

MINUTES

Marin County Employees' Retirement Association (MCERA) Retirement Board Strategic Workshop

**One McInnis Parkway, First Floor
San Rafael, CA
April 16-17, 2019**

Day 1 April 16, 2019

Meeting Chair Steven Block

9:00 a.m.

Call to Order/Roll Call

Chair Block called the meeting to order at 9:05 a.m.

PRESENT: Block, Cooper, Given, Gladstern, Jones (alternate retired), Klein, Murphy, Shaw
(ex officio alternate), Silberstein, Thomas, Werby

ABSENT: None

Open Time for Public Expression

Open time for public expression, from three to five minutes per speaker, on items not on the Board Agenda. While members of the public are welcome to address the Board during this time on matters within the Board's jurisdiction, except as otherwise permitted by the Ralph M. Brown Act (Government Code Sections 54950 et seq.), no deliberation or action may be taken by the Board concerning a non-agenda item. Members of the Board may (1) briefly respond to statements made or questions posed by persons addressing the Board, (2) ask a question for clarification, or (3) provide a reference to staff for factual information.

No members of the public provided comment.

9:00 a.m. – 10:00 a.m.

Capital Markets Update

Jay Kloepfer, Executive Vice President, Callan LLC

Jim Callahan, President, Callan LLC

Jay Kloepfer, Executive Vice President, Callan LLC, presented Callan's annual capital markets update. Mr. Kloepfer said it is interesting that the S&P 500 has risen 16.6% in 2019, rebounding from the stock market decline in the 4th quarter of 2018. Callan focuses its capital market outlook on a forward looking 10-year period. Every year elements that are different are examined to determine if they change the prior year's investment outlook. Factors need to be defensible in determining what the effect would be of making changes in the economic assumptions, and informed by current conditions but being sure not to focus on the short-term. Jim Callahan, President, Callan LLC, stated the main purpose of capital market assumptions is to help clients design portfolios. Especially now there has never been a point in time when short-

term expectations are such a disconnect from long-term expectations. Callan's view is that markets will ultimately be clear and rational across a broad set of asset classes.

In 2017 the volatility index (VIX) was below 10, which was unusually low. Then in 2018, short-term market volatility came back in March and again at the end of the year. There was concern the economy was heating up and the Fed raised rates. Subsequently, there was concern about slowing economic conditions that led to the December 2018 stock market decline. Mr. Kloepfer stated it is an extremely unusual period we are coming out of with the Fed announcing raising interest rates is on pause. A key phrase for the Fed is for some time, rates will be held steady.

Mr. Kloepfer pointed out that in 2018 the best return came from cash. Ten-year capital market projections no longer count financial crisis numbers, so the forecast looks better now. The twenty-five-year return forecast for equities is 9%, which is what many plan sponsors have achieved over time. The Consumer Price Index (CPI) going negative in the fourth quarter of 2018 was a surprise. In the United States the job market is strong, as is labor force participation, but demographic changes affect this. First notices of layoffs are starting, particularly in financial markets. China has a serious economic slowdown and the trade issue that is holding back growth matters more to China than to the U.S.

Mr. Kloepfer does not see a sudden sharp economic drawdown coming following the slow expansion that is now the longest on record. The yield curve inverted with short rates higher than longer term rates, which is an expression of investor concern. The Fed has been pushing the short end of the yield curve higher. In response to Trustee Werby's inquiry, Mr. Kloepfer stated an inverted yield curve signals recession within a time frame of six to 18 months.

Trustee Given joined the meeting at 9:30 a.m.

Mr. Kloepfer listed Callan's ten-year projections for economic and capital market variables:

- GDP: 2% to 2.5% for the U.S.
- Inflation: 2% to 2.5% for the U.S.
- U.S. Equity 7.15%
- Non-U.S. Equity 7.25%
- U.S. Fixed Income 3.75%
- Real Estate 6.25%
- Private Equity 8.50%

Mr. Kloepfer noted that inflation has dropped back below 2%, and debt service cost for consumers is creeping back up. Trustee Klein inquired about the inverted yield curve predicting recession and why banks are paying low rates on savings and deposit rates. Mr. Kloepfer explained the idea is that the banks will not make as much money and therefore contribute to an economic slowdown. With credit card company rates high, for banks low rates may be driven by demand, he said. Mr. Callahan observed that bank lending has lessened as banks push loans out to the capital markets in response to the great financial crisis. Mr. Kloepfer added there is also considerable private lending. Trustee Given asked how this will work out down the road for banks and investment firms. Mr. Kloepfer replied it is a race to the bottom on fees, with one study predicting that one-third of investment management firms will disappear in the next five years. Banks are trying to diversify investments out of the public markets into the private markets that has been in the investment world due to low interest rates.

