State of Alaska
ALASKA RETIREMENT MANAGEMENT BOARD
BOARD OF TRUSTEES MEETING

Videoconference

MINUTES OF
December 3-4, 2020

Thursday, December 3, 2020

I. CALL TO ORDER

CHAIR JOHNSON called the meeting of the Alaska Retirement Management Board to order at 9:02 a.m.

II. ROLL CALL

Nine ARMB trustees were present at roll call to form a quorum.

Board Members Present
Robert Johnson, *Chair*
Bob Williams, Vice-Chair
Gayle Harbo, Secretary
Lorne Bretz
Allen Hippler
Commissioner Lucinda Mahoney
Commissioner Kelly Tshibaka
Dennis Moen
Michael Collins

Board Members Absent
None

Investment Advisory Council Present:
Dr. William Jennings
Dr. Jerrold Mitchell
Ruth Ryerson

Department of Revenue Staff Present:
Zachary Hanna, Chief Investment Officer
Pamela Leary, Director, Treasury Division
Mike Barnhill, Deputy Commissioner
Kayla Wisner, State Comptroller
Scott Jones, Head of Investment Operations, Performance & Analytics

Michelle Prebula, Public Equity & DC Investment Officer
Sean Howard, Portfolio Manager Alternatives
Steven Sikes, State Investment Officer
Shane Carson, State Investment Officer
Casey Colton, State Investment Officer
Victor Djajalie, State Investment Officer
Kevin Elliot, State Investment Officer
Mark Moon, State Investment Officer
Ryan Kauzlarich, Accountant V

Hunter Romberg, Investment Data Analyst
Grant Ficek, Business Analyst
Alysia Jones, Board Liaison

Department of Administration Staff Present:
Kevin Worley, Chief Financial Officer, Division of Retirement and Benefits
Ajay Desai, Director, Division of Retirement and Benefits
James Puckett, Deputy Director, Division of Retirement and Benefits
Emily Ricci, Chief Health Administrator, Division of Retirement and Benefits

ARMB Legal Counsel Present:
Stuart Goering, Assistant Attorney General, Department of Law

Others Present:
Paul Erlendson, Callan
Steve Center, Callan
Gary Robertson, Callan
David Kershner, Buck
Scott Young, Buck
Tonya Manning, Buck
Paul Wood, Gabriel Roeder Smith
Bill Detweiler, Gabriel Roeder Smith
Melissa Beedle, KPMG
Beth Stuart, KPMG
Joel Whidden, Bridgewater
Patrick Dimick, Bridgewater
Frank Reid, Special Agent, FBI
Doug Woodby, Public
Bob Schroeder, Public
Jim Simard, Public
Michael Tobin, Public
Nils Andreassen, Public
Benjamin Garrett, Public
Josh McLin, Public
Bob Mitchell, Public
Tom Brice, Public

III. PUBLIC MEETING NOTICE

MS. JONES confirmed that public meeting notice requirements had been met.

CHAIR JOHNSON introduced new additions to the ARM Board family. MR. COLLINS, from Wasilla, who replaced NORM WEST, and MS. JONES, the liaison officer.

IV. APPROVAL OF AGENDA

MS. HARBO moved to approve the agenda. MR. WILLIAMS seconded the motion. The agenda was approved without objection.

CHAIR JOHNSON stated that as a correction to the agenda, MS. HARBO is now Chair of the Audit Committee, and MR. HIPPLER is now Chair of the Actuarial Committee.

V. PUBLIC/MEMBER PARTICIPATION, COMMUNICATIONS & APPEARANCES

DOUG WOODBY stated that he is a member of 350Juneau and has spoken to the Board many times in the past about the fiduciary risk of the climate crisis. He stated the fossil fuel industry, through Exxon's own research, was aware of the direct link between burning fossil fuel and the greenhouse effect. He stated that Exxon, along with many of the major producers, began a disinformation campaign to spread doubt about the science. He said it is now known that it is best to leave the majority of proven reserves in the ground to avoid the worst climate impacts. He said that Exxon just announced a $20 billion write-off, and that announcement followed similar announcements by BP, Shell, and Total earlier in the year. He suggested for the Board to take actions on determining the exposure across all asset classes, which would include identifying those investments that are not directly fossil fuel enterprises, but closely related and dependent on them. He said that would include banks who loaned substantial amounts of money to the industry, and to conduct a climate risk analysis across all those asset classes, and to also move funds to less risky investments if the risk analysis points in that direction.

BOB SHROEDER said that he had testified before the Board several times to urge the Board to examine its fossil fuel holdings and other investments that prop up the declining fossil fuel extraction industry. He said that his conclusion some years ago was that investing in fossil fuels was a bad financial bet. He said that he had divested his personal funds to avoid losing money and to be on the right side of the transition to a carbon-neutral economy and that betting on the fossil fuel industry will lose money in the near term as the industry inevitably declines. He stated that at last count, worldwide 1,246 funds and organizations have divested $14 trillion in assets from fossil fuels and that Bank of America announced that it is joining Wells Fargo, J.P. Morgan Chase, Goldman Sachs, City Bank, and Morgan Stanley in making commitments to stop funding for Arctic oil and gas projects. He said that he was dismayed that ARMB does not know on a real-time basis what its specific holdings are, and that ARMB does not closely track performance in the energy

sector. He said that ARMB deserves to know, and Alaskans need to be able to see how their investments are doing over time.

JIM SIMARD said that in the continuing absence of adequate executive or legislative action, there now was a growing second wave of climate-related litigation. He said that dozens of new lawsuits were making their way through the state courts as tort cases or public nuisance suits. He said many of these suits were brought by states and municipalities seeking reimbursement for the cost of mitigating climate-related damages. He said that Federal District Court Judge William Smith summarized the supporting evidence in these cases in his opinion remanding back to the state court of Rhode Island's tort case which had been filed against 21 fossil fuel companies stating that "Climate change is expensive, and the state wants help to pay for it, specifically from defendants in this case, who together have extracted, advertised, and sold a substantial percentage of the fossil fuels burned globally since the 1960s. This activity has released an immense amount of greenhouse gas in the earth's atmosphere, changing its climate and leading to all kinds of displacement, death, extinction, and destruction."

MR. SIMARD urged the Board to consider the probability that fossil fuel companies be held financially liable for damages caused by their past actions.

MICHAEL TOBIN said that in 2018, California SB 964 required companies to factor in climate-related risk in their portfolios and report progress on that and on meeting the Paris Climate Agreement goals every three years. He said the first report came out in December of 2019, and they found out that 20 percent of their investments were in sectors vulnerable to the fiscal aspects of climate change. He said those sectors included energy, forestry, transportation, food, and agriculture. He said that the CalPERS report noted that in addition to physical risk, like floods, fires, stronger storms, and sea level rise, there were also, transition risks in moving to a low-carbon economy. He said shifts in the market, in policies, and in technologies can affect the financial success of existing business models and industries. He said the report also noted that as a long-term global investor, the concern in addressing climate change in the portfolio was vitally important in fulfilling the fiduciary duty to exercise prudence and care in managing members' assets.

MR. TOBIN said that the investment landscape was changing rapidly, and some climate-related risk was due to large asset managers, banks, pension funds, and insurance companies moving to align their investments with The Paris Agreement. He said that all six of the largest U.S. banks had released formal exclusion policies against funding Arctic drilling.

MR. TOBIN said that a formal climate risk assessment process was part of the Board's fiduciary duty and to institute a climate risk assessment process to avoid getting caught with the assets stranded.

NILS ANDREASSEN stated that lot of the discussions that occur at the ARM Board level were valuable to the employers who participate in the PERS and TRS systems, and requested that at least for municipal employers, that the municipal representative to the Board produce either a summary of Board action or an annual report based on that

representative's financial experience in terms of how ARM Board decisions and PERS actuarial assumptions or audits or requests to the legislature, might impact municipal budgets as they move forward. He said that as part of the Boards operational responsibilities and duties, feedback from the municipal representative back to those municipal employers would be beneficial and keep everyone fully apprised of the work of the ARM Board.

CHAIR JOHNSON said that it was an interesting concept and that communications with municipalities and other employers in the system is always something that should be encouraged. He suggested MR. BRETZ consider the request and encouraged municipal participants to attend the ARMB meetings and read their reports.

VI. APPROVAL OF MINUTES: September 17 - 18, 2020

MR. HIPPLER moved to approve the minutes of the September 17-18, 2020 meeting. MS. HARBO seconded the motion. The minutes were approved without objection.

VII. ELECTION OF OFFICERS

MS. HARBO nominated ROB JOHNSON for Chair, BOB WILLIAMS for Vice-Chair and GAYLE HARBO for Secretary. MR. WILLIAMS seconded the motion.

A roll call vote was taken, and the motion passed unanimously.

VIII. STAFF REPORTS

1. Retirement & Benefits Division Report

MR. WORLEY directed the Boards attention to page 41 of the packet which was the staff report for a summary of monthly billings, Buck Global LLC. He said they were through the first quarter of FY21 for the period ending September 30, 2021. He said that all the work that was listed was for valuation work or related to audit work that the Division performs that requires actuarial reports for pension and OPEB liabilities, as well as information related to GASB allocation schedules for employers participating in PERS and in TRS.

MS. HARBO and MR. WORLEY discussed the work Segal performs and how much their annual contract was and how much comes out of the pension funds. MR. WORLEY said that he would see about providing the information.

MR. WORLEY directed their attention to the second report located on page 44 which was the Division's report on the membership activity for the first quarter ended September 30, 2020 which was first quarter FY21. He said that they saw a decrease in PERS and TRS Defined Benefit membership --200 in PERS and 4 for TRS -- increases in Defined Contribution membership, and an increase in PERS and TRS retirees for all tiers, just under 200 for PERS and just above 250 for TRS.

MR. WORLEY provided a correction on the membership statistics on page 46. He said the numbers were correct, just the labeling was incorrect. He said that where it said,

"Retirements 4th Quarter FY19," should be 4th Quarter FY20," and the same with the two lines below that. He said for September 30, 2020, a similar update was needed for the last three lines; instead of FY20 it should be FY21.

MR. WILLIAMS asked if they had seen more retirements due to the pandemic; MR. WORLEY said that he would have to check with the retirement section and would provide the response to MS. JONES to provide to the Board.

MR. WORLEY said that the final information item that he had was the FY22 Health Retirement Arrangement amount. He said that the amount for FY22 was going to be $2,168.40. That if an employee in either the PERS or TRS HRA or DCR plans worked the entire year, they would get $2,168.40 applied to their account, which is a 0.43 percent increase.

MR. WORLEY stated that the calculation established in statute under 39.30.370, which was the annual average compensation of all employees of all employers in both TRS and PERS, and it would then be 3 percent of that.

MS. HARBO stated that she appreciated the table with all the amounts from fiscal year 2008 to 2022; it was helpful to look at the percentage change in the annual amount.

MR. WORLEY said that they would be providing the interest that was earned on HRA for eligible member accounts for FY20. He said that by regulation, the Division must post that interest by January 15th of the year following the end of the fiscal year. He said that information would be posted to member accounts and available on the December 31, 2020 statements for eligible members of the Empower statements which would be out by the middle of January.

MR. DESAI added a comment to the question posed by MS. HARBO regarding the cost for the Segal actuary. He said that all costs that were paid for the Segal contracts came from the health trust fund since they perform strictly health related work. He said that all the actuarial work was completed by Buck, but there was no double work that was done by either Segal or Buck. Buck does obtain information from Segal for verification purposes for the work they do with Aetna, but all costs for Segal came from the health trust.

2. Disclosures/Communications/Calendar

MS. JONES stated that beginning page 53 of the packet was the disclosure, communications, and calendar update, and on page 54 was a list of disclosures for the third quarter. She said that on the following page was the communications report and that an updated version of the report had been provided.

MS. JONES said the communication log and report was something that was introduced at the September meeting. She said they had made two additions to the report, the first being correspondence sent by the Board and/or Chair. She said for this meeting there was a letter sent to former Trustee Norm West, that was included under the Chair Report later in the Board packet.

MS. JONES said the second addition was a section regarding public records requests, and the information was provided so the Board could see the type and volume of requests that were being received.

MS. JONES said the last item was the 2021 board meeting calendar. She said March was listed as telephonic, and they were hopeful that the remaining meetings would be in person but, that may require some reassessment as time goes on.

MS. HARBO said that Commissioner Tangeman wanted to have all the meetings in Juneau because he was located there, but since most of the Trustees reside in Anchorage, most of the travel would be eliminated if they had the meetings in Anchorage.

MS. HARBO said she knew that it was important to have MS. LEARY and MR. HANNA at the meetings, but most of the staff could give their five minute to half-hour presentations online, which would save a lot of travel expense for the Trustees.

CHAIR JOHNSON said he thought the discussion as to where they might have meetings when they get together was an important one to have in the back of their minds. He said that they all wanted to be optimistic and hoped that they have meetings in person together as soon as possible, wherever that may be.

CHAIR JOHNSON also wanted to make note for the Trustees that the log of communications that MS. JONES referred to, which was relating to communications from folks to the Board and any communications by the Board going out, was something that, going forward, would always be available to Board members.

3. CIO Report

MR. HANNA said that his first months as CIO had been busy. He said that he had been able to meet one-on-one with all the portfolio staff members and that the team was very solid. He also said that he was not currently planning on filling the deputy CIO role. He said that in the alternative investment area there were two senior staff members, SEAN HOWARD and SHANE CARSON who were ready to take on additional responsibilities. He also said that the equity and fixed income team would be involved in the direct evaluation of external managers in their respective areas as there were synergies that flowed from that. He said it was important to have the domain experts bring their best thinking to manage those portfolios.

MR. HANNA said that from an investment perspective, he was focusing much of his attention on asset allocation in the current market environment and mentioned presentations on private equity, fixed income, markets, and risk.

MR. HANNA said that item 2 was the Annual Manager Review which was held on November 4th. He said Callan started with a background presentation on equity factors since the ARM Board has significant factor exposure. He said they would be following up with staff on a specific analysis of the ARM Board's equity structure next year. He said that he anticipates that it will be in the timeframe of February, March, and April.

MR. HANNA said that they reviewed every manager in the ARM Board's portfolio and that the managers provided due diligence questionnaires to the group which were reviewed prior to the meeting. He said that staff and Callan then shared information on manager organization strategies, and they participated in a discussion with the IAC members. He also said that they intentionally do not keep a detailed record of the discussion to promote a candid discussion.

MR. HANNA stated that the CIO of Man's Alternative Risk Premia strategy, Keith Haydon, was expected to retire in February and that it had been a well-communicated transition, but given Mr. Haydon's central role in creating the strategy at Man, staff was considering placing Man on the watch list once that occurs.

