarion Lion Industrial Trust was invested in -- as you recall we did the search back for Cook County.

CHAIRMAN OCHALLA: Which fund would we be using to take that money from?

MS. BERNARD: The recommendation would be that the source of the funds would come from Rhumbline's domestic equity portfolio.

CHAIRMAN OCHALLA: What is it called?

MR. JACKSON: Rhumbline. It is the passive domestic equity portfolio. We have a little bit over 50 million dollars in that portfolio. We are a little over in domestic
anyway, that would bring it down a little bit, and then bring real estate investment. We would still be complying.

CHAIRMAN OCHALLA: What is the proposed ROI on that or what do you have your target on that new asset?

MR. JACKSON: Barb, do you remember the target ranges for Clarion Industrial?

MS. BERNARD: In terms of the return, they are targeting a 10 to 12 percent return.

MR. JACKSON: What is the percent of income?

MS. BERNARD: About 50 to 60 percent of the return comes from income.

MR. JACKSON: Thank you.
CHAIRMAN OCHALLA: Okay. Is there any other discussion on the Clarion Lion Industrial Trust purchase?

Do we have a motion? Based upon Callan
Associates recommendation, it is moved that the Investment Committee recommend that the Board approve to follow an investment to Clarion Lion Industrial for the Forest District Fund for 2 million dollars and that assets currently held in

Rhumbline be used as the funding source for such investment, subject to statutory completion of our due diligence and successful contract negotiations. Is there a motion?

TRUSTEE BLAIR: So moved.
TRUSTEE MCFADDEN: Second.
CHAIRMAN OCHALLA: Having been moved and seconded, all in favor?
(Chorus of ayes.)
CHAIRMAN OCHALLA: Any opposed?
(No nays.)
CHAIRMAN OCHALLA: The ayes have it. So recommended to the Board.

MS. HASKINS: Did you still want the Artemis fees or not?

MS. TUCZAK: If you have them.
MS. HASKINS: I do. So it is 75 basis points on committed capital and then once your capital is invested it is 1.25 percent on invested capital. Then they get an incentive fee so after they achieve the 7 percent return they get essentially 15 percent of profit. The new sidecar would have the same fees.

MS. BERNARD: Thank you, very much.

MS. TUCZAK: What I suggested to the
Chair and the Committee is that the JP Morgan transition option that we would bring that to the Board next week since the Investment Committee is a committee of the whole.

And at this point the Board meeting appears to be a little bit lighter than the last two. So given the fact that we have two trustees that have donated a significant amount of time this morning and have to get going, that we would table the second quarter results and the JP Morgan EAFE transition option to the board meeting next week.

I don't know if Callan is available next week on Thursday. I hope so.

MR. JACKSON: We will certainly make that happen next week, Gina.

MS. TUCZAK: We are about to lose a quorum. I think the trustees have provided a lot of their time already today.

The proposal is that second quarter results and the JP Morgan EAFE transition be moved to the board meeting. The Investment Committee is a subcommittee of the whole and we are about to lose a quorum. The next meeting $I$ don't think it
will be as big a meeting as the last two.
CHAIRMAN OCHALLA: Okay.
MS. TUCZAK: The fact we have two
trustees that are leaving that is probably the best option.

CHAIRMAN OCHALLA: We'll see you next week for what we couldn't get to today.

MS. TUCZAK: John said he would make it work.

CHAIRMAN OCHALLA: Thank you. We apologize for the time constraints today. We are trying to get everything in as best we could. Thank you.

Motion to adjourn.
MS. TUCZAK: We just lost the quorum.
TRUSTEE MCFADDEN: I will second it.
CHAIRMAN OCHALLA: All in favor?
(Chorus of ayes.)
(WHICH WERE ALL THE PROCEEDINGS
IN the ABOVE-ENTITLED MEETING
AT THIS DATE AND TIME.)

STATE OF ILIINOIS )
SS.

COUNTY OF DU PAGE )

DEBORAH TYRRELL, being a Certified Shorthand Reporter, on oath says that she is a court reporter doing business in the County of DuPage and State of Illinois, that she reported in shorthand the proceedings given at the taking of said cause and that the foregoing is a true and correct transcript of her shorthand notes so taken as aforesaid; and contains all the proceedings given at said cause.
$\frac{\text { Debbie Tyrrell }}{\text { DEBBIE TYBRELL, CSR }}$
License No. 084-001078

| 0 | $\begin{aligned} & \text { 1993 }_{[2]}-38: 6,38: 9 \\ & \text { 19th }[1]-151: 23 \end{aligned}$ | 3 | 83:2 | $\begin{gathered} \text { able }[19]-4: 24,12: 1, \\ 13: 24,14: 22,15: 17, \end{gathered}$ |
| :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { 084-001078 }{ }_{[1]} \text { - } \\ & 161: 21 \end{aligned}$ |  | $\begin{aligned} & 3_{[1]}-141: 13 \\ & 30[20]-9: 10,10: 20, \\ & 14: 9,18: 6,26: 16, \end{aligned}$30:7, 30:20, 35:3, | 6 | 4, 29:12, 34:22 |
|  | 2 |  |  | $35: 12,36: 12,43: 19$, $52: 17,57: 22,64 \cdot 9$ |
| 1 | $\begin{gathered} 2[4]-6: 22,143: 10 \\ 156: 5,157: 24 \end{gathered}$ | $\begin{aligned} & 30: 7,30: 20,35: 3, \\ & 44: 7,62: 6,62: 7, \end{aligned}$ | $\begin{aligned} & 6[3]-13: 13,140: 23, \\ & 152: 5 \end{aligned}$ | $\begin{aligned} & 95: 20,96: 14,102: 3, \\ & 115: 22,152: 17 \end{aligned}$ |
| $\begin{gathered} 1[6]-6: 3,64: 5,86: 10 \\ 134: 9,141: 7,151: 22 \end{gathered}$ | $\begin{aligned} & \text { 2-(C-7 [1] - 132:21 } \\ & 2.25[1]-25: 1 \end{aligned}$ | 66:13, 83:22, 87:16, | $6.5[1]-117: 23$ | ABOVE ${ }_{[1]}$ - 160:21 |
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| $\text { 11th }[1]-138: 21$ | $\begin{aligned} & \text { 62:17, 66:13, 68:5, } \\ & \text { 141:17, 149:7, } \end{aligned}$ | $\begin{gathered} 400[4]-12: 23,52: 13, \\ 152: 18,153: 15 \end{gathered}$ | $8[7]-18: 21,26: 1$ | accurate [2] - 95:9, 118:20 |
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| $\begin{gathered} 15[7]-32: 16,36: 3 \\ 62: 6,70: 6,139: 5 \end{gathered}$ | $23.5[1]-118: 10$ | $\begin{gathered} 5[12]-10: 6,12: 22, \\ 14: 8.33: 24.70: 6 . \end{gathered}$ | $\begin{aligned} & \text { 20:5, 142:5, 142:12, } \\ & 156: 3 \end{aligned}$ | 62:22, 106:24, |
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