Mr. Kloepper stated equity returns consist of capital appreciation and a share of income. U.S. capital markets are reasonably valued, and non-U.S. markets have been undervalued for the last several years. Trustee Silberstein asked about large stock buybacks. In response, Mr. Kloepper said stock buybacks serve investors as a return on free cash flow.

The biggest change in capital market projections is increasing the fixed income return from 3.0% to 3.75%. This is due to Fed rate hikes and Callan's view that the yield curve will steepen. The yield curve has flattened, and fixed income spreads are back to the median level. Callan also made a fundamental change in forecasting private equity returns at 150 basis points over the public equity market.

Trustee Gladstern inquired about the recent wave of initial public offerings (IPOs) in the markets. Mr. Kloepper replied the cycle has changed for private equity as public offerings have slowed down. The number of publicly traded stocks is half of what it used to be, and there are other exits for private equity holdings. Mr. Callahan said the IPOs will realize private investments and boost distributions. Trustee Klein asked whether private equity firms will have to adjust asset values based on IPO valuations, and Mr. Callahan indicated this would have an effect.

Mr. Callahan discussed the Canadian private equity model where plans invest directly in companies which reduces the cost of fees. This model can require more growth assets to offset lower capital market expectations.

Chair Block recessed the meeting for a break at 10:06 a.m., reconvening at 10:15 a.m.

10:00 a.m. – 11:30 a.m.

Asset Liability Review and Discussion

Jim Callahan, President, Callan LLC

Jay Kloepper, Executive Vice President, Callan LLC

Mr. Callahan stated the cornerstone of a prudent process for a pension plan is a careful and thorough examination of its long-term strategic plan. The asset/liability study is an investment function to establish an asset allocation to meet the Plan's long-term obligations. Every five years Callan conducts the asset/liability study with the goal of defining the least amount of risk to reach the desired return; after that, it becomes more about implementation. In between asset/liability studies, capital market updates serve to change course as needed.

Mr. Callahan explained that as pension plans mature, liquidity has more of an impact as exemplified in the Contra Costa County Employees Retirement Association (CCCERA) portfolio discussed at the October 2018 Strategic Workshop. Mr. Wickman observed that the impact created by changes to economic assumptions is different for MCERA's three main valuation groups because of the composition of their workforces and the associated cost of those benefits. The Administrator stated that the sustainability of the Plan relates to sustainability of the employers and their ability to pay contributions. Counsel Dunning observed that Plan members have a right to an actuarially sound system, which may include assessing whether the funding policy overly burdens employers.

Mr. Kloepper presented the review of the 2016 Asset/Liability Study which simulates capital market uncertainty to show how capital markets can vary over time. The big change since this study was lowering the discount rate from 7.25% to 7.00%. Normal cost as a percentage of payroll rises over the ten-year period. Contributions are considered and the closed amortization period that will finish in 2030 will go away. Trustee Block asked what the benchmark is to

determine what portion of the portfolio can be in illiquid assets like private equity and real estate. Mr. Callahan replied that the rule of thumb is below 5% outflow is manageable, greater than 5% outflow is a concern, and 10% outflow is liquidation mode.

Mr. Kloepfer said asset modeling is restricted to current investments in the Plan. He explained that the 15% real asset allocation includes real estate and TIPS, commodities, REITs and natural resource equities. The current portfolio projects a 6.9% nominal return with the real return coming out just higher than the Plan's current real return target, which gives a level of comfort that the target will be achieved. Callan has subdued return expectations and would have concerns about guiding to take more risk in the asset allocation.