MR. HANNA said that he then led a brief discussion on ARM Board risk levers in the current capital market conditions.

MR. HANNA said that they had discussed potential ARM Board educational topics, such as the China national debt relevance, diversity, and options in volatility, and oversight of the internal funds. He said that staff would keep these subjects in mind as they prepare future Board agendas.

MR. HANNA stated that the third item on the list was the watch list and that there were no managers currently on the watch list and they were not recommending that any managers be placed on the watch list at that time.

MR. HANNA said that items 4 through 6 were areas where they exercised the CIO delegation. He said in item 4 they transitioned to the securities lending versions of several SSGA passive equity funds, which was the World ex-U.S. fund and their emerging markets fund. He said that item 5 committed $100 million to Neuberger Berman Secondary Fund V which was the ARM Board's third investment in a series of successful private equity funds. He said that in item 6 they approved the cross trade of less than $1 million in securities from one account to other accounts managed by Schroders in the wind down of the insurance-linked investments with Schroders.

MR HANNA stated that Item 7 was a summary of the portfolio's rebalancing that took place in September and October, which could be seen on the second page of the CIO Report. He said overall, during this period, $535 million was invested in fixed income which was funded largely by the sale of equities, which had increased in value with the market rebound. He said $439 million of that was a combination of third quarter end rebalancing from equities to fixed income and to fund the monthly $92 million pension payment.

MR. HANNA said that in late October they funded another $92 million pension payment through equity sales and that they also conducted two internal rebalance transactions over that period to equalize the relative allocations across the plans that they manage.

4. Fund Financial Presentation

MS. WISNER stated that page 61 starts the financial report for the period ending October 31, 2020. As of Tuesday, December 1st, the total nonparticipant-directed assets was $29.8 billion, with fiscal year-to-date income of $3.5 billion, and a net withdrawal of $250.5 million.

MS. HARBO asked if the funds managed internally had changed from $14 billion she had as of the end of October; MS. WISNER said yes, and that as of yesterday, it was about $14.7 billion and the difference was that when she had sent out the staff report, it had August quarterly statements for some of the internally managed funds and now that she had September statements.

MR. WORLEY said that his presentation started on page 88 and that on page 89 was the four months ending October 31, 2020. He said that they also had the one-month period shown on page 90 and that it was an expansion of the net number that was presented on Treasury's financials, at the request of the Board, to show what the contributions and expenditures were by fund. He said that the biggest requested item from the Board was participant-directed disbursements or refunds from the plans, and that information was noted and characterized on page 91.

MR. WORLEY said that the Supplemental Annuity Plan and Deferred Comp Plan both offer the CARES Act distributions with limits that were established by the Division. He said that they distributed just under $20 million through October 31. He also said that the last table on page 91 was the Defined Benefit refunds by tier which was explained on page 92 and 93.

MR. HIPPLER asked if people wanted to roll over their Defined Contribution Plan to their new employer, if that would fall under separation from service, or the zero-dollar transfer to a qualifying plan line; MR. WORLEY said the information provided on the table was based on how the member fills out the form; if they checked it as a separation of service but then rolled money over, they would not know ahead of time what that was going to be so they would show it as a separation of service. He said that if a person informed them that they wanted to roll their money over, then it would show as a rollover.

MR. HIPPLER asked if that data was available as to how often it was happening. MR. WORLEY said that they could get that information from Empower; MR. WILLIAMS said that it was his understanding that the $20 million in distributions for the CARES Act funds was authorization for people to pull money from their Deferred Comp or their SBS because of the pandemic, and that all of the $20 million, none of which was subsidized, was to deal with an immediate need but was reducing future financial security; MR. WORLEY said that yes, they were pulling money out of their retirement to deal with the present situation.

MR. WILLIAMS said that had they not pulled the money out, it would have gained interest and would be there for them when they retired, but because they were pulling it out now, the $20 million would not be there. MR. WORLEY said that there was a three-year repayment period within the CARES Act if they choose to put money back in.

IX. TRUSTEE & LEGAL REPORTS

1. Chair Report

CHAIR JOHNSON stated that since the last meeting in September he worked with staff to develop agendas, discussion topics and points.

CHAIR JOHNSON said that NORM WEST stepped down as one of the Trustees and read a letter to NORM WEST, thanking him for his four-plus years of service as a Trustee of the ARMB and how much he was appreciated and what a joy he had been to be around.

CHAIR JOHNSON said that MR. COLLINS from Wasilla was appointed Trustee and asked that MR. COLLINS say hello to the Board.

MR. COLLINS said that it was an honor and a privilege to have been appointed to such a prestigious Board and that he took the appointment in high regard.

2. Committee Reports

A. Audit Committee

MS. HARBO said that they had met yesterday and approved two sets of minutes. She said the second set of minutes was the special meeting that was held on October 12th to review the draft financial statements to be included in the CAFRs.

MS. HARBO congratulated the Division once again for being the recipient of the GFOA Certificate of Excellence for Financial Reporting, which they have received for the past 20 years.

MS. HARBO said that they had received a report from MS. BEEDLE and MS. STUART, of KPMG, and MR. WORLEY on the audited financial statements. She said that MR. WORLEY gave them information on the GASB Rules 68 and 75 regarding the schedules that had gone out to participating employers which involved 16 audits.

MS. HARBO said that they had a complete employer audit report from MS. HELMICK regarding working with employers around the state. She said that this had been a trying time for doing anything with audits, especially in-person audits due to limited travel, but they completed 10 out of 59 scheduled audits for FY20. She said that MS. HELMICK explained the different problems they ran into as they performed the audits, and how the audits save the plan money.

MS. HARBO said she gave an excellent review on how they go through the audits each year and rotate the multiple employers in the State of Alaska in both PERS and TRS, on a four-year cycle.

B. Actuarial Committee

MR. HIPPLER said that the Actuarial Committee went over some of the preliminary findings and that the lag in earnings on assets was greater than the liability gains that they realized, the liability gains being favorable changes on per capita claims costs.

MR. HIPPLER said that there was a discussion on the unknown impacts of the coronavirus

shutdowns on the economy as far as people requiring more medical care and deferment of medical care, with the implication that in the future it may be that deferred medical care would come to fruition, so it was an artificial decrease in costs. He said there were some liability gains that were realized, but all of them together did not equal the asset losses that were realized.

MR. HIPPLER noted that in the DCR Plan they were eliminating the .2 percent annual rate trend adjustment, which almost completely offset the per capita claims gains. He said this meant that it was likely that the future contribution rate would increase.

ACTION: Relating to ARMB Actuary Audit

MS. LEARY said that she was not aware that Segal had made the same recommendations, but she would check on it.

MS. HARBO asked if MR. GOERING had a comment on the motion.

CHAIR JOHNSON asked MS. HARBO if her question was going to MR. GOERING's original assessment that it was an appropriate action, or did she have a more specific question about finding a sole source procurement; MS. HARBO said that she wanted MR. GOERING's assurance that the sole source contract was okay because the administration had received public comment on other sole source contracts that had been issued.

MR. GOERING stated that 15 AAC 112.160(a) controlled the issue, and it was permissible for the Board to use a sole source contract under the circumstances. He said the regulation section in subsection (d) Paragraph 6 stated: If a person possessed a special expertise required to perform the specific professional service. He said that it seemed to be essentially what was being said, that GRS had a level of background with ARM Board's plans that caused them to have special expertise.

MR. GOERING said that MS. HARBO was correct when she said the executive branch in Alaska had been under a lot of scrutiny recently with sole source contracts, and although the ARM Board was exempt from the state procurement code under most circumstances, the statute that provides for that exemption requires the adoption of regulations which encourage competitive bidding.

MR. GOERING said that while it was permissible to do sole source, it was not mandatory and was within the Board's discretion. He said he strongly recommended that they make the written explanation of why the procurement was in the best interests of the beneficiaries a part of the record because that was what the regulations required.

MS. LEARY said that she had just gone through the Segal report and their recommendations were limited to the work that was performed by the primary actuary, which was Buck. She said there was no mention of Aon or GRS or the review of the actuary or either of the two recommendations that Aon had made.

MR. WILLIAMS asked MS. LEARY if they could assume that there would be no negotiations and that the sole source procurement would result in substantial savings to the State of Alaska; MS.

LEARY said that if they found that was not the case, they would bring it back to the Board for an RFP.

MS. TSHIBAKA said they had recently found through an assessment of their procurement systems throughout the state, that they could save $23 million to $87 million through competitive sourcing that they had not been doing because of sole source contracts and redundant procurement spending in their department. She said there was something to be said for doing competitive sourcing but one reason they would not do it was the need for expediency.

MR. GOERING said that a possible alternative to an RFP would be to permit the Board to advertise the intent to make a sole source award for the purpose of determining if other sources were reasonably available or interested in a procurement, which could be done in parallel with negotiations with GRS.

COMMISSIONER MAHONEY said that she liked MR. GOERING's recommendation to pursue an expression of interest at the same time they negotiate a sole source.

CHAIR JOHNSON suggested to MR. HIPPLER that as there was no need for a second, as the maker of the motion on behalf of the committee, to add that language.

MR. HIPPLER said that it would specify the language would be to direct staff to pursue a sole source procurement contract and concurrently manage an expression of interest process.

After discussion, it was decided that the action memo should direct staff to pursue a sole source procurement contract and concurrently manage an expression of interest process for an independent audit.

A roll call vote was taken, and the motion for the Actuarial Committee passed unanimously.

C. DC Plan Committee

MR. WILLIAMS said they had public testimony at the beginning of the meeting, expressing gratitude that there was going to be a brokerage window. He said there was also an expression of gratitude that the HRA interest had been calculated. He said there was a comment about the Municipality of Anchorage and the Anchorage School District having contracts with Empower for the 457 plan that were exclusive and so the school district could not have a contract with the State of Alaska 457 plan.

MR. WILLIAMS said they had a Treasury update from MR. HANNA, and one of the things they were thinking about on the committee was how do we ensure that the DC members, which are more than half of the membership, get the same expertise, quality and value that they were getting for Defined Benefit members.

MR. WILLIAMS said that they had seen over time, a reduction in fees in their Defined Benefit, and there was also a push to get those reductions in fees for their DC members.

MR. WILLIAMS said they had heard from MS. PREBULA and were assured of and given

numerous examples of where she had been vigilant about aggressively negotiating fees on behalf of DC members.

MR. WILLIAMS said they had heard from MR. PUCKETT about HB79, which was a bill that was likely to be introduced in the House about police and firefighters.

MR. WILLIAMS said they heard about the number of monthly meetings and appointments that had increased dramatically since COVID-19. He said the in-person meetings had stopped, but a lot appointments were based on people wanting to know how secure they were. He said there did not seem to be a huge spike in those asking for retirements, but also response to the CARES Act money that had been talked about previously, which authorized members to tap some their deferred compensation or SBS for immediate needs.

MR. WILLIAMS said they had heard testimony from Empower that was very encouraging. He said they had been getting things set up so that the SmartSpending investment plan that the committee and the Board had approved, can be implemented in a timely way and work through Empower.

MR. WILLIAMS said that they had public testimony a few meetings ago from a member that wanted to withdraw money from a specific fund. He said Empower had reduced the amount of paperwork that members had to fill out; they were training their representatives so they could fill out that form while on the phone with the member; they are also going to make it so that it can be accomplished online.

MR. WILLIAMS said they had a discussion with MR. WORLEY about the recordkeeping fees. He said some of their plans had a recordkeeping fee at 11 basis points, and Deferred Comp was at 17 basis points. He said he thought that was all going to Empower; but in reality, only some of it was going to Empower. He said some of the fees were going to Treasury and some were going to Admin and said that there needs to be clarification about what goes where.

MR. WILLIAMS said that with Deferred Comp there was a possibility to reduce the overall fee of 17 basis points. He said that one of the reasons the Anchorage School District and the Municipality set up a plan with Empower was for 15 basis points instead of 17 basis points. He said there had been a renegotiation with Empower on the recordkeeping fee from 7 basis points to 5.5 basis points and that difference did not result in a reduction of the overall fees for the plans; it was divided between Treasury and Admin. He said there should be further discussion on options to reduce the overall fees for those plans.

CHAIR JOHNSON said that unless there were objections, he would push the Operations Committee, the Alaska Retirement Health Plan Advisory Board process as well as MR. GOERING'S legal report to after the lunch break. He said hearing no objections they would next be hearing from Buck.

CHAIR JOHNSON recessed the meeting from 10:35 a.m. until 10:43 a.m.

X. PRESENTATIONS

1. Actuarial Presentation

MR. KERSHNER said that Slide 4 showed the preliminary results of the June 30, 2020 valuations for PERS and TRS and the results included both the Defined Benefit plans that covered employees who were active through June 30, 2006 and the DCR plans, which covered all hires on or after July 1, 2006. He said the valuations were prepared annually based on census and participant data they collect from DRB, as well as the claims and enrollment information received from Aetna and Optum.

MR. KERSHNER said the main purpose of the valuations was to calculate the assets and the liabilities to determine the funded status. He said they then compared those measurements with prior year's measurements and identified the key activity during the year.

MR. KERSHNER said the valuations would be used to set the contributions for FY23. He said as per the discussions of the prior day, the reason the 2020 valuations were used to set FY23 contribution rates was because the process takes time and it gives as much lead time to the employers and the state for budgeting purposes. He said they use what is called a two-year lag.

MR. KERSHNER said that Slide 6 showed the valuation results. He said with market performance and the effect of COVID on invested assets for pension plans as well as other assets, the last 12 months had not been favorable, but did perform better than other plans in the country. He said the market value of assets for the DB plans was above 4 percent.

MR. KERSHNER said they do not use potentially volatile market values to determine contributions because if market assets drop significantly, it would cause a significant increase in contributions. He said if assets performed better than expected, that would cause contributions to decline. He said to remove the potential volatility on the contributions, they use a term called "actuarial value of assets," which is the market value with five-year smoothing of the market gains and losses over time. He said each year's market gain or loss is then recognized in the smoothed value of assets, 20 percent per year, so at the end of the five-year period, all of those market gains and losses are recognized.

MR. KERSHNER said that when they determined the actuarial value at 6/30/20, they took into account market gains and losses that occurred in FY16 through FY20. He said the whole point of the actuarial or smoothed asset value was to dampen the effects of the market ups and downs.

MR. KERSHNER said that for the liability side, except for the retiree medical for the two DCR plans, all of the liabilities at 6/30/20 were less than what they expected them to be based on last year's valuation.