When asset and liability models are integrated, simulations are run to determine what the Plan would look like and to define the right place to be. Study results include a range of potential outcomes defined as Mix 1, Mix 2, etc., based on the risk-reward tradeoff. In making the asset allocation decision, the expected case and the worst case are examined to look for a tradeoff. Given the current asset mix, the risk-reward trade off to pursue more return is not there, Mr. Kloepfer stated. The conclusion of the study is that there is a need to retain the current growth profile. Mr. Callahan said the current asset allocation seems reasonable and the expected return for the MCERA Policy Target Mix is 6.9%. The mixes in the study results have significant changes in allocations, but there could be minor changes to allocations that would not make a big difference in the profile of the Fund. Mr. Kloepfer noted that Callan looks at liquidity continually and receives projections from the Retirement Administrator.

Trustee Klein asked why the private equity projected return was raised. Mr. Kloepfer replied the projection is a reasonable expected return over public equity. The standard deviation was lowered to a reasonable number that involves judgment. Mr. Kloepfer pointed out that MCERA is reaching its 7% return on a nominal basis and exceeding it on a real basis.

Mr. Kloepfer discussed liability-driven investing that matches cash flows and is used mostly by plans that are closed or frozen and therefore have fundamental differences from MCERA. These plans have greater exposure to fixed income for cash flow needs and potential drawdowns. Other plans are more aggressively postured because they had to sell assets during the financial crisis. There may be six months of benefit payments in an explicit liquidity position. Mr. Wickman stated the biggest risk to the Board is governance risk and the ability to sustain what you believe in. Chair Block said he thinks some of these questions are valuable as a holistic process leading up to another asset/liability study and opening a broader discussion about options. Mr. Wickman said Callan has been developing the asset/liability study every five years and the next one is planned for 2021. Chair Block said it is worthwhile to discuss different approaches to asset allocations so that Callan is better informed when they conduct the study. Mr. Callahan said it is about tradeoffs; for example, having a more aggressive portfolio or lowering the expected return.

Chair Block recessed the meeting for a break at 11:20 a.m., reconvening at 11:30 a.m.

11:30 a.m. – 12:30 p.m.

Fixed Income Role of Central Banks

Mike Bazdarich, Senior Economist, Western Asset

Frances Coombes, Client Service Executive, Western Asset

Mike Bazdarich, Senior Economist with Western Asset Management Company, stated the Federal Reserve (the Fed) is the central bank of the United States; it is the U.S. banks' bank.

Monetary policy has only been around for 80 or 90 years, and central banks that oversee the banking system were established in the United States about 110 years ago. Prior to that there had been various attempts to establish a central bank. Over the years there were a number of banking crises, and an event in 1910 precipitated the establishment of the central bank. The Federal Reserve was established to lend in times of trouble and oversee and regulate an elastic currency supply.

Federal Reserve currency consists of Federal Reserve Notes issued by the Fed. It has a portfolio of about \$3.5 trillion of securities it bought with printed money. The Fed collects interest, pays its expenses, and sends the rest back to the United States Treasury. The Fed has a Board of Governors appointed by the President of the United States that is equivalent to a cabinet-level post. The Fed has become more policy oriented, and most members are economists. In 1933 the Federal Open Market Committee (FOMC) was created when economic policy became more formalized. The FOMC provides oversight and officially sets economic policy.

U.S. banks have the option of joining the Federal Reserve banking system. Being a member means getting audited in a system which is designed to avoid banking panics. In the last 80 years, monetary policy has become more important. The Federal Funds Rate is the main policy indicator – it is the rate paid by U.S. banks for overnight funds. U.S. banks have to hold reserves equal to 10% of checking accounts.

Mr. Bazdarich stated up until the great financial crisis, the Fed controlled interest rates by controlling the amount of reserves. After Lehman Brothers failed, the Fed flooded the system with money. In 2010 the Dodd Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank) became law. It created the Consumer Protection Finance Board under the purview of the Fed.

Open market operations are the main policy tool of the Fed as reserve requirements have not changed very much. The Fed buys securities and auctions federal debt. There are a few primary dealers who can put in competitive bids. The Fed takes the highest prices, and then after the auction, everyone gets the average price. Capital requirements for banks are based on how risky assets are. Since 2008, the banks are not lending out excess reserves. Another change since then is the Fed started paying interest on excess reserves, adding more incentive for banks not to lend money. Trustee Klein asked if this has caused slower economic growth. In response, Mr. Bazdarich pointed out that the Fed has been hiking short-term interest rates for three years, but bond yields have not gone up. The Fed is actively shrinking its balance sheet now, and still bond yields have not risen. The bottom line is the Fed will be done with quantitative tightening in the next five months. Mr. Bazdarich does not expect the Fed to tighten rates again during this economic expansion because it is intent on sustaining the economy. He pointed out the yield curve is not inverted because it slopes back up.

Chair Block recessed the meeting for lunch at 12:30 p.m., reconvening at 1:31 p.m.

12:30 p.m. – 1:30 p.m.

Lunch (on site)

1:30 p.m. – 2:30 p.m.

Continuation of Capital Markets and Asset Liability Discussion

Jim Callahan and Jay Kloepper, Callan LLC

Mr. Callahan gave an overview of fixed income, stating that the goal for MCERA's portfolio is a total return with less concern for whether the return comes from income or appreciation. Within the portfolio fixed income plays a variety of roles. It serves as a diversifier, does well in stressed capital market environments, is liquid, and has low transaction costs. Components of corporate bonds include the interest rate driven by the maturity of the bond and the credit level. The investor receives the coupon every six months, which is a good diversifier against equity. The lower the credit level, the more the security acts like equity. If interest rates go down, the total bond value goes up. The longer the duration, the greater the sensitivity to interest rates. Negative convexity means when the interest rate goes down, the value of the bond goes down.

Trustee Gladstern asked if credit rating agencies have changed their view on bonds. Mr. Callahan replied there is an independent evaluation of the bond rating. Bonds are investment grade down to BBB and below this non-investment grade. A downgrade of investment grade to non-investment grade would cause a dislocation. MCERA's fixed income portfolio is investment grade by design.

An active fixed income manager adds value by yield curve management and picking sectors (government, mortgage-backed, etc.). All bonds trade off the value of U.S. Treasuries. Active managers tend to like sectors with more yield as most of the return is the coupon. Then, the decision is what issuer is better. In response to Trustee Werby Mr. Callan indicated that hedge funds short bonds.

Trustee Gladstern asked about the County of Marin pension obligation bond issued in the early 2000's. Mr. Callahan explained the bond was taxable and backed by the County general fund. Tax exempt bonds tend to have a lower interest rate, he said. In response to Trustee Block's inquiry on the difference between maturity and duration, Mr. Callahan said duration is a measure of when you get your cash back.

In the MCERA Fund, the bond allocation has been reduced from 40% to 20% due to concerns about the low interest rate environment. Wellington manages the core plus strategy and Western Asset manages an intermediate credit mandate. A third fixed income manager, Colchester, was hired with an international global fixed income mandate. The current structure lowered duration, which is good for the Fund, and increased convexity. The strong U.S. dollar has been a headwind for the fixed income portfolio.

In summary, Mr. Callahan noted that MCERA's approach to its asset mix was appropriate for an open public plan with sound funding and no current liquidity issues. Using a liability matching approach for this type of plan was not optimal but could be an appropriate option to consider as the plan ages and liquidity becomes more of a challenge.

Chair Block recessed the meeting for a break at 2:50 p.m., reconvening at 2:54 p.m.

2:30 p.m. – 3:30 p.m.

Domestic Relations Orders Processing

Michelle Hardesty, Assistant Retirement Administrator

Mr. Wickman explained that Domestic Relations Orders (DROs) processing is a complex benefit calculation requiring a level of expertise because of the unusual counseling component.

Processing DROs has increased since the great financial crisis. They have also increased because of communications to members asking them to notify MCERA if they divorce during membership.

Assistant Retirement Administrator Michelle Hardesty stated DROs come up often and are similar to the disability retirement process in being lengthy, complicated, and with legal guidelines with multiple parties involved. When a member is married and actively contributing, they are establishing a community property right that extends to their spouse. Upon divorce, the non-member spouse has rights to the portion of the retirement benefit earned during the marriage. Parties can negotiate what percentage is awarded to the ex-spouse, but the Court order provides MCERA with the details on the split. An “interest” order happens if a divorce occurs after retirement where the only option is to award a percentage of the member’s benefit to the ex-spouse. A “split account” occurs in a divorce prior to retirement. A split account establishes a separate account for the former spouse and requires three documents: a Joiner, a Dissolution, and a Stipulation and Order. The rights of the former spouse include a lifetime benefit or a refund of contributions, to purchase eligible service credit, and the ability to redeposit a refund to restore prior service. The former spouse may not apply for disability. The rights of the member include receiving any service credit and contributions not awarded to the ex-spouse and the right to redeposit the DRO service/contributions, if the former-spouse withdraws.