MR. KERSHNER said that for the pension side, the most significant gain on the liability was due to the fact that CPI or inflation did not increase as much as they expected it to be based on the long-term assumption, and the COLA, and the PRPA benefits that are provided to retirees in the two DB plans, those adjustments which are tied to the CPI increase, did not increase as much as they thought they would because inflation did not increase as much as they thought.

MR. KERSHNER said that healthcare funds are not tied to CPI increases directly, and the main source of the gains was the fact that they had a favorable year on the medical and prescription drug experience due to the change in the prescription drug administrator, which occurred in the middle of last year's cycle.

MR. KERSHNER said that when they put unfavorable market asset experience together with favorable liability experience, the contribution rates at 6/30/20 were flat compared to a year ago.

MR. KERSHNER said the ultimate goal of the valuation was to determine the FY23 additional state contribution. He said the employer contribution rates for PERS and TRS are set by statute and are fixed. He said that every PERS employer contributes 22 percent of pay to the PERS trusts, and every TRS employer contributes 12.56 percent of pay to the TRS trusts. He said that the actuarially determined contribution rate for those valuations was higher than those fixed contribution rates, and the excess amount falls to the state via the additional state contribution. He said that anytime there is a favorable or unfavorable experience that causes those contribution rates to go up or down relative to those fixed employer rates, the additional state contributions can go up or down as well.

MR. KERSHNER said that they would be providing the calculation of those FY23 additional state contributions in the next few weeks and then will discuss those with the committee and then the Board in further detail at the March meeting. He said that they had provided two different estimates of what the FY23 contributions were likely to be. He said the first one was based on 2019's valuation and the combined PERS and TRS amounts were $320 million. He said that in September they had set the FY22 contribution rates and updated those projected amounts based on the preliminary June 30, 2020 assets, and those new projections resulted in higher FY23 additional state contributions of a bit above $350 million. He said based on the preliminary results, they believed that the FY23 additional state contribution derived from those results would be between $320 million and $350 million.

CHAIR JOHNSON asked if MR. KERSHNER was going to be careful in describing to the legislative committees when he presents the data that it is a draft and preliminary information not yet subject to the full vetting that is required by law; MR. KERSHNER said that Buck does not present the information to the committees, they present it to DRB who then presents it to the committees. He said it was his understanding that the results are clearly communicated as preliminary and have not been finalized with the Board at that point, and that it is provided strictly for information and budget purposes.

MR. YOUNG said Slide 7 showed the actual incurred claims for medical benefits that were paid from PERS and TRS trust over the last two fiscal years. He said that data is used to set the average expected cost for retirees in the plans because healthcare benefits are not defined by a formula like pension benefits are.

MR. YOUNG said they look at the actual experience of the retirees and use that as a basis for setting future expected costs and projecting those in the future. He said the methodology that has always been used is to look at the prior year experience, and for the last couple of valuations they have used the last two fiscal years. He said they take the claims that are incurred by retirees and

calculate what the average cost that the retirees are incurring each year. He said they have to calculate a cost for medical separately for those prior to Medicare those who are eligible for Medicare, and then the same for prescription drugs.

MR. YOUNG said that since they use the claims in calculating an average cost, they do not want to have the short-term volatility distort and reduce the average expected costs they expect in the future because the point of the valuation is to try to predict the long-term expected average costs of the plans.

MR. YOUNG said that due to COVID, healthcare services were severely impacted starting around the middle of March. He said people stopped going to facilities because they were concerned about becoming infected, so there was a significant decline in the actual amount of claims that were incurred during that time. He said since they use those claims in calculating an average cost, they did not want to have that short-term volatility distort and reduce the average expected costs they expect in the future. He said it had been assumed that the COVID impact was a short-term issue and that once it has passed, they expect healthcare costs will return to normal. He said they excluded the months that were impacted by COVID in their calculations.

MR. YOUNG said Slide 8 showed the prescription drug claims. He said there was a spike in March for both under 65 and over 65. He said they attribute that to once things started to get bad with the COVID pandemic in March, people were rushing to refill their prescriptions before things started to shut down. He said a lot of people switched from getting a 30-day supply from their pharmacy to getting a 90-day mail-order supply. He said that unlike medical, where they had to make an adjustment because there was a huge drop in the claims during that time, there was not that need on the prescription drug side.

MR. KERSHNER said that Slide 10-13 were charts pertaining to PERS, TRS and DCR plans. He said there are three measurements in the charts, the first one is called 6/30/19 actual, which were actual results from last year's valuation with no adjustment. He said the next measurement is called 6/30/20 expected, which was what would the results at 6/30/20 have been if the 2019 results had changed from last year to the current year as expected; He said for example, if assets had earned the 7.38 percent return what would they have been at 6/30/20, and if all of the other assumptions had been realized, what would the liabilities have been as 6/30/20. He said the 6/30/20 actual was what the actual assets and liabilities were at 6/30/20 and they compared the actual with the expected and those deviate. He said in any given year they will have deviations between actual and expected values and if the difference is favorable to the plan then that leads to what they call an actuarial gain and if it is unfavorable to the plan, it is an actuarial loss.

MR. KERSHNER said that in total they were at 24.08 percent of pay last year and at 6/30/20 they were at 24.10 percent.

2. KPMG - Audit Report

MS. STUART said they were very committed to serving the Retirement Management Board with the highest level of audit quality, and they build that into their staffing plan, audit plan, the technology they use during the audit, as well as their review process that happens both on the detailed audit work performed, as well as the overall financial statement review.

MS. STUART said they had completed their audits and had issued their audit opinions. She said that there were several items in their report that stated there were no matters to report. She said that this was to emphasize that their obligation was to report to the Board all items. She said one item was if there were any unusual transactions that occurred in the past in the plans. She said they would perform audit work and report that directly to the Board so the Board would stay informed as to what major financial activities had occurred. She said they would also report any uncorrected audit misstatements, which are audit misstatement where there was an error, or a number misstated in the financial statements that they did not think was significant enough to impact their opinion.

MS. STUART said that they did not identify any illegal activities, fraudulent financial reporting and did not have any difficulties during their audit. She said they have a good relationship with the staff of the retirement system, as well as the commissioners' staff, and they provide all information requested on a timely basis.

MS. STUART said during the audit of the National Guard Retirement System, they identified that the retirement system did not have adequate controls to ensure the accuracy of certain components of the National Guard data. She said once National Guard members leave the State of Alaska, they may still be accruing benefits from their service in other states, but the Alaska Guard has no way to track that information. She said they do not know whether the census data that is used to determine the actuarial valuations is accurate, so they report that as a material weakness in controls.

MS. STUART said to summarize their auditors' report, they issued unmodified or clean opinions for five of the retirement systems. She said that they issued a qualified opinion on the National Guard system based on the matter that she just described. She said they do not have the information related to the census, and Buck can only use the census data that is provided to them to come up with an actuarial estimate.

MS. STUART said that there were not any significant changes in accounting policies that were pending and no significant changes in the accounting policies that were applied to the financial statements. She said when they evaluated the application of the policies, they did not identify any matters that caused them concern about management bias, including in the accounting estimates. She said the largest accounting estimates related to the total pension liabilities and the total OPEB liabilities.

MS. STUART said the financial statement amounts were built on several assumptions that were uncertain, such as the rates of return, mortality rates, retirement, and termination rates. She said they had reviewed those assumptions and the actuarial reports that were provided by Buck. She said they have a KPMG actuary review the assumptions for consistency with information that he saw across other retirement systems, and what he expected as an actuary independent of the retirement system actuary, and independent of Buck. She said that their conclusion was the assumptions used were reasonable and did not indicate bias, and the disclosures were appropriate.

MS. STUART said there was other information that was associated with the audits of the plans. She said they have issued all of the financial statements related to the plans, to the systems. They review the CAFRs when those are available, and they were expecting those soon. She said they would also perform audit work and issue an audit opinion on schedules that allocate the pension and post-retirement obligations across the various employers in the state. She said that audit would be issued before the end of the year.

MR. HIPPLER asked if the qualified audit for one of the plans impacts the State of Alaska's CAFR having a clean audit itself; MS. STUART said it did not. She said the size of the plan was not so significant that it impacted the State CAFR.

MR. HIPPLER asked what was the actual head count of physical people involved with the National Guard plan that they were unable track; MS. STUART said it was roughly 5,000.

D. Operations Committee

CHAIR JOHNSON said that the Operations Committee had a brief but informative meeting. He said they heard the Manager Review report from MR. HANNA. He said there were three items presented in the Treasury operations update by MS. LEARY and an action item.

CHAIR JOHNSON said the external communications process which was how they deal with the submissions in writing by their beneficiaries and other members of the interested public. He said that MS. JONES had created a log of the communications that should be reviewed by all.

CHAIR JOHNSON said that he thought it was an important way to add a reasonable record of the communications shared with them. He said they represent the beneficiaries and want to hear their proposals or suggestions, as they inform the Board's judgments.

CHAIR JOHNSON said the second item was a report from MS. LEARY in response to requests from MR. BRETZ regarding travel and honoraria. He said a document was provided that listed the information which they would discuss at the September meeting each year.

CHAIR JOHNSON said the other matter was an action item regarding the custody contract with State Street. He said MS. LEARY proposed to go forward with negotiations with State Street for an up-to-five-year contract. He said that that he thought it appropriate for the Board to go forward with the contract.

ACTION: Custody Contract

CHAIR JOHNSON said the action item is a recommendation that the ARM Board approve use of its delegation to MS. LEARY to negotiate an extension of the custody contract with State Street for a period not to exceed five years. He said that as Chair of Operations Committee he submitted the motion to the Board and that a second was not required.

MS. LEARY stated that the action memo included the reasons and authority as to why this could happen and that the current contract with State Street was extended also for a five-year period and that contract ends June 30th, 2021.

A roll call vote was taken, and the motion for the Operations Committee passed unanimously.

CHAIR JOHNSON said they had also heard a Middle Office update from MR. JONES regarding cybersecurity. He said they heard from MR. GOERING who talked about questions previously posed about the necessity of obtaining fiduciary insurance, but the answer to that was not practicable and not necessary. He said the state is self-insured and the types of insurance that would be the best used were not available. He said there is no need to go forward with that matter.

E. Alaska Retiree Health Plan Advisory Board

MR. BRETZ said that COVID was on a lot of retirees' minds and that one of the clarifying points of the meeting was changes in the AlaskaCare Retiree Defined Benefit Insurance. He said they had been working on a booklet with a new section added that clarified COVID. He said that testing and vaccinations were being added and the medical plan would cover medically necessary FDA-approved COVID-19 testing and vaccinations at 100 percent, subject to recognized charges.

MR. BRETZ said the exact language was in the report and that there were also changes to the IRMAA charges that retirees are assessed. He said the reimbursement process will be made easier in the coming year, which will be through OptumRx.

MR. BRETZ said that the Division had been looking into the possibility of having carriers bring a Medicare Advantage plan in and an RFP had been put out with some positive feedback from carriers that are interested in developing a Medicare Advantage program in Alaska.

3. LEGAL REPORT

MR. GOERING said that he had recently reported on three matters that he had updates for and stated that the ARM Board was not a party to any the matters.

MR. GOERING said that two of the cases were pending in the Alaska Supreme Court. He said one of them involved the potential for former employees to return to employment and buy back in. He said the case had been briefed and argued in the Alaska Supreme Court and was ripe for decision, but one had not yet been issued.

MR. GOERING said that the second case in the Alaska Supreme Court was pending briefing and involved a retiree's dental benefits. He said the State of Alaska believes that it had complied with the Superior Court's order but there had been outstanding questions about compliance with the Superior Court's order as well as what will happen going forward in terms of what dental plans would be offered.

MR. GOERING said that the third was a case in the Superior Court involving the change in a third-party administrator for retiree health plans, and that case was expected to go to trial in July of 2021.

CHAIR JOHNSON asked about the last case mentioned that challenged the new third-party administrator. He asked in what terms of the appointment of the third-party administrator; MR. GOERING said that the substance of the claim was that the change in third-party administrator resulted in changes to the way the claims were processed, and the types of services offered. He

said the substance of the case was what constitutes a benefit, and what constitutes simple plan administration. He said the plaintiffs were claiming that the change in the third-party administrator resulted in a change in benefits that were constitutionally protected.

CHAIR JOHNSON asked for clarification regarding the dental/vision/audio claims before the Supreme Court, that the issues were really about the specifics of whether there was a diminishment in the DB plan. He asked if an issue in the case was whether or not the D/V/A coverage was even subject to the diminution clause. MR. GOERING said one of the remaining questions in the case was whether or not the state will have to continue to offer plans as they were offered in the past, or whether, at some point, there can be a change to a new plan.

MR. GOERING said if the Supreme Court decides that it was not a diminishment in the first place, the answer would be they can move forward as necessary. He said if the answer was, yes, there was a diminishment, then the question would be: What happens in the future to plans that may or may not exist or may have changed in terms of what the commercial carriers offer; He said he thinks there is a lot of cleanup that needs to be done in terms of clarifying what the Superior Court decided and how it will apply going forward.

CHAIR JOHNSON recessed the meeting for lunch from 11:52 a.m. until 1:01 p.m.

3. Risk and Return in the Current Market Environment

MR. HANNA said that at the last Board meeting he promised to provide an early preview of the upcoming asset allocation process. He said that Slide 2 was related to asset allocation and touched on governance and management structure. He said that it was a more active process this year since the capital markets were so dynamic.

MR. HANNA said the investment return was compensation for bearing the risk, and that most incremental return involved a series of difficult tradeoffs. He said the asset allocation job was to select the balance of risks that best fit the return goals, time horizon, and liquidity constraints.

MR. HANNA said that pension funds can adopt a high-risk tolerance as they have a long-time horizon. He said that as a result the main investment advantage a pension has would be its ability to take long-cycle risks that other investors cannot take. He said those sorts of risks can be a challenge since performance was monitored over a shorter period of time and it was important to be thoughtful in assessing those risks in making decisions.

MR. HANNA said other principles relate to cost, efficiency, and complexity and that controlling all of these principles was fundamental to managing institutional capital and the ARM Board had been a leader in this regard.

MR. HANNA said Slide 5 showed the asset allocation starting point. He said the portfolio was heavily weighted towards public and private equities at 59 percent. He said they have 22 percent in fixed income and another 19 percent in real assets and opportunistic. He said the ARM Board and staff had recently completed a major portfolio restructuring focused on reducing complexity and investment management fees. He said it had resulted in a $30 million reduction in fees every

year. He said the equity portfolio now has significant passive management exposure to risk factors and more limited active management. He said the portfolio was expected to meet the actuarial return target over a 20-year time frame.