Involved parties for DROs include the member, the former spouse, their attorneys, both members’ new spouses, counsel and staff. Chair Block asked about counseling being MCERA’s responsibility and whether we should be concerned about being liable. Mr. Wickman replied that member counseling is an everyday aspect of MCERA’s work and staff understand the uniqueness of a divorce situation. Staff do not advise what the member and ex-spouse should do for the DRO. Staff also know to consult counsel if needed.

When the final dissolution is completed, and a percentage of community property is allocated to the former spouse, staff provides a sample Stipulation and Order which details how to split the account. The next step is an audit of service credit and contributions. Once data is determined to be correct, the account is split into two accounts and the former spouse is notified of their rights and choices.

3:30 p.m. – 4:30 p.m.

Closing and Follow-up Items from Today’s Agenda

No discussion.

Chair Block adjourned the meeting for evening recess at 3:49 p.m.

Day 2 **April 17, 2019**

9:00 a.m.

Call to Order/Roll Call

Chair Block called the meeting to order at 9:01 a.m.

PRESENT: Block, Cooper, Given, Gladstern, Jones (alternate retired), Klein, Murphy, Shaw (ex officio alternate), Silberstein, Thomas, Werby

ABSENT: None

Open Time for Public Expression

No members of the public provided comment.

9:00 a.m. – 10:00 a.m.

Actuarial Assumptions – How changes impact the plan's liabilities

Graham Schmidt, Cheiron

Bill Hallmark, Cheiron

Bill Hallmark, Actuary with Cheiron, reported Cheiron will be working on the next Experience Study to present to the Board in 2020. In setting economic and demographic assumptions, the context is very long term, with benefits expected to be paid to current members for 80 years or more. Taking into account what is happening right now, Cheiron looks at each assumption individually within a reasonable range and also considers a combination of all of the assumptions.

Trustee Given joined the meeting at 9:04 a.m.

Economic assumptions are primarily driven by macroeconomic conditions, Mr. Hallmark said. Some specific adjustments are made for inflation for the annual cost of living adjustment (COLA) that is driven by local inflation. Investment returns are driven by macro conditions that Cheiron monitors for a potential disconnect. Demographic assumptions are much more based on historical experience for MCERA including looking at how that may differ going forward. For the mortality assumptions there is a focus on national studies, in terms of future improvements to mortality and in terms of current rates. It is difficult to have enough plan experience to develop entirely system-specific mortality assumptions.

Price inflation is the foundation for all economic assumptions. It is added to real rates of return to determine nominal rates of return. Current economic assumptions are:

- Inflation: 2.75%
- Wage Growth 3.00%
- Expected Return: 7.00% nominal, 4.25% real

The expected return or discount rate is the most powerful assumption for the Plan. A higher discount rate requires lower contributions, and a lower discount rate requires more contributions. Chair Block asked to what extent Cheiron is producing a separate opinion from our investment consultant on what the discount rate should be. Cheiron uses forecasts for capital markets to develop the recommended discount rate, including the projections from Callan Associates and other investment consultants. Mr. Wickman said the Experience Study shows all investment managers nominal inflation projections. This data is taken into consideration in how to set the discount rate. Counsel Dunning said from a legal perspective, the actuary makes a recommendation to the Board, but it is ultimately the Board's final decision. Trustee Gladstern pointed out that Callan is looking out ten years and the actuary is looking further out. Mr. Hallmark said Cheiron constructs what it believes is a reasonable range for the discount rate. Chair Block said there is nothing wrong with the Board challenging its consultant opinions, but the decision needs to be reasonable. Mr. Wickman agreed the Board should probe and investigate issues related to the asset and the liability equations, but any decision has to be based on evidence to support it. Mr. Hallmark said it makes sense to ask those questions.

Trustee Jones joined the meeting at 9:19 a.m.

Cheiron is using the discount rate to develop a funding target. The expected return on assets determines the level of assets accumulating at this return that will be enough to pay liabilities. Mr. Hallmark discussed situations when the risk-free rate of return would be used as the discount rate, which are not applicable to MCERA. Mr. Wickman noted that MCERA plan sponsors other than the County of Marin could exit the Plan. In that case, it would lead to calculation of a termination liability. Counsel Dunning explained the options in the event a participating employer other than the County would want to withdraw from MCERA. Chair Block asked if it is possible to craft a related policy without knowing all the scenarios. Mr. Wickman replied that a policy could be developed and presented to the Board based on advice and consultation with the Actuary and Board Counsel.

Trustee Klein said CalPERS is converting its termination liability into an annuity. Mr. Hallmark said there is some pooling going on at CalPERS that is supported by a bond portfolio. It is a very conservative bond portfolio because they have nowhere to go to get money. Mr. Wickman said in managing a closed plan, a Board would think differently about how to invest, because you have no incoming employee and employer contributions.

For inflation expectations Cheiron looks at a variety of sources, including surveys and market indicators. One thing that has been consistent for a while, he said, is that public plans are using a higher inflation assumption than forecasters. Part of this is the time horizon and this gap has been shrinking for the last few years. Cheiron has also seen as the inflation assumption has come down, the discount assumption has come down. The median discount rate across the country is trending down to below 7.5%, is lower in California, and is expected to continue the trend.

Demographic assumptions include mortality and projections rates for retirement, termination and disability. There are also merit and longevity salary increases and other assumptions. With the most recent Experience Study Cheiron recommended that MCERA switch to generational mortality tables that project improvements every year. Last year in a new development the Society of Actuaries did a mortality study based on public pension plan experience for teachers, safety and general employees. It is not expected that the new study will have a significant impact on MCERA because Cheiron is already looking at MCERA's experience and improvements are built into the mortality tables.

Chair Block said in the asset/liability presentation payroll and head count were held constant; how does that affect projected cash flow, he asked. Mr. Hallmark said this is an important topic. Cheiron assumes active headcount stays constant and payroll grows through inflation and real wage growth across the board. He noted it would not be conservative to lean on growth in head count, and moreover, it could have wide-ranging effects. Mr. Wickman noted the Board adopted a membership growth value of zero based on the latest Experience Study. Trustee Gladstern said Marin County tends to hire older employees, which Mr. Hallmark said results in a higher Normal Cost. Mr. Wickman said the average entry age is around 40 years old. Trustee Given said one issue is how expensive it is to live in Marin for younger people. Trustee Cooper pointed out that when MCERA implemented PEPRA, we moved to a single pooled rate for PEPRA tiers instead of the age-based rates for the Classic tiers. Mr. Wickman stated that pooled rates are very common in public retirement plans and that the CERL was somewhat unique in providing age-based rates. He also discussed some of the administrative challenges associated with age-based employee contribution rates.

Mr. Hallmark reported that improvements to mortality are not materializing to the degree projected. If that trend continues, we could see improvements to liabilities, he said. Trustee Cooper asked if we will see a mortality assumption for safety applied to safety members. Mr. Hallmark said Cheiron is now using CalPERS mortality tables adjusted for MCERA experience. He showed that the effects of changing mortality tables are within a narrow range and do not have a big effect on the Plan's funding level. Switching from CalPERS mortality tables to the new public pension plan tables, rates are higher at older ages than what we are assuming.

Mr. Hallmark discussed the sensitivity of the discount rate. The 10-year U.S. Treasury is used as a marker and its yield has declined over time, meaning there is a higher risk premium needed to reach the assumed rate of return. This has been a difficult dynamic for public pension systems to manage. He showed the effect on contribution rates of a return one percent above and below the 7.00% assumed rate of return. In the short term there is not a significant impact, but over the long run there is more of an impact.