MR. HANNA said Slide 6 provided a look at where the markets stand as they get closer to a year into the pandemic. He said Governments worldwide reacted quickly to the pandemic with a combination of monetary and fiscal stimulus to help stabilize capital markets. He said that as a result, interest rates in the U.S. had dropped by over 100 basis points through the 10-year point on the yield curve which, in turn, there is now increasing government debt, the prospect of continuing stimulus, and the Fed's willingness to accept more inflation. He said that all results in lower expected returns for bonds, a higher potential for longer-term inflation, and potentially dampened economic growth.

MR. HANNA said recovery for the equity markets had been rapid but fairly narrow. He said the winners were the companies that benefited from the transition to remote and e-commerce.

MR. HANNA said Slide 8 showed that interest rates had been steadily declining for 40 years and from an asset allocation perspective, it had been a tailwind for institutional investors. He said most hedges have a cost associated with them and fixed income had provided a strong equity edge, solid returns, and liquidity. He said that fixed income's ability to play a strong role moving forward had come into question.

MR. HANNA said that equities have been increasing in value for the past 40 years. He said one rationale for the increased valuations was related to the interest rate; since the discount rate applied to forward equity case flows had been steadily decreasing, equities and their earnings were more valuable from a discounted cash flow perspective, which was another explanatory factor behind the equity rebound during the year.

MR. HANNA said that Callan will release their 2021 capital market assumptions in January. He said the ARM Board uses a 20-year set of assumptions which is close to the weighted average life of their liabilities. He said other market participants had recently released their CMA's which provided a preview of what they could expect. He said fixed income returns were expected to be 100 basis points less than last year. He said equities were tougher to forecast and there was less consensus. He said that J.P. Morgan and others were forecasting a similar reduction due to the high valuations, slower future growth, and a lower risk-free rate.

MR. HANNA said that one common element that most are projecting is that the curve is still relatively steep as they move from bonds to stocks, so the equity risk premium is expected to remain largely intact. He said that overall, they were expecting a material 40 to 80 basis point reduction in expected returns of the ARM Board's current risk level over a 20-year time.

MR. HANNA said they were expecting a reduction in forward earnings and that he thought it would be useful to discuss the approaches used by their peers to adjust risk and return that could be considered by the ARM Board. He said for modest changes in capital market assumptions they have often kept the same core set of assets and moved up or down the efficient frontier targeting their actuarially assumed rate of return. He said the main thing to consider was the

increased volatility and downside risk. He said that since the ARM Board was more mature and had material cash outflows, its ability to recover from significant downturns was more limited than a fund that was less mature, but that the ARM Board has a long-time horizon and could afford to take a high risk within reason. He also said that the further out the efficient frontier is, the portfolio becomes very concentrated in equities and less resilient to states of the world where equities are not expected to perform well.

MR. HANNA said that another variation on the efficient frontier would be to add new or additional diversifying assets. He said some of them are return and risk enhancements that might be underrepresented in the ARM Board's portfolio and some are inflation hedges that would help in certain environments that the portfolio could face.

MR. HANNA said the ARM Board was taking equity factor risks with excess return compensation expected. He said they could consider increasing their active management in less efficient areas such as emerging market, small cap, and the REITs.

MR. HANNA said that adding leverage would be another way to increase expected returns and was also one of the more controversial approaches. He said they had also invested in leveraged strategies like private equity, direct lending, and others which could be increased. He said that at the portfolio level they could add leverage to improve diversification and also to increase return. He said it was usually done by investing using futures or other derivatives that were highly cash-efficient and repurposing some of the cash into new investments. He said that the last thing that could be done after working through all the other options would be to adjust return expectations.

MR. HANNA said that Callan would release their 2021 capital market assumption in late January and would formally take the Board through the CMAs and a deeper look at liquidity and the downside at the March meeting.

MR. WILLIAMS said that he was not one to jump into the pool for leverage, but it seemed that the cost of using leverage seemed to be fairly low and was a way to enhance returns. He asked if they have $30 million in assets, do they leverage that to make it look like $50 million, or what percentage would it be? He said that he thought that moving forward, leverage made sense in a conservative way.

MR. HANNA said that he thought MR. WILLIAMS initial response to be cautious was healthy and prudence was something to think about in relation to leverage. He said that if capital market assumptions remain low for an extended period of time, he does expect leverage to be a discussion that they will hear more often. He said CalPERS was considering a 15 to 20 percent additional leverage, so not to the degree of up to $50 million, but more on the modest side.

MR. HANNA said that his approach going through this would be fairly neutral with all of the options. He said he does expect that the return deficit may be material enough that everything does need to be on the table.

MR. HANNA said that it does require consideration of several different points of view, such as the types of risks that they end up taking if they were going to look in to leveraging the portfolio.

MS. HARBO requested a comment from each of the IAC members on the best way forward and any cautions that they might have on what to do next.

DR. MITCHELL said that the next step would be to go over those alternatives one by one and ask what risk and what reward they present. He said that it was possible that the conclusion might be that they cannot do a whole lot given the environment that they may be in. He suggested they wait to see what MR. HANNA's study showed.

MS. RYERSON agreed with DR. MITCHELL.

DR. JENNINGS said he thought there might be a cheaper source of leverage through the financial markets. He said he appreciated that MR. WILLIAMS was open to the idea. He also said that he thought the answer to the degree of leverage was going to be a function of what you were doing with it.

MR. COLLINS said when they were looking at leverage -- and over the course of the last 10 years in the market they have seen moral hazards in adverse selection, a great identifier in the lending aspect, and with the current interest rates that they were seeing and had seen for five to seven years, would that lead into a greater opportunity in small cap and domestic equities, as well as utilizing the high yield corporate bond structure to where they have a greater rate of return with minimal risk due to the convertibility? He also asked as they hedge into potential inflationary risk with devaluation of bond holdings, if implementing a floating rate bond holdings to assist in capturing the increased interest rates over their 20-year liability were some of the proposed investment strategies that they would be vetting through the analysis in the coming months; MR. HANNA said some of those are things that he would expect to vet and some of them were already present in the existing portfolios.

COMMISSIONER MAHONEY thanked MR. HANNA for his presentation and said that it was timely and a good conversation for the Board to address. She said that they had been going through a similar exercise at the permanent fund in terms of trying to address the gap as well. She said one of the areas they decided to address was something that she wanted to present to the Board for consideration, which was to determine how much risk they were willing to take, what level of risk were they willing to be at and address it in a manner where everyone would understand.

CHAIR JOHNSON said that COMMISSIONER MAHONEY posed the question and to the extent that they can advise and come up with a sense of how much risk they were willing to take, he would be happy to try doing that.

MR. HANNA said that it was a process of triangulation to try to figure out the elements of risk that were most impactful to the ARM Board in areas where they could afford to increase their risk posture. He said it was his view that there were two governing aspects of risk. He said one was liquidity over time as the funds continue to mature, they need to be sure that they can pay benefits when they come due and that they can effectively afford the public equity posture and be able to rebalance into public equities when they go through downturn periods.

MR. HANNA said the downside risks have the same aspects to them in terms of do they have a mature plan that has material outflows, the path of returns does matter because every year of outflows is a portion of the portfolio that can no longer recover from a significant drawdown. He said more would be discussed during his presentation the following day.

MR. WILLIAMS said that that it looked as if they were a bit riskier than some of the portfolios because they were at 59 percent equities. He said if they needed all their money next year, that would be dangerous, but based on the length of their plan, he was comfortable with them being 59 percent in equities. He then asked if there were other aspects of their plan that makes them riskier than others and was MR. HANNA confident that if they go deeper into private equity, will they get diminishing returns because they are pursing projects that are less quality; MR. HANNA said both public and private equities at 59 percent was largely what puts them at that place in the efficient frontier. He said that opportunistic and real assets also have a 60/40 risk of posture which contributes to a degree as well. He said as far as MR. WILLIAMS second question, he would defer it until the presentation the following day as to not steal Callan's thunder.

MR. WILLIAMS said he could wait for the answer.

MR. HANNA said that it was a good question to think about as they hear both presentations and to ask the presenters for their views on it.

4. Private Equity Annual Plan

MR. HOWARD presented an overview of the private equity asset class, market conditions, and the ARMB's portfolio and plan recommendation. He first directed the Board's attention to Slide 4 which showed a pie chart that reflected results from an investor survey that had been conducted that asked specific questions to fund sponsors. He said the results pointed to return enhancement being the primary consideration. He also directed the Board's attention to a table that showed a comparison between the Cambridge private equity composite and public equity benchmark blend made up of one third S&P 500, one third Russell 2000, and one third MSCI EAFE. He said it was a public equity blend that was established in ARMB's private equity guidelines and that it had done quite well.

COMMISSIONER MAHONEY asked if they were returns net of fees; MR. HOWARD confirmed that it was net of fees for private equity and for public equity they were index returns.

MR. HOWARD directed the Board's attention to Slide 5 which listed several characteristics of private equity that helped to explain why the opportunity of enhanced returns existed. He said that private investment opportunities were large with the vast majority of the companies being ran privately. He said the number of public companies had declined over time due in part to the growth of the private market which had developed to the point that companies could remain private and have access to capital without the distraction and expense that comes with being a public company. He said most private equity groups aim to buy higher-growth companies at low valuations, create value by making operational and financial improvements, and then sell the companies at higher valuations. He said the negative characteristics of this was that private equity is illiquid, fees are

high, and the market data was imperfect.

MR. HOWARD said that Slide 6 gave information on private equity structure. He said the ARMB was currently invested in private equity funds through two advisors, Abbott and Pathway, and that the investments were made through limited partnerships outlined in the top diagram. He said in the limited partnership structure, ARMB and other investors were limited partners, and the private equity group was the general partner and directed investments in underlying companies. He said the bottom diagram showed how typical private equity funds drawdown structure worked and was an important component for controlling the Board's overall allocation to the asset class.

MR. HOWARD said that Slide 7 gave a broad overview of the types of strategies included in private equity. He said the investments in ARMB's portfolio were categorized in three separate groups and differentiated by a portfolio company's corporate growth stage. He said the first was venture capital, which invests in earlier-stage companies. He said the second category was buyout, which invests in mature operating companies and the third was special situations that is a catchall for groups that either had a multi-strategy or specialty focus.

MR. HOWARD said that on Slide 8 the top graph showed the spread between upper and lower quartile Cambridge performance by vintage year, and that was the year capital was initially deployed by a fund. He said upper quartile funds had significantly outperformed lower quartile funds and that dispersion made manager selection a critical component of portfolio implementation. He said avoiding the bottom quartile was important to the success of the program and that the ARMB's portfolio was invested through institutional-quality managers with well-established business and proven capabilities. He said that diversification was achieved on several different fronts, including strategy, industry, geography, vintage year, and manager. He said the goal was to build a well-diversified portfolio of high-quality partnerships.

MR. HOWARD said Slide 9 shows that 2019 was another year of fundraising growth. He said that he expected this to continue as investors sought out asset classes that could help them meet their return targets. He said GPS had quickly adjusted to fundraising without the ability to travel and fundraising had been relatively strong. He said because of the demand for private equity, terms were GP-friendly and access to top managers could be challenging.

MR. HOWARD said that Slide 10 showed that investment activity had declined slightly in 2019 due to a 30 percent drop in large buyout deals and that deal activity had then been negatively impacted during the first half of 2020 as economic uncertainty created a divergence between buyer and seller pricing expectations.

MR. HOWARD said Slide 11 was a chart that highlighted the common paths GPs take to exit investments and that the primary sources of liquidity were through the MNA market. He said the secondary sources of liquidity were through an IPO or recapitalizations which were dividends paid to private equity firms funded through issuance of additional portfolio company debt. He said he had added a bullet point on the recent growth in Special Purpose Acquisition Companies, which are companies that raise capital through an IPO and then use the capital to purchase and take companies public through a reverse merger.

MR. HOWARD said that overall, the portfolio had performed well, in the 40th percentile with an 11.8 percent IRR compared to 8.5 percent for the Cambridge private equity median. He said it was helpful to compare the performance against public equities through timely returns and public market equivalent IRRs.

MR. HOWARD said the AMRB's private equity policy had an expectation for the private equity portfolio to outperform the public equity blend over rolling 10-year periods by 200 basis points, and that was net of fees using both calculations methodologies. He said the ARMB's 10-year time weighted return was 15.4 percent, compared to 10.2 percent for the benchmark blend which was an outperformance of 522 basis points.

MR. HOWARD said the second way of measuring relative performance against public markets was by comparing against public market equivalent returns, (PMEs). He said PMEs were the returns they would have achieved in the public market if they were to buy in and out of the policy benchmark using their actual private equity cash flows.

MR. HOWARD said that over a 10-year period, ARMB's portfolio had a 15.1 percent IRR, compared to the PME IRR of 11.6 percent, which was an outperformance of 343 basis points. He said since inception, the portfolio had outperformed the PME by 441 basis points which was equivalent to $2.1 billion of additional fund value than if they had only been invested in the public markets.

CHAIR JOHNSON asked MR. HOWARD if he had seen a length of time between commitments and actual contributions and if that time had increased, and if so, how did it get accounted for and if there was a negative impact; MR. HOWARD said that those time periods had extended a bit. He said the level of private equity exposure would be based on the paid-in capital and uncalled capital of 1.6 billion would remain in cash or out of private equity. He said that they expect the capital to be called over several years.

COMMISSIONER MAHONEY asked why wouldn't we keep the money in public equities because public equities are very liquid. MR. HANNA said that was what they were doing - the money was not sitting in cash.

CHAIR JOHNSON asked if the $1.6 billion had increased in size or had it gotten smaller; MR. HOWARD said that it had increased as private equities became a larger component of the portfolio.

MR. HOWARD said that Slide 14 showed that the ARMB's portfolio resulted in distributions of $593 million, which was slightly more than the amount contributed and that over the past five years the portfolio had been a significant cash generator for the retirement system providing net cash inflows of $235 million. He said that was a result of increasing private equity commitments several years ago that enabled it to reach a 12 percent portfolio allocation.

MR. HOWARD said that Slide 15 showed that the portfolio was well-diversified by strategy and that the targets were 25 percent to venture capital, 45 percent to buyout, and 30 percent to special situations. He said that the portfolio was close to these guidelines and staff expected diversification

to remain in line with long-term targets.

MR. HOWARD said that Slide 16 included pie charts that summarized data by looking through the over 2,000 companies in ARMB's private equity portfolio. He said the portfolio was well-diversified by both industry and region and that international investments represented 25 percent of the portfolio. He said that software represented 29 percent of the portfolio as it is inherently diversified since it is exposed to an end market rather than a narrow set of risk drivers.

MR. HOWARD said Slide 17 showed the commitment target for 2019 was $590 million, and during the year $508 million was committed to 48 investments with $191 million by Abbott, $222 million by Pathway and $95 million directly. He said the co-investment program, which started in 2016, made 15 investments totaling $47 million.

MR. HOWARD Slide 18 showed their pacing model which projected forward commitments needed to achieve ARMB's targeted allocation to private equity. He said that Slide 19 showed the output of the pacing model and their recommendation for forward commitments. He said that in summary, as expected returns decline for all major asset classes, private equity plays an important role in achieving ARMB's return target. He said that because private equity had been a reliable source of excess returns, the asset class had experienced tremendous growth which was expected to impact future returns. He said that they continue to look for opportunities to drive performance and cost improvements and adding co-investments was a good example of that.

MR. HIPPLER asked about the directly managed portion of private equity - that as the staff was privately managing that, how do they find opportunities; MR. HOWARD said the staff utilizes Abbot's, Callan's, and Pathway's deep industry knowledge for funds, and does their due diligence on those investments as well.

COMMISSIONER MAHONEY asked if the returns between Abbott, Pathway and their direct investments were comparable; MR. HOWARD said that the Abbot portfolio has a 10.5 percent since-inception IRR, Pathway has a 14.2 percent since-inception IRR, and the staff direct investments were a bit more of an immature portfolio at 10.4 percent since inception.

MS. RYERSON asked how they decide which portfolio gets how much and how they make sure they are not over-allocated to any particular fund; MR. HOWARD said that the approach allows for higher-conviction investments, but they have always been conscientious of what Abbott and Pathway do.

MR. WILLIAMS asked what the correlation between private equity and public equities was; MR. HOWARD said that they were driven by similar economic factors and from a diversification standpoint, private equity could be thought of as a way to diversify.

COMMISSIONER MAHONEY asked if they were approving the 29 percent allocation to the software industry or was that something that the Board could still discuss; MR. HOWARD said the 29 percent allocation to software was already in place and what the Board would be approving would be next year's pacing of $600 million.

CHAIR JOHNSON asked with respect to Resolution 2020-18, was the proposed plan for adoption the entire presentation or just Slides 15 and 16; MR. HOWARD said they consider the whole presentation the plan.

MS. HARBO moved to adopt Resolution 2020-18. MR. HIPPLER seconded the motion.

A roll call vote was taken, and the motion to adopt Resolution 2020-18 was adopted unanimously.

5. Private Equity Review

MR. ROBERTSON said that the Board had enjoyed nine years of positive cash flow out of the portfolio. He said through Abbott, they had been investing in private equity for 22 years and they started investing at high prices and then investments got hurt and then ramped up again. He said that would be evident in their IRR return because it was not as good as their multiple. He said IRRs were sensitive to early cash flows. He said that hiring Pathway in 2001 was a brilliant move, they are a buyout-oriented manager and they were hired at the beginning of the buyout boom.

MR. ROBERTSON said the Treasury portfolio was started just before the GFC which was similar to what happened with Abbott. He said little money was invested at the beginning of the staff portfolio and most of it had been in more recent years so for having invested for 12 to 14 years, it is still a young portfolio. He said that year after year the private equity portfolio increased quite a bit, even though the total plan did not. He said that a positive would be the uncalled capital at 50 percent of the private equity target.

MR. ROBERTSON said that the current fiscal year had a boom during the first half, that in the last half of 2019, the equity markets were roaring, and the MNA markets were highly liquid. He said since March, the private equity market had stayed strong, and on a dollar basis through the third quarter, they were down 7 percent from 2019. He said from an investment and exit standpoint at the portfolio company level, they were down quite a bit from 2019 and that there was a 30 percent decrease in MNA activity through the September quarter. He said once the pandemic started, the general partners stopped investing and paid attention to their portfolio companies.

MR. ROBERTSON said after the first quarter was over, the second quarter prices had dropped, that in 2019 prices were at 11 to 12 percent on average in the buyout market, then they dropped by the second half to 9 times cash flow, so they started investing aggressively and by the end of the third quarter, prices had rebounded significantly.

MR. ROBERTSON said the paid-in, or money getting invested into companies went up to $600 million, and the paid-in comes from the start at uncalled of $1.68 billion which was 36 percent of their starting uncalled. He said for distributions, $515 million gross out of the portfolio last year came out of the starting NAV, which was $2.967 billion, a 17 percent distribution of that NAV. He said that part of it was principal, part of it was gain, but it was a strong cash flow out of the portfolio. He said that they do not just take cash out of the portfolio, that they have to put cash in; putting the two together, they had to put in $87 million or about 3 percent of the original NAV into the portfolio last year.

MR. ROBERTSON said that the NAV increased $391 million, or a 13 percent year-over-year rise.

He said considering the paid-in, which was negative 3 percent plus the 13 percent unrealized appreciation it would equal a 10 percent increase in the portfolio.

MR. ROBERTSON said the IRR through June was 11.8 percent, the median Cambridge benchmark was 8.5 percent with an upper quartile of 16.6 percent which puts it in the 40th percentile. He said the total value to pay in was 1.56 percent, which was above the 1.34 percent median and puts it in the 39th percentile.

MR. ROBERTSON said that the portfolio commitments had increased 3.5 times over the past 14 years and that the TVPI has had a gradual steady increase over that time frame and that he expects to see that to continue to rise before leveling out as that portfolio continues to build.

MR. ROBERTSON said they have a lot of venture capital, which was a good thing and that high-quality venture was hard to access and was a benefit for the portfolio. He said that as MR. HOWARD had touched on, they have a lot of tech, which in the current environment was a fortuitous industry classification to be in. He said the overall geography was similar to peer portfolios and close to their intended amount of international at 26 percent and having 20 percent in Europe and a bit more in Asia and elsewhere was normal.

MR. ROBERTSON said that Abbott was their longest-standing manager with 38 percent of the portfolio. He said the firm had been very stable, but they were beginning to see retirements. They had three in the last two years. He said the CEO was still relatively young and will be there for a while. He said that Abbott has a rule that when they hit social security retirement age, they are out. He said the transitions from old staff to new staff have been smooth.

MR. ROBERTSON said Pathway was the larger of the two managers at 45 percent of the portfolio. He said the firm had been very stable with few retirements and one departure in the last two years. He said the three founders were still in place and he was not getting any sense that anyone was going anywhere in the near future.

MR. ROBERTSON said that the in-house portfolio had 28 investments that had been made in the portfolio over the last 14 years. He said the goal of the staff was to try to enhance the number of investments in each year to five or more gradually going into the future. He said they had been investing for 14 years, but in 2009 and 2011 due to the Global Financial Crisis, no investments were made. He also said that 44 percent of the commitments in the portfolio were older than 3.5 years, so most of the portfolio was hardly even paid in, so it was a much younger and dynamic portfolio. He said that corporate finance was the key focus, with less emphasis on venture or no venture capital in the portfolio. He said there was emphasis on secondary and debt-related distressed and mezzanine, which makes it a lower-risk, lower-return profile than the other two external managers.

MR. ROBERTSON said last fiscal year $80 million was invested in two partnerships, compared to $185 million the year before. He said the uncalled of $155 million was 33 percent of the starting uncalled. He said they had a gross distribution of $111 million or 21 percent which was better than the overall portfolio which was 17.4 percent for a strong cash flow out of the portfolio and that is up $57 million from a year ago. He said they paid $44 million in net distribution which was 8 percent funding mechanism, versus a 3 percent for the total portfolio. He said if they add it all up, it had a

slightly negative year-over-year return or uplift in the portfolio.

MR. ROBERTSON said that to sum up, they had overcome the early tech bubble and increases with good returns, that the portfolio was close to its target. He said the TVPI was in the 39th percentile and well above the peer median. He said that all three portfolios were doing quite well even when considering the unusual circumstances of the past year. He said that private equity was a good place to be during all the volatility; that two notable factors were they had a strong paid-in rate and a strong unrealized appreciation during the year. He said that performance moderated but remained strong on a year-over-year basis and looking forward it seemed that the markets were stabilizing with vaccines coming out. He said it will take a while and he expects the markets to continue to be volatile, but overall, private equity had been a good place to be.

MR. HIPPLER said the way MR. ROBERTSON was using "percentile," the 99th percentile would mean they were only better than the 1 percent of other people and the 1st percentile would mean they were better than 99 percent of people and asked if that was his intension; MR. ROBERTSON said that was correct.

MR. WILLIAMS said there was a portion of the presentation where he was not sure of the numbers and that he wanted to confirm that the numbers were correct; MR. HANNA said MR. ROBERTSON would get back to the Board with a correction or confirmation. MR. HANNA said MR. HOWARD mentioned that they did decrease their premium over the benchmark from 350 basis points to 200 basis points last year and they recommended doing so because the asset class was more efficient than it was.

MR. HANNA said he thought Callan had a roughly 130 basis point premium in their capital market assumptions for the asset class, so the ARM Board's 200 basis point premium was an excess of that number.

MR. HANNA said that one thing they had not touched on was that the nature of private markets and public markets have changed dramatically of the past 15 years. He said Sarbanes-Oxley and additional regulations made it comparatively less attractive for companies to become public. He continued by saying that due to the growth in the private markets companies now have access to capital and those things go hand-in-hand. He said the smaller higher-growth companies are much less accessible in the public markets than they were in the past and the only way they can access that performance is through the private markets.

CHAIR JOHNSON recessed the meeting from 3:01 p.m. until 3:11 p.m.

6. ISO 27000 Review

A. Introduction

MR. JONES said that he was going to discuss the ISO 27001 and 27002 assessment that had been completed for the Treasury Division. He said the presentation would include sensitive information and because of that, the presentation will take place in the Executive Session.

B. Executive Session

CHAIR JOHNSON asked for a motion to go into Executive Session for the purpose of considering

matters, the immediate knowledge of which would lead to the detriment of the ARM Board and its operations, and specifically regarding security issues surrounding the ARM Board and the Department of Revenue.

MR. HIPPLER moved to enter into Executive Session. COMMISSIONER MAHONEY seconded the motion.

CHAIR JOHNSON requested that participation be limited to Trustees of the ARMB Board, MR. HANNA, MR. JONES, MS. JONES, MS. LEARY, and Assistant Attorney General GOERING participating.

MS. LEARY requested that MS. ROMBERG and MR. FICEK, support staff to MR. JONES be allowed to join as well.

Hearing no objection to the cast of attendees, a roll call vote was taken, and the motion to enter into Executive Session was approved unanimously.

CHAIR JOHNSON recessed the meeting at 3:20 p.m.

Friday, December 4, 2020

CALL BACK TO ORDER

CHAIR JOHNSON reconvened the meeting at 9:00 a.m. All Board members were present.

CHAIR JOHNSON announced that the ARM Board came out of Executive Session yesterday at 4:28 p.m. No actions or decisions were taken by the Board after hearing confidential information pertaining to security and matters, the knowledge of which would have been to the detriment of the ARM Board. He further stated that they were out of Executive Session and back in regular session.

7. Approaches to the Current Macroeconomic Environment

MR. HANNA introduced JOEL WHIDDEN and PATRICK DIMICK from Bridgewater to discuss navigating the current macroeconomic environment.

MR. DIMICK said that he was going to cover the notion of the new policy paradigm and what they mean when they say that. He said they call it Monetary Policy 3, or MP3 which is the new way that economic cycles were going to be managed. He said the two important topics for portfolios were inflation and bonds. He said inflation was not something that many of them have had to worry about and that higher rates of inflation may not happen, but it was time to consider the possibility as more than a far-out scenario.

MR. DIMICK said that the policymaking paradigm that they are in was defined by the channel through which policymakers try to effect economic recovery. He said that Monetary Policy 1, (MP1) was the way that economies have been managed has always been when the economy was too weak and they needed to stimulate more activity, the channel through which they would do that was to stimulate borrowing and cut interest rates. He said by lowering interest rates, certain people

would borrow money more so than before, and they would spend that money which is how the economy is managed. He said when it was time to cool things down and fight inflation, they raise interest rates which chokes off borrowing and slows things down. He said the way to manipulate the economy was to manipulate borrowing behavior.

MR. DIMICK said that ended in 2008 during the Global Financial Crisis; once the short rates got down towards zero those rates could not be manipulated. He said in 2008 they started quantitative easing or, Monetary Policy 2, (MP2). He said trillions of dollars were printed by the central bank and they used that money to purchase assets. He said MP2 tries to manipulate the economy through manipulating the behavior of savers, not borrowers. He said by purchasing trillions of dollars' worth of assets and pushing up asset prices or removing financial assets from the system, savers would create new assets or go buy other assets to replace those assets.

MR. DIMICK said that they had known for some time that they would need MP3, which targets neither borrowers nor savers, but the spenders. He said that they thought it would play out over a few years across different countries and at different times. He said that what they did not know coming into 2020 was that there was the most sudden economic collapse in economic history. He said the first quarter of the year was a much faster plunge in incomes than occurred in the Great Depression, and it was a global event, which meant that every country was suddenly forced to adopt a form of MP3. He said budget deficits of this size had not been seen since Pearl Harbor. He said if governments were going to spend that much, the only way to get that amount of money was by the central bank printing the money to fund the government spending.

MR. DIMICK said that all developed world countries are in MP3 and his view was that they will all be in it for quite a long time because the other levers available for economic stimulation were not present, and more stimulation would be needed for quite some time.

MR. DIMICK said that the GDP in the first part of the year was down nearly 18 percent and was about at 9 percent currently. He said the drop in mobility, that people are not able to get out and spend was going to be a challenge for a while, even with a vaccine. He said under the current forecast for how much nominal income growth there is going to be in economies, it would be 1 to 1.5 percent real growth rate in developed world economies, and stack that on top of the inflation that will happen there could be a 2.5 percent growth rate in nominal income per year.

COMMISSIONER MAHONEY asked if MR. DIMICK would correlate this to the record Dow Jones Industrial of $30,000 and how it fits in his graphs: MR. DIMICK said the easiest way would be to appreciate how much it helped the stock market prices when MP1 runs its limits, which means short-term interest rates were made as low as they possibly could go, then the central banks printed tens of trillions of dollars to purchase assets since 2008 and those asset purchases flowed all the way out the risk curve into equities, including the Dow Jones Average. He said the combination created a backward-looking return. He said there was only one lever left for policy makers – reflate. He said the 1 or 1.5 percent real growth would generate enough income growth if the inflation rate was much higher than what has been experienced at any time in the last 20 years.

MR. HANNA asked if MR. DIMICK would make a few comments in terms of the relative timing of this in terms of just how long this may take to play out; MR. DIMICK said they think it is worth

trying to open investors' minds to the possibility of inflation happening soon, as in the next year or two. He said that he thought it was difficult to predict when they will start to see the inflation, but he thinks it will show up soon. He said he imagines inflation rates coming in much higher than the markets are expecting.