In response to Chair Block's inquiry, Mr. Wickman stated the Plan was 100% funded in 2002. Currently MCERA is 87% funded with a stable funding policy and predictable contribution rates, which is a good goal. Chair Block asked if the assumptions should reflect that we are going to be 100% funded. The Administrator replied each year will present actuarial gains or losses, and it is the impact of those changes that are managed through the Board's funding policy. In summary, Mr. Hallmark stated the focus now is to get to a higher funding level. The next Experience Study is planned for completion in late 2020. In addition, there are new Actuarial Standards of Practice (ASOPs) for assessment and disclosure of risk in the June 30, 2019 valuation.

Chair Block recessed the meeting for a break at 10:25 a.m., reconvening at 10:33 a.m.

Trustee Cooper was excused from the meeting at 10:26 a.m.

10:00 a.m. – 11:00 a.m.

Cyber Security Considerations

Peter Dewar, President, Linea Secure

Peter Dewar, President of Linea Secure, stated the firm helps public pension funds address cyber security risks. Cyber security is risk management to protect information, assure no one is changing that information without authorization, and prevent unauthorized persons from using the data. Mr. Dewar said some of the root causes of cyber security risks are malicious intent, human error, and system deficiencies. He explained that a malicious attacker will do reconnaissance on how to gain access to information. Avenues include phishing emails, self-service entry points, and targeting executives. There are persistent attempts to attack vulnerable organizations through weakness in the technology that is used and compromise credentials, which can be escalated. Once an attacker moves around in a system, the goal is to find valuable data. Then the data is either stolen or may be made unavailable to the intended user. Ransomware distributed through email will encrypt files making them inaccessible. Phishing emails will gather information if a link is clicked. Mr. Dewar stated typically the attacker is not discovered for some time (the average is 184 days) although the time span is trending down. It is therefore critical to have discovery tools and to see if things are changing so action can be taken.

Areas of concern for pension funds are:

- What are your areas of heightened vulnerability?
- Do you have a plan to respond if there is an attack?

- Are you following a methodology?
- What are your key controls?
- Do you perform an annual assessment?
- What do you need to work on to mitigate risk?

Trustee Thomas asked about “whaling” Mr. Dewar said that “whaling” is going after senior staff and others such as the Chief Executive Officer (CEO). An example is requesting financial transfers. Attackers sometimes try to mimic business operations by sending an email that looks like it came from the CEO requesting a transfer of funds.

Third parties are an area of concern and should be examined for sufficiency of policies and procedures. Agreements should include language to extend cyber protection across those borders. Member call centers can be vulnerable to pretenders trying to gain access. Member self-service is not available at MCERA, but would be another target. Trustee Shaw asked about the validation process for member self-service that would prevent an attacker from creating an invalid profile saying they are a member. Mr. Dewar replied this has happened where an older member who did not have an account was impersonated. Prevention involves doing an assessment of self-service applications including a penetration test by trying to compromise the technology. Mr. Dewar stated that studies have shown the likelihood of being able to compromise multi-factor identification is much smaller than single factor identification. Mr. Haws said additionally it is recommended to identify unique information when setting up member accounts.

Other sources of risk include employer reporting and payroll processes that could be vulnerable to a cyber threat. Payroll processing involves an insider threat, meaning separation of duties is important. MCERA’s consultants such as the actuary need to protect the information sent to them as a matter of due diligence. Vendors can be targeted so there is third-party risk. In financial and investment processes, custodial banks have moved to multi-factor identification. Linea Secure recommends getting compliance reporting that banks are taking appropriate steps to protect data. Finally, Mr. Dewar stressed the importance of continually patching involved systems.

In conclusion, Mr. Dewar recommended developing a pension data protection plan to mitigate cyber threats. Data including paper copies that is at rest, in transit, and in use needs to be protected. Insurance companies will look into what protections are and may not pay out based on what they find, if the insured party stipulated that the processes were in place. He said a key pension data protection plan that is free to use is the National Institute of Standards & Technology (NIST) 2014 Cyber Security Framework (CSF). This provides a roadmap to protect the privacy of information systems. Key controls include access control, awareness, and training. Configuration and change management processes are vulnerable if not appropriately tested.