MR. DIMICK said that now that it is an MP3 world where it is an unfamiliar policy of the central bank printing money and the government spending it or handing it to people who will spend, there are a couple possibilities. He said one would be to work their way through the next several years, they do not do enough policy response, that at some point policymakers would say, "Enough is enough. Look at the amount of money we've printed. Look at the amount of government borrowing. 20 percent of GDP budget deficits. It is flat-out irresponsible. We've to tighten our belts a little bit." He said if that were to occur, there would be a period of time where there would be inadequate stimulation and then there would be a Japan style of deleveraging. He said that if the policy makers continue to push the print-and-spend approach to its limits, reflation would happen.

MR. DIMICK said that in the 1970's the U.K. was a great example of a period where a lot of reflation was needed, but was accrued mostly to labor, and corporations did poorly. He said inflation rates went up, nominal GDP went up but that was not good for the stock market because it was a strong period for labor power.

MR. DIMICK said that there could be reflation that would be very pro-labor and not good for equities and there could be reflation that would contain good growth and profits for capitalists, and it works for the stock market. He said in a policy environment like the current one, all the outcomes are on the table and when they look back at the history of period that resembles the current period, meaning lots of stimulation and reflation is needed, what happens to the asset returns; He said Slide 12 showed those periods of history where lots of reflationary stimulus was needed. He said to ignore the deflationary depression scenario because he thinks the scenario where no stimulation was possible because they are on a gold standard. He said no one is on a gold standard and they hopefully do not have to worry about the deflationary depression.

MR. DIMICK said that there is a group of experiences which they call insufficient stimulation, where there is printing and spending but not quite enough. He said that is an environment for multiyear periods that is poor for equity market returns. He said historically it had been good for nominal bond returns but would not be now because bond yields cannot fall. He said inflation - indexed bonds and gold tends to do better when there is a strong effort to stimulate, but it is a tough time for portfolios.

MR. DIMICK said that there are two ways that reflation can go if they continue with the print-and-spend MP3. He said there could be what they call successful reflations, where some of the print-and-spend goes to productive ends and achieve economic activity to accompany the higher rates of inflation. He said there are excellent historical results if the reflation is successful. He said inflation hedging assets also do well, equities can do well and portfolios that combine those things together do quite well. He said there is a scenario where a lot of money is being produced and creates an unstable inflation, or confidence-damaging levels of inflation. He said what people mostly do with the printed money is not engage in productive economic activity, but try to push that money into inflation hedges, then worry about the value of money.

MR. ERLENDSON asked if MR. DIMICK sees that MP3 is going to be the province of central bankers, legislators, or the executive branch that are going to push it forward to make it happen: MR. DIMICK said he thinks the spending or distribution of the money for others to spend will be the role of the legislators, and the role of the central bank, while essential, would be radically degraded relative to economic history. He said the central bank has to be there to keep rates, but the government has to distribute the cash; it's fiscal monetary coordination and both are needed. He said it will be interesting times and will produce huge differences across countries in terms of how different countries manage a different policy mix.

MR. DIMICK suggested that they look at their risk through three lenses. He said the first lens diversifying across asset classes for more inflation protection, the second lens is mitigating risk through geographic diversification, and third lens is active management.

MR. WILLIAMS asked if MR. DIMICK thought there was a higher probability of all countries going the same way, or did he think there would be diversity and how confident was he that this approach would rule the day in the foreseeable future; MR. DIMICK said that there would likely be wildly different outcomes across countries based upon how many different ways money can be distributed, and difficulty reaching agreement. He said the MP3 policies would probably be with them for a very long time, and hence risk management and diversification were a valuable investment of time.

8. Performance Measurement - 3rd Quarter

MR. ERLENDSON briefly touched on who Callan was for the new Board members. He said that there are four functions that Callan assists with: asset allocation, manager selection, performance evaluation, and education.

MR. ERLENDSON said there was a significant drop-down in economic activity in the second quarter as the COVID epidemic hit. He said in February there were over 152 million Americans employed and at the beginning of April, that number fell by 25 million. He said economic stimulus programs took place and started to take effect by the end of the second quarter, which was where the uptick happened in the GDP.

MR. ERLENDSON said they could encapsulate the challenges of fixed income because Treasury bonds are viewed as the safest thing to do with money and is the baseline off of which any other asset return is priced on a risk level. He said that investing in equities or corporate bonds would be more risk but lends to a higher return than Treasury bonds. He said a 30-year Treasury bond was yielding 2.12 percent and then at the end of September it had dropped to 1.4 percent.

MR. ERLENDSON said that the industries that have the best performance were typically in online retail and technology, which were two major sectors that benefited from the work-from-home perspective. He said the industries that suffered the most were ones that had the greatest employment population.

MR. ERLENDSON said that when they take the GDP apart, 30 percent of it is due to spending and consumption patterns within government, agriculture, and other service industries, but looking at

technology, their contribution to GDP is 6 percent.

MR. ERLENDSON said that in the U.S., 1 percent of the population works in technology and when looking at the composition of the S&P 500 in terms of the weighting of stocks within that index, the largest sector is technology at 39 percent. He said in 1990, technology was composed of about 6 percent of the S&P 500. He said that consumer discretionary, consumer staples, industrials, energy, utilities have shrunk over the last 30 years as a proportion of the stock market composition. He said that energy now constitutes 2 percent of the stocks within the S&P 500 and in 1990 it was at 11 percent, meaning the stock market is not the economy.

MR. ERLENDSON said that there had been constant job growth over the last five months, but there are about 10 million fewer jobs today than there were at the beginning of February. He said that feeds into a ratio called the participation rate which counts people who either have a job or are looking for a job. He said currently, the participation rate has fallen to 63 percent from 70 percent and has been falling steadily. He said what that means is the 10 million people that lost their jobs have not regained them, but of those people fewer of them are looking for work. He said that was not a great reflection given that the consumer constitutes two-thirds of the GDP.

MR. ERLENDSON said that in the beginning of this century, short-term interest rates were at 6.5 percent. He said that since the Global Financial Crisis that began in late 2008, it has hovered pretty close to zero until about 5 years ago and then due to the COVID crisis, they have collapsed again. He said that the Fed is planning on leaving short-term interest rates at zero for the foreseeable future but are looking for something above 2 percent which he thinks feeds into the MP3 theory.

MR. ERLENDSON said that the last 25 years the average cash return had been 2.3 percent but over the last decade it has been close to zero, so getting short-term interest rates up to 2.5 percent will be a heavy move.

MR. ERLENDSON said that the long-term savings rate peaked at 15 percent but has been steadily coming down until the stimulus programs went into effect. He said people did not go out and spend that money, they saved it.

MR. ERLENDSON said that for the March meeting in 2021 they will be working with staff to make a presentation on capital market projections through pension funds. He said they were looking at a list of asset class benchmarks which they have grouped as U.S. Equity, non-U.S. equities, fixed income, and real estate. He said the Russell 3000 has had significantly positive returns and that area of the market has been most popular among investors in the U.S. large cap stocks.

MR. ERLENDSON said that with Treasury bills there has been a 2.3 percent for the 25-year return on cash and that includes the 10-year, the 5-year, and the 1-year where the return on cash has been at or below 1 percent.

MR. ERLENDSON said that the inflation rate has been at 2 percent for the last 25 years. He said that the driver for economic activity would be getting money into the hands of people that will then be competing for goods and employers that will be competing for employee.

MR. ERLENDSON said that the Russell 3000 is a proxy for large, mid, small, value, core, and growth stocks, and through the end of the third quarter it was up 9.2 percent. He said that the Russell 1000 versus the Russell 2000, the small cap index was only up 5 percent. He said that this phenomenon had been going on for seven years, where small cap stocks have had a difficult time delivering the expected returns. He said that the first two months of the fourth quarter - October and November- there was a reversal. He said small cap stocks were up 22 percent, and large cap stocks measured by the Russell 1000, were only up 10. He said the same thing was true for growth value - growth stocks were up 13 percent versus 5 percent for value. He said for the first two months of the fourth quarter, that was reversed. He said even though there are elements that have not been performing up to stuff, Callan still believes they merit inclusion within the Board's portfolio.

MR. CENTER said that Slide 18 showed the performance dashboard for PERS, TRS, and the judicial system, which showed the historical returns for the last one, three, five, and 10 years. He said last year plans underperformed the policy target, but over the three years and longer, all of the plans had outperformed their policy targets over those times. He said that all three plans have exhibited a lower standard deviation - a lower-risk profile than the benchmark over the last three, five and 10 years and all three plans had done better than the benchmark over the maximum drawdown measures over that same time period. He said the Sharpe Ratio -- a return per unit of risk, how well the risk was being implemented within the plan, were strong relative to the policy target and peers over all trailing periods for all three plans.

MR. CENTER said that Slide 19 showed the three healthcare plans all had similar profiles. He said last year's performance was difficult relative to the target, but longer-term performance compares favorably. He said they had a lower standard deviation over time and strong comparable drawdown statistics and a relatively high Sharpe Ratio relative to both the benchmark and the peers.

MR. CENTER said the military plan has historically had a different asset allocation. He said it had been at a different, more risk-averse risk profile than the other plans and is compared against its own benchmark but does have a similar return pattern to its policy target.

MR. CENTER said Slide 21 showed the PERS Asset Allocations as of September 30th were in line with target allocations, slightly overweight to domestic and non-U.S. equity, and slightly underweight to fixed income, real assets, and private equity.

MR. CENTER said that in conjunction with MR. JONES and the Department of Revenue, they have instituted a one-quarter lag in the performance for the private equity and for the real assets portfolio. He said it was common in the institutional investment space to accept that it was rare to get up-to-date information on the Board's private investments in time to discuss their performances at the quarterly performance meetings - the report on those assets will be one quarter in arrears. He said in order to do that, the performance for the private equity portfolio and the real assets portfolio during the third quarter was zero. He said they had done the same for their benchmarks and they were also lagged with a zero return. He said that meant that 25 percent of the PERS, TRS and judicial system's performance for quarter 3 had a zero return.

CHAIR JOHNSON said that as he understood, there was $1.6 billion worth of commitments and

those commitments would be left and invested in public equity. He asked if having much uncalled-for commitments in the private equity silo, affected the allocations; MR. CENTER said no, it was common, in order to keep the private equity program in place and invested over time, to commit a higher portion than what the actual target was. He said in this case, the target allocation to private equity was 12 percent, for PERS they were close to that allocation, but with the investments in private equity, they will get their capital return over time and will need to keep a commitment to private equity so that as they receive money back, additional money gets invested. He said they have an overcommitment to private equity because additional capital gets returned from the existing program over time, and capital gets recycled into private equity. He said the committed capital that is sitting on the sidelines, typically sits in the public equity portfolio in order to keep the exposure to company investments.

MR. ERLENDSON said if there was a capital call, staff would typically fund the capital call from the asset class that was above target. He said normally that would be equities, but if they have to have a market correction and suddenly domestic equities were 2 percent below target and fixed income was 2 percent above target, and they get a capital call for private equity, it would likely be funded out of fixed income so that they would move both fixed income and private equity closer to the target weights.

MR. CENTER said Slide 22 compares PERS asset allocation and its target allocation versus the Callan public fund sponsored database, which was the peer group that they compare PERS, TRS, and the judicial system against. He said PERS has a slightly lower allocation to fixed income than most of the peers, below median, and a slightly higher allocation to real assets and alternatives versus peers. He said the overall trailing standard deviation for the PERS portfolio was just below median over 10 years which was a slightly lower realized risk versus peers.

MR. CENTER said Slide 27 showed the long-term returns for the PERS portfolio. He said that during the Global Financial Crisis, the PERS portfolio did fall pretty far as did its benchmark, but they have seen a continued uptick since that time with return patterns similar to the actuarial expected return.

MS. HARBO asked how they choose the peer groups; MR. CENTER said that they compare the PERS performance with a public fund sponsored database, which includes other public funds, U.S.-based public retirement plans, state-sponsored public retirement plans or county sponsored public retirement plans. He said they cast the widest net and use a combination of their own client performance along with purchased data from external vendors.

MR. CENTER said that Slide 28 showed a longer-term performance for PERS and TRS relative to their target index and public market proxy. He said it is a benchmark designed to have a similar return profile, given Callan's capital market expectations, but only investing in public market investments such as the Russell 3000, the MSCI all-country world index, and the Bloomberg Aggregate Index. He said it was not designed to have a similar risk profile to the PERS portfolios, but to simply have a similar long-term return profile.

MR. CENTER said the S&P 500 and the Russell 3000 were both strong performers relative to their peer group. He said that it was a difficult period for active domestic equity portfolios to outperform

the indices and for the Alaska portfolio, its structure had resulted in substantial headwinds relative to those benchmarks. He said the plan made a shift in its domestic equity portfolio over the last 18 months to move away from active management and invest passively in the S&P 600 for small cap, the S&P 900 for large cap, and a blend of internally managed and externally managed factor-based strategies. He said the factor-based strategies are designed to invest in U.S. equity securities that, over the long term, have shown a propensity to outperform the market.

MR. WILLIAMS asked if the small cap managers were the S&P 600 strategy; MR. CENTER said that it was a combination of both active and passive managers, not strictly the passive S&P 600 investments; MR. WILLIAMS asked that since their S&P is a passive strategy, should they only be looking at tracking error in terms of execution of it; MR. CENTER said that was accurate to a degree. He said it was a decision by CIO MITCHELL to implement the small cap exposure by investing in the S&P 600, but to keep the plan's benchmark as the Russell 2000. He said that while they were implementing passively using a benchmark strategy, the benchmark strategy that was being implemented differed from the actual target.

MR. CENTER said that they were working with staff on the asset allocation study, and part of the study this time, will be an equity structure analysis. He said they will be reviewing the overall public equity portfolio to either reaffirm the commitment to those factor-based strategies or to propose other alternatives.

MR. CENTER moved up to Slide 38 stating that the global ex-U.S. portfolio, or non-U.S. equity portfolio had done well. He said it differed from the U.S. portfolio in that it did not include active managers, both in the developed market space and the passive investments emerging markets equities and that it was ahead of its benchmark, 80 basis points over the longer-term six and 10 - year periods. He said the developed market portfolio represented on Slide 39 had done very well relative to the benchmarks. He said that Slide 40 showed details about the non-U.S. equity portfolio which had a strong performance from the active managers, Arrow street and Baillie Gifford.

MR. CENTER said the emerging markets portfolio was restructured a year ago and moved away from active management to mostly passive. He said that last quarter it slightly underperformed the benchmark and was down 4 percent relative to the benchmark.

MR. CENTER said the fixed income portfolio could be found on Slide 43 and showed it had outperformed its target over all time periods. He said the benchmark relative performance was ahead by over a percent over the last five years and 60 basis points over six years. He said the internally managed U.S. aggregate portfolio over the last year was up about 8.3 percent. He said the external strategies included two strategies managed by Fidelity, both of which had strong quarters with the tactical bond strategy over the last year by 6 percent, the real estate high income strategy had a strong quarter but did trail over the last year. He said that alternative fixed income was a drag on the performance over the last year with Crestline and lending strategies doing very well, but the other two opportunistic strategies were not as strong.

MR. CENTER said Slide 45 showed the opportunistic portfolio. He said there was a strong performance from the McKinley Healthcare strategy with a positive 29.3 percent return over the last year. He said the tactical asset allocation strategies by PineBridge, and Fidelity combined to return

8.4 percent which was above the return for the PERS portfolio.

MR. CENTER said the Man Group was down 9.6 percent with the overall program down about 14.8 percent. He said the program was designed to mimic the performance of alternative investments over time, such as hedge funds, which have had a difficult period. He said overall, the performance, while negative, was designed to be a diversifier to the rest of the portfolio.

MR. CENTER said Slide 46 touched on the real assets portfolio that had a strong performance from the private real estate portfolio for the quarter and over the last year relative to overall benchmarks. He said that energy had been a difficult investing space, that private energy investment was down 16 percent of the year, but overall, the real assets portfolio was up 73 basis points over the last year which was ahead of the real assets target.
MR. CENTER said in terms of the participant directed Defined Contribution plans, the PERS portfolio as of September 30 was at $1.5 billion in assets, about 60 percent of that portfolio was invested in the target date funds or balanced funds. He said the asset flows for the PERS portfolio over the last five quarters showed the PERS DC plan was cash flow positive. He said the TRS portfolio had $620 million in assets and was 60 percent invested in the asset allocation funds. He said while the plan remained cash flow positive, there was an uptick in cash flow withdrawals likely due to the CARES Act that permitted participants to increase withdrawals due to COVID-19. He said the Deferred Comp Plan shown on Slide 52 showed that 22 percent of its investments are in the asset allocation funds, remaining at $1 billion as of September 30 and was slightly cash flow negative. He said the SBS fund, which was the largest fund at $4.4 billion, was also 60 percent invested in the asset allocation funds, with a fairly stably negative cash flow.

MR. CENTER said the performance of the individual investment plan and investment options, the target date funds had performed well, relative to both benchmarks and peers. He said each one of the investment options had its own benchmark, and that as a whole, they have a lower-risk profile than their benchmarks.

MR. CENTER said Slide 58 showed the passive options which were in line with their benchmarks in a cost-effective manner. He said the Strategic Completion Fund, which was designed as an inflation hedging strategy had performed slightly ahead of its benchmark over the last year. He said the Northern Trust ESG fund, which was a passively managed environmental, social, and governance-focused smart investment strategy had slightly outperformed its benchmark over the last year as well. He said the international equity fund was ahead of its benchmark by over 5 percent and that T. Rowe Price small cap was also doing good, that all of their active options had done extremely well over the last year.

CHAIR JOHNSON recessed the meeting from 11:06 a.m. until 11:16 a.m.

9. FBI Cyber Risk

CHAIR JOHNSON introduced Special Agent FRANK REID of the FBI.

MR. REID said that he had been an agent for 10 years and started in the San Francisco Division working primarily white-collar fraud cases, investment fraud cases, and intellectual property rights, (IPR) cases, as well as child exploitation cases. He said he transferred to Juneau in April of 2018

and works everything that comes through the door. He said that he is not an expert on cybersecurity, but the Anchorage office has a specific squad that works cybersecurity. He went on to explain that the FBI has 56 field offices and 63 international offices. He said that as far as cybersecurity is concerned, the FBI is the lead federal investigative agency for cyber matters with dedicated cyber squads in every field office with a focus on intrusions as well as Internet fraud.

MR. REID said that today 58.5 percent of the world's population has access to a computer, versus 6.8 percent 20 years ago. He explained that cyber criminals are after everybody - small businesses, large businesses, universities, governments, nonprofit organizations, everyone is a potential target. He said that economics was the driving force. He said hackers would be interested in what the Board does and how they do it. He said there are some military and political advantage intelligence collection capabilities, but it could also be as simple as revenge -- someone seeking revenge on an old employer. He said that politics was a hot button issue as well as terrorism or ways to conceal infrastructure by using servers as a way to bounce around to avoid detection.

MR. REID went on to give an overview of an attack explaining the hackers would perform reconnaissance - research to gain information about the target. He said social media such as Facebook, LinkedIn, and Instagram where people put their private life out for all to see. He said hackers use this information to their advantage to manipulate the situation and get in the door.

MR. REID said that sophisticated hackers can get on networks, scan them, and find ways in and install backdoor mechanisms that allow them in, then cover their tracks so no one can figure out who they were and how they got in. He said in 2019 they received 467,361 complaints, or on average 1,300 per day, and asked the group to consider the resources allocation needed to address the issues. He said the end result of those cyberattacks resulted in $4.5 billion in losses to U.S. victims in one year. He said hackers are using social engineering, phishing, malware, ransomware, and denial of service attacks.
MR. REID went on to explain how hot points and various proxy networks worked. He said as an example, the victim is in the United States, and the adversary is in Asia, a hacker would use proxy networks to bounce to and from to find a victim, and once they get to the victim, the hacker will appear as if they were in the United States. They will eventually get into the system and move money out and back to them in Asia. He said because of virtual private servers, and share file services, the footprint is easy to hide because of how sophisticated these actors have become and the various technologies and applications that can help hide identity through encryption.

MR. REID explained that another common method was spear phishing. He said phishing is a campaign that does not target individual victims, but hundreds and sometimes thousands of recipients. He said spear phishing is specific and is the one that he had seen a lot of successful attacks, and it is highly targeted and targets a single individual. He explained that the hacker will use social media to determine who the CEO is that works for a corporation they are targeting and the corporate directory will show who that person's assistant is and then will send a spoofed email from the CEO to that assistant asking for money. He said PayPal is another victim of hackers sending spoofed emails to people asking them to click on a link and enter all their bank card information as well as other highly personal information.

MR. REID said ransomware is an increasingly significant threat where hackers get into systems

through a spear phishing email that someone has opened. He said once they are in, they can infect the system and lock it up with the purpose of holding the servers as hostage by encrypting the system to control it for the purpose of collecting a ransom to release the files. He said last year there was $11.5 billion in losses globally and in 2020 the losses had exceeded that number. He said ransomware is a type of malware that targets the critical data and systems for the purpose of extortion. He said that ransom attacks occur every 14 seconds. He said that they do not advocate paying the ransom because it does not guarantee anything, he also said that the Treasury Department had advised that paying ransom may be considered illegal and lead to prosecution.

MR. REID said that to avoid infection use a good antivirus software, always scan downloaded files and attachments, and if there is a question as to who or where a file came from, do not open it. He said it was extremely important to back up all the data on an external drive for restorative purposes in case of data loss at least monthly. He also said to file a complaint with the FBI if an attack happens. He said if it is a personal attach, a complaint can be filed with IC3.gov which is their online complaint center.

MR. REID showed an example of a ransomware attack on the Mat-Su Borough that happened in 2018. He said the borough discovered their computer network had been the victim of a ransomware attack that resulted in the disruption of numerous services and a temporary loss of digital files. He said credit card machines could not be used, animal shelter records were lost, and online services were inaccessible. He said some departments had to use typewriters to continue to process paperwork. He said it happened through a malicious e-mail that had been sent to a Mat-Su employee months before the attack was discovered. He said the employee opened a file link that allowed the malware to gain a foothold in the network. He said 700 devices had to be checked and scrubbed, the process took 10 weeks before they were finally back online. He said the cost to get Mat-Su back online was $2.3 million dollars, but the Mat-Su had insurance that covered $1 million of the damage.

MR. REID said another type of malware was Trojan viruses, they are worms that can travel through multiple machines. He said another one is business e-mail compromise, (BEC) or spoofing an email account to look almost exact to an email account that is trusted. He said in that circumstance the hacker tricks the employee into making a wire transfer to accounts belonging to a trusted person, instead the money is wired to an account controlled by the hacker. He said the funds are generally transferred to a U.S. account in the name of a witting or unwitting money mule who then sends it overseas. He said that there should be protocols in place regarding significant money transfer requests. He said that in 2019 the FBI had received 23,775 complaints related to BEC fraud which resulted in $1.7 billion in losses and since 2015 there has been an increase of 1,300 percent in those types of incidents.

MS. HARBO asked what kind of insurance the Mat-Su Borough had; MR. REID said that he did not know, but it could be a general policy. He said the reality is this affects the consumer because insurance companies are not going to not make money, they will have to adjust their rates to take into account those payments they are paying out; MS. HARBO asked if they all are paying for it; MR. REID said absolutely 100 percent.

MR. REID said when it comes to tracking down cyber criminals outside the U.S. border, the legal

process does not work overseas without assistance through a mutual agreement between countries to share information, which is a lengthy process. He said that hackers are able to use this and it makes it difficult to track them and by the time they figure out who the criminals are, the money is gone. MS. HARBO said that the presentation was fantastic but it made her want to throw her computer away and crawl into a hole; MR. REID agreed and said that everyone needed to be careful with what they do and how they do it.

CHAIR JOHNSON asked what the success level in recovering things on this that would cause people to not think the FBI was overburdened by so many complaints so why bother; MR. REID said that a lot of the investigations are ongoing and he cannot comment on them. He did say when things occur in real-time, they are more successful than coming in months after the fact and the hacker has covered their tracks.

MR. REID explained a BEC fraud case called Operation reWired. They arrested 281 people, 74 of them were US citizens, in 10 different countries. He said they seized $3.7 million and were able to recover $118 million in fraudulent transfers. He said once discovered, there is a 72-hour window where the FBI can stop the hackers; they can work with the banks and get the money back. He said it is important for businesses to act immediately once the activity is discovered.

MR. REID said the things that people can do to keep this from happening is to keep software updated. He said network segregation can be set up so if one fails, the other network can pick it up. He said to make sure the networks are encrypted and back up everything off of the network and use two-factor authentication wherever possible. He also said to think before clicking a link in an email; pay attention to email addresses to make sure they are the legitimate address of a trusted source. He said that employees should be trained on cybersecurity threats and best practices, so they understand the severity of a single action. He said it was also important to watch the outbound traffic - what sites employees are visiting.

MR. REID said to verify the changes of vendor payment location by adding additional two-factor authentication, such as having a secondary sign-off to make sure everybody is on the same page and to regularly monitor financial accounts.

MR. REID said that cookies on websites are another way to track movements and he discourages the use of them. He said a good idea would be to set up a burner e-mail, something not typically used for online shopping or bill pay where it is not easily associated back to a person. He said never use a debit card to make online purchases because if that site gets hacked it could be a potential problem for that bank account. He said to always devote one card to online shopping to avoid getting all of the accounts hacked. He said to avoid putting too much personal information on social media accounts, check privacy settings to make sure that only friends and family can view the account.

MR. REID suggested having a pre-established relationship with vendors who can take care of malware immediately. He said to engage the FBI within the 72-hour window to stop the attack and loss of funds. He said that if a device is infected, to leave it on but disconnect it from the network.

MR. REID said one big threat today was travel. He said when traveling overseas, the Constitution

does not go along. He said to be conscious of the surroundings, who could be listening and watching, and gifts. He said to avoid transporting devices such as computers, phones, and thumb drives in checked baggage, to keep them in a carry-on. He said to not take laptops or phones that are used every day and only take the data that is needed. He said to set up burner accounts such as e-mail and messaging apps, and use burner devices

CHAIR JOHNSON recessed the meeting from 12:22 p.m. until 1:16 p.m.

10. Fixed Income Presentation

MR. HANNA introduced investment officers VICTOR DJAJALIE and CASEY COLTON and took the opportunity to recognize the outstanding job the fixed income team had done navigating the current market with a strong one-year performance of 8.4 percent, placing them high in Callan's fixed income universe.

MR. DJAJALIE introduced the staff members. He said there were five of them and that he oversees the group. He said MR. COLTON runs the government and mortgage-backed securities, NICK ORR specialized in infrastructure products, primarily on the longer CMBS, EMILY HOWARD manages the short-term portfolio and is also the asset-backed specialist and STEPHANI PHAM helps on the credit side and supports the operation analytics.

MR. DJAJALIE said that Slide 5 showed their target allocation for FY21, with fixed income at 22 percent of the allocation and three-quarters of the assets under management of the 22 percent was managed internally by the internal fixed income team.

MR. DJAJALIE said Slide 7 showed the 10-year Treasury yields, and over the past 40 years, risks had been trending lower and likely to remain low for the foreseeable future as global central banks continue to promote an easy money policy. He said that he had seen that the 10-year Treasury yield was 97 basis points which was still attractive especially considering over 30 percent of the global sovereign debt outstanding has a negative yield.

MR. DJAJALIE said Slide 8 showed that 2020 had been unprecedented with a record issuance. He said $1.6 trillion worth of deals hit the market with deals often well oversubscribed by the market participants and was well absorbed with over 70 percent in the secondary.

MR. DJAJALIE said Slide 9 showed the overall health of the U.S. companies. He said since the Global Financial Crisis, leverage had been gradually increasing. He said the rates are low and companies take advantage of that by issuing a lot of debt.

MR. DJAJALIE said that Slide 10 showed that the fundamental U.S. corporates were deteriorating. He said that did not matter, the rate spread continues to be well supported with a lot of demand from domestic and foreign investors.

MR. HIPPLER asked if the spreads were over the T-bill rate: MR. DJAJALIE said that it's over Treasuries and that where they are now with pricing, it makes sense to deal all in fixed income.

MR. DJAJALIE said Slide 11 showed the role of fixed income in a broadly diversified portfolio.

He said that it serves three functions. He said the first function was portfolio diversification where fixed income has a lower-risk profile and is less correlated to other asset classes, so if it were combined in a portfolio, it would reduce the risk.

MR. DJAJALIE the second was the yield. He said fixed income provides a steady stream of yield for income that can be used to pay bills. He said the third was liquidity. He said fixed income provides an important liquidity function in the portfolio by facilitating benefit payments and portfolio rebalancing during equity market drawdowns.

MR. DJAJALIE said Slide 12 showed the historical drawdowns of the S&P and Bloomberg Barclays Aggregate Index. He said he used the Barclays Agg Index as a proxy for fixed income because that is the mandate within the ARM Board.