Mr. Dewar stated it is a matter of when, not if, your system will be attacked. Therefore, Linea Secure recommends adopting a methodology, knowing vulnerabilities, having a plan to manage incidents, testing plans, getting insurance, and continuously monitoring evolving threats. Chair Block asked if there is a certified body that makes cyber security threat assessments in an acceptable due diligence process. In response, Mr. Dewar recommended having an independent assessment as there is no official entity yet. Chair Block asked if Mr. Dewar is aware of any efforts in California to move in that direction. Mr. Dewar replied there are a number of

legislative proposals to push government organizations in that direction. In addition, there is talk in Congress to compel federal agencies to manage cyber security threats and to extend that to other organizations. In response to Trustee Gladstern's inquiry, Mr. Dewar said training is available which he received from a well-known organization.

Chair Block recessed the meeting at 11:22 a.m., reconvening at 11:30 a.m.

11:00 a.m. – 12:00 p.m.

Public Retirement System Trustee Dos and Don'ts

Ashley Dunning, Nossaman LLC.

Board Counsel Ashley Dunning of Nossaman advised articulating the reasons for the Board's actions is important. Board members are co-fiduciaries with one another to help the Board act prudently. Board members also act as quasi-adjudicator on certain topics, such as for disability retirement determinations. Another purpose is to maintain an actuarially sound pension system. This means not being a rubber stamp for the actuary, but asking questions and making comments about assumptions. Fundamentally, what will be questioned is if the Board is complying with the fiduciary duty of care and of loyalty. The California Constitution, the County Employees' Retirement Law of 1937 (CERL), and the Public Employees' Pension Reform Act of 2013 (PEPRA) all provide guidance for the Board's duties. Board members also need to know laws including the Brown Act, the California Public Records Act, and procedures like Robert's Rules of Order. Chair Block noted the Board is sometimes relaxed as to Robert's Rules of Order and asked if we are following due process. Ms. Dunning replied the process is pretty good. She noted it depends, and a casual approach may lead to behavior on the Board that may make its decisions more vulnerable to challenge. Mr. Wickman said the risk of informality is to get off the topic that is agendized for discussion. Counsel advised doing the homework so that questions asked reflect the Board member has read the background material. Ms. Dunning views the Board's Strategic Workshops as good opportunity to provide education to the Board. She advised Board members to stay in their policy-making role. This makes the selection and interaction with the Administrator important for the Board, she said, as well as the relationship with the actuary and the investment consultant.

Ms. Dunning stated risks for Board members are in the context of conflicts of interest that can lead to civil, or potentially criminal, violations. This means Board members have no personal interest in and no material benefit from points of discussion or decision. Board members should listen to but not succumb to pressure from outside bodies, because they have the duty of loyalty to all the members and beneficiaries of the pension system.

In conclusion, Ms. Dunning reminded Board members there are to be no discussions by a quorum or more of the Board or a standing committee on matters of within the Board's jurisdiction. Also, emails are subject to the Public Records Act. Robert's Rules of Order require Board members to listen to different viewpoints and make sure everyone understands, but do not prolong debate unnecessarily.

Closing and Follow-up Items from Today's Agenda

12:00 p.m. – 1:00 p.m.

Trustee Murphy expressed appreciation for the workshop topics, and Trustee Jones said reviewing the basics is a good thing. The Callan fixed income overview was of particular interest to Trustee Shaw. Chair Block focused on the liability-driven investment strategy discussions and

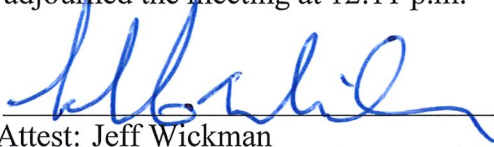
presentations from last fall's workshop that he said give us something to think about. He said the plan for the next workshop and beyond is to continue to gather perspectives on assets and liabilities that might be able to inform our professionals. Trustee Given observed how well-matched assets and liabilities are and following a path to better funding. He commended the Board for working well together and for all it has accomplished in its discussions.

Chair Block said the plan is to have Tom Iannucci, who was not able to attend this workshop, come back in October for what is expected to be a valuable exercise in prioritizing. Mr. Wickman thanked Chair Block for his considerable feedback on the material for this meeting. Chair Block in turn commended Sara Klein, Chair of the Investment Committee, for her input.

There being no further business, Chair Block adjourned the meeting at 12:11 p.m.



Steve Block, Chair



Attest: Jeff Wickman
Retirement Administrator