MR. DJAJALIE explained that Slide 13 showed how the performance was during the recession. He said fixed income had consistently generated positive returns in all of the recessions when the equity decline was the greatest.

MR. DJAJALIE said that Slide 14 showed the average annual fixed income flows that were handled daily. He said the ARM Board portfolios manage 254 contributions and 142 redemptions which equated to $2.6 billion in contributions and over $700 million in redemptions.

MR. COLTON mentioned that the ARM Board's short-term fund had outperformed by an average of 25 basis points annually for the past 10 years and the ARM Board's Treasury pool outperformed by nearly as much by an average of 18 basis points over its life of 9-1/4 years.

MR. COLTON explained that the stress testing they do under multiple interest rate regimes is a form of quality control. He said they look for different combinations of bonds held in the right proportion to modestly outperform regardless of change in short-term, immediate-term, or long-term interest rates. He said another consideration and practice is that a basis point saved in transactions cost is worth as much as a basis point of yield. He said the U.S. Treasury notes and bonds they hold are among their best options for liquidity as they are readily available in size and at very low round-trip trading costs.

MR. COLTON said that advances have helped them test more innovative structures over a wider range of scenarios, but ex-post interest rates will follow one path and not necessarily the one they choose to test, so controlling risk means they have to carefully choose how to test and combine bonds.

MR. COLTON said they compare the expected performance of each pair over a carefully chosen range of interest rate scenarios. He said that to manage a larger portfolio of 800 bonds out of an aggregate universe of more than a million, they resort to generalizations, such as grouping bonds which often trade together. He said that Slide 19 showed the longer fund, displaying some of these generalizations, which help simplify where the risk is being taken. He said their current focus was to overweight corporate and asset-backed security exposure, and underweight exposure to U.S. Treasury and mortgage-backed securities. He said Slide 20 was similar to Slide 19 except it was for

the short-term fund, which also had overweight to asset-backed securities.

MR. COLTON said that Slide 21 showed that the ARM Board's short-term fund had outperformed by an average of 25 basis points over the past 10 years and was similar over the shorter time periods as well. He said that the ARM Board's now-closed U.S. Treasury pool outperformed by 18 basis points over its 9-1/4-year life.

11. Liquidity and Risk Management

MR. CARSON said that he would discuss the biannual ARM Board risk reporting as provided by the risk platform truView. He said that every six months State Street Global Exchange collects portfolio data, including asset allocation, asset targets, public market constituent data, and runs it through their risk analytic platform. He said the staff then analyzes the reporting provided by truView to answer several questions including:: Where is the allocation of risk compared to the ARM Board's asset allocation targets; Are there any significant contributors of risk that are outside of expectations of what should occur; What is the probability and magnitude of losses; and How would the current portfolio perform during periods of market stress; MR. CARSON said that Slide 5 showed the broad domestic equity appeared to be overweight by 2 percent and fixed income underweight by 2 percent on June 30th, but staff and the portfolio were right in the middle of trading to meet the FY21 targets. He said the events in the first half of 2020 caused portfolio volatility to jump from 7.8 percent, reported as of December 2019, to 12.6 percent, but that it continued to reflect a lower volatility than the 13.6 percent forward portfolio risk expectations derived from the Callan capital market assumptions.

MR. CARSON summarized the points of Slide 6. He said value-at-risk was the expected loss at a given probability-in-time period. He said in the analysis, they used 95 percent. He said conditional value-at-risk, or CVaR, was the weighted average of the extreme losses beyond value-at-risk, and that qualified expected losses in the extreme tail beyond the value-at -risk cutoff point.

MR. CARSON said Slide 7 showed value-at-risk was 10.3 percent in the June 2020 report, which was an increase from 7.3 percent in December and was within staff expectations. He said public equities contributed about 56 percent of portfolio value-at-risk, and this is expected from the riskier growth asset class that also has a significant portfolio allocation.

MR. CARSON said that Slide 8 showed that total equity market risk was within expectations. He said the one-year and five-year beta measurements were close to benchmark, indicating the portfolio was close to market risk. He reminded the Board that beta was a measure of the volatility of the portfolio compared to the benchmark.

MR. CARSON explained that Slide 9 showed the portfolio-level impact of several truView scenarios. He said the scenarios were based on historical events as well as predictive scenarios based on events that had not occurred. He said for predictive scenarios, truView provides a range of outcomes, from most severe to mild. He said for those predictive scenarios he provided the two most severe outcomes. He said there was a mixture of outperformance and under performance given the set of scenarios, but there was no significant underperformance for any one scenario. He said he thought that it was an indication that the portfolio overall was not exposed to specific risks that would cause underperformance for the scenarios shown on the slide.

MR. CARSON said that Slide 10 showed portfolio liquidity, which comes from several sources. He said the first was from state contributions to the retirement plans, then cash income from the investments themselves; and finally, from the selling of assets to satisfy liquidity needs. He explained that the plan's primary objective was to make current and future benefit payments and to be consistent with the objective, the plans must rebalance back to the target asset allocations, and the plans must fund investment prospects and commitments. He said that each of those things were important in driving growth which satisfies future benefit payments.

MR. CARSON explained that state contributions and investment income were the less volatile and more easily managed liquidity sources, but in practice, incoming contributions are deployed and investment income as a reinvestment consistent with the target asset allocation; so during normal market conditions, selling assets and coordinating income to manage cash flows was accomplished without a lot of friction. He said portfolio rebalancing and liquidity were the mechanism employed to sell assets, to fund outflows, and to keep the actual asset class weights near their targets.

MR. CARSON explained that Slide 11 showed asset allocation of targets approved by the Board which included ranges or bands specific to each of the asset class targets. He said that it allows drift from target weights, which reduces the frequency and urgency to rebalance. He said the Board's decision to increase the fixed income band to plus or minus 10 percent at the December 2019 meeting increased the portfolio's ability to withstand a significant equity drawdown and potentially reduced the requirement to rebalance during periods of market stress. He said that by their nature, illiquid investments do not lend well to the rebalancing process; that the fund's investments in those asset classes were usually not readily accessible, so in the event of a significant equity drawdown, the fixed income asset class is the primary source of rebalance the portfolio.

MR. CARSON said that Slide 12 showed that in 1989 an investor could allocate three-quarters of the portfolio to cash and still hit the 7.5 percent return target with very low risk. He said that in 2020 the portfolio was much riskier and more complex but with the same expected return.

MR. CARSON said that they need to make payments and rebalance the portfolio, so they need liquidity, then they need to incur risk to generate growth to fund future payments, so the expectation is to be compensated for risk, but the risk must be carefully managed.

MR. CARSON said that Slide 13 showed the results of an analysis of 2019 data provided by NASRA to compare the Alaska PERS and TRS portfolio composition against peers with some allocation to alternative assets. He said the ARM Board's FY21 allocation of liquid assets was close to the median peer allocation but with higher-than-median net outflows, as the plans are closed and mature. He said the chart also showed the allocation of liquid assets amongst peers tends to increase as net outflows increase.

MR. CARSON said Slide 14 showed a similar analysis that staff provided last December which analyzed the impact equity drawdown would have on rebalancing, but instead of changing the width of the bands around the fixed income target as they recommended last December, they changed the target and left the bands consistent as a plus or minus 10 percent. He said given the current allocation to liquid fixed income, the plans can sustain a 43 percent equity drawdown. He said by

holding the allocation to public equity constant and reducing the allocation to liquid fixed income down 12 percent, the portfolio can sustain a 35 percent equity drawdown.

MR. CARSON said Slide 15 showed the impact of partial rebalancing, where trades are executed to bring the allocations within the allowed ranges but not fully to target. He said there are advantages to partial rebalancing, such as if the portfolio experiences a significant equity drawdown and is pressed up against the edges of the allowable bands, a full rebalance back to target would require trading, which may incur significant transaction costs, but a partial rebalance to get back within the bands, but not fully back to target could buy time from the selective or timely trading or for markets to naturally recover. He said another advantage is the portfolio's ability to sustain an equity drawdown increases significantly with the partial rebalance.

MR. CARSON said that Slide 16 was the summation of his presentation and showed that the first half of 2020 saw significant market volatility increasing overall portfolio risk, but risk metrics continued to remain within staff expectations. He said the ARM Board, along with its peers, are facing a downward trend in return expectations and have responded by increasing portfolio complexity and risks. He said staff analysis suggests the plan's current liquidity profile was sufficient to sustain all but the most severe market drawdowns and that there was room to increase the allocation to the illiquid asset classes and still satisfy liquidity requirements.

CHAIR JOHNSON asked whether risk is just simply whether or not we have the ability to meet liquidity needs at various levels? MR. CARSON said his presentation was to focus on one of the risks that if it failed, then the outcome would be catastrophic. He said there could be a failure to meet benefit payments if liquidity was tied up, or benefit payments could be met, but the cost of making those cash outflows could be significant enough to have future implications for meeting the outflows. MR. CARSON said there was liquidity risk and market risks. He said his presentation focused on investment risk and liquidity risk, but that was not to say that a failure in any of the other facets of risk would not have a catastrophic impact. He said as the Board assesses their tolerance of risk, they also need to assess tolerance of risk and how the different facets of risk add up to the overall risk to the plans.

MR. HANNA said that when they come back to the Board in March, they will have a deeper evaluation of liquidity risk. He said they may approach it from a simulation perspective to try to put that in context and to a certain degree it is a process of triangulation and taking a look from a prudent investor perspective, what the peer set is doing and how the Board compares to that peer set.

MR. HIPPLER asked if leverage could also enhance liquidity and take away some of the need for the liquidity benefits of the fixed income portfolio; MR. HANNA affirmed that was the case and that one of the solutions from a rebalance perspective was to allow for a certain amount of leverage and to use futures to do some of the rebalancing.

12. Investment Actions
Action: Amendment to IAC Contracts

MR. HANNA said that the IAC had been a valuable source of advice and counsel to the ARM Board over the years, and with the ARM Board approval, an Alaska statute allows the ARM Board

IAC to provide investment advice to other state agencies. He said they were looking to expand the role of the IAC to include this advice to the state more generally. He said they were looking to amend the IAC contracts so the Commissioner of Revenue could also benefit from this resource. The compensation for this service would be separate from the compensation for the ARM Board - there would be an additional retainer and separate daily per diem for the new state responsibilities.

MR. HANNA said that the recommendation is that the Alaska Retirement Management Board approve the expansion of the IAC's services to include the state assets under the fiduciary responsibility of the Commissioner of Review.

MS. HARBO said she thought they had an additional sentence. After some discussion, CHAIR JOHNSON read the revised recommendation: The Alaska Retirement Management Board approves the expansion of the IAC services to include the state assets under the fiduciary responsibility of the Commissioner of Revenue, provided that the IAC members will be compensated separately for services provided directly to the state.

MS. HARBO SO MOVED. MR WILLIAMS seconded the motion.

A roll call vote was taken, and the motion passed unanimously.

XI. UNFINISHED BUSINESS - None.

XII. NEW BUSINESS - None.

XIII. OTHER MATTERS TO PROPERLY COME BEFORE THE BOARD - None.

XV. INVESTMENT ADVISORY COUNCIL COMMENTS

DR. MITCHELL said that he wanted to compliment the Board and staff on the transitions that had taken place with the new Board members; a new CIO and new liaison officer, all in a rapid succession. He said the transition had been seamless and the new incumbents were as dedicated and professional and hard-working as one could hope for. He also said that he agreed with MS. HARBO's hope that once they get back to face-to-face in-person meetings, they consider having some of them in Anchorage. He also said that he had heard good presentations on private equity and had been a supporter of it since the ARM Board first began investing in that asset class.

DR. MITCHELL said that much of the excellent performance was due to the quality of work of staff, of Callan, the managers - Abbott and Pathway, and the general partners who actually invest the funds. He said a few other factors that are just as important is the 40-year decline in interest rates, a decades-long rise in the stock market, and the employment of leverage. He said that equity managers rely on two critical elements to make money: leverage and benign stock market. He said buyout managers employ 60 to 80 percent leverage in their acquisition deals, particularly in the intermediate and later stage investment round. He said borrowing costs have gone down during the era of the private equity boom, to the point where leverage is almost free, at the same time the stock market has gone up, particularly in the growth sector. He said it had been a perfect storm for private

equity and to not confuse brilliance with a bull market.

MS. RYERSON commented that adjusting return expectations was never politically popular, but sometimes that made sense to look at that in conjunction with trying to go out on the risk spectrum and get more of a return.

MS. RYERSON said that Bridgewater's presentation was a bit disturbing in that the next couple of years would be a difficult environment and would depend on how the governments deal with what happens on what can be done with the portfolio.

DR. JENNINGS said that the global risk report put out by the World Economic Forum was useful. He said "infectious diseases" was 10th on the impact scale, and that pandemics are an expected and knowable risk. He said that there were two cyber risks on the scale that were higher in likelihood and impact than infectious diseases and he appreciated staff bringing these conversations to the floor. He said that he encouraged the Board to Google the World Economic Forum to read the report. He said he has made a habit of looking at it each year and over the years it had opened his eyes to different risks.

XVI. TRUSTEE COMMENTS

MS. HARBO thanked MR. WEST for all his services to the Board over the years and will miss his stories and comments. She also thanked the IAC members for all their comments. Lastly, she thanked the great staff at both Revenue and Administration for all the work they do for the retirees, actives, and all the help they give the beneficiaries.

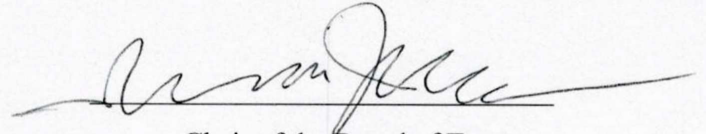
MR. WILLIAMS said that he enjoyed the meetings; that they gave a lot of time for reflection. He also said that he had been thinking about MS. RYERSON'S question about the amount of risk they should take and that he has different feelings about it at different points in time.

MR. WILLIAMS requested the CHAIR JOHNSON forward the email that came in from a member regarding challenges with trying to cash out some of their deferred compensation to Division of Retirement and Benefits to get some action. He said that they may have the best intentions, but if that is not what members' experiences are, they have to learn from that and find ways to improve.

XVII. FUTURE AGENDA ITEMS - None.

XVIII. ADJOURNMENT

There being no objection and no further business to come before the Board, the meeting was adjourned at 2:35 p.m. on December 4, 2020, on a motion made by MS. HARBO and seconded by COMMISSION MAHONEY.



Chair of the Board of Trustees
Alaska Retirement Management Board

ATTEST:

Corporate Secretary

Note: An outside contractor recorded the meeting and prepared the summary minutes. For in-depth discussion and more presentation details, please refer to the recording of the meeting and presentation materials on file at the ARMB office.