Joint Meeting of
The Board of Trustees and
Investment Advisory Committee
Minutes – May 22, 2019

EMPLOYEES RETIREMENT SYSTEM OF TEXAS

August 21, 2019

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JOINT MEETING OF THE
BOARD OF TRUSTEES AND
INVESTMENT ADVISORY COMMITTEE
EMPLOYEES RETIREMENT SYSTEM OF TEXAS

TRS Building – Board Room
1000 Red River Street, Austin, Texas 78701
May 22, 2019 – 8:47 am

TRUSTEES PRESENT
Craig Hester, Chair
Ilesa Daniels, Vice-Chair
Doug Danzeiser, Member
Catherine Melvin, Member
James Kee, Member

INVESTMENT ADVISORY COMMITTEE (IAC) PRESENT
Caroline Cooley, Chair
Bob Alley, Vice-Chair
Ken Mindell, Member
Gene Needles, Member
Laurie Dotter, Member
Gene Needles, Member

IAC ABSENT
Laura Starks, Member
Didi Weinblatt, Member
James Hille, Member
Mari Kooi, Member

ERS DIRECTORS PRESENT
Porter Wilson, Executive Director
Catherine Terrell, Deputy Executive Director
Paula A. Jones, Deputy Executive Director and General Counsel
William Nail, Special Projects & Policy Advisor
Tony Chavez, Director of Internal Audit
Robin Hardaway, Director of Customer Benefits
Diana Kongevick, Director of Group Benefits
Betty Martin, Director of Investment Services
Wendy McAdams, Director of Operations Support
Machelle Pharr, Chief Financial Officer
Gabrielle Schreiber, Director of Procurement and Contract Oversight
DeeDee Sterns, Director of Human Resources
Kathryn Tesar, Director of Benefits Communications
Tom Tull, Chief Investment Officer
Keith Yawn, Director of Strategic Initiatives
Bernie Hajovsky, Director of Enterprise Planning

ERS STAFF PRESENT
Brannon Andrews, Office of General Counsel
Jason Avants, Information Systems
Georgina Bouton, Group Benefits
Amanda Burleigh, Office of General Counsel
Tony Cardona, Investments
Jennifer Chambers, Executive Office
Carlos Chujoy, Investments

Amy Cureton, Investments
Anthony Curtiss, Investments
Kelley Davenport, Executive Office
Christi Davis, Customer Benefits
Juli Davila, Investments
Leticia Davila, Investments
Pablo De La Sierra, Investments
Blaise Duran, Group Benefits
Leah Erard, Strategic Initiatives
Peter Ehret, Investments
Angelica Harborth, Group Benefits
Aaron Ismail, Internal Audit
Tressie Landry, Internal Audit
Nancy Lippa, Office of General Counsel
Ricky Lyra, Investments
Greg Magness, Information Systems
Kenneth McDowell, Investments
Aris Oglesby, Investments
Jamey Pauley, Executive Office
Jonathan Puckett, Internal Audit
Susie Ramirez, Executive Office
Tanna Ridgway, Investments
Cheryl Scott Ryan, Office of General Counsel
Robert Sessa, Investments
Leighton Shantz, Investments
John Streun, Investments
Chuck Turner, Information Systems
Mary Jane Wardlow, Executive Office
Ariana Whaley, Government Relations
Stuart Williams, Investments
Ryan Wilkinson, Investments

VISITORS PRESENT
Nick Arnold, Humana
Sam Austin, NEPC
Diel Bakalli, CBRE Caledon
Brian Barth, Texas Department of Transportation
Trampus Bright, Voya
Tim Bruce, NEPC
Phil Dial, Rudd & Wisdom
Rob Dwyer, Empower
Christy Fields, Meketa
David Glickman, Meketa
Lynn Gordon, Securian
Gavin Groenberg, Voya Financial
Patrick Harvey, Walgreens
Diana Head, Blue Cross and Blue Shield of Texas
Angela Holland, Empower
Asif Hussain, CBRE Caledon
Kirt Laualla, Delta Dental
Colleen McGlamry, UnitedHealthcare
Chris Paxton, Optum RX
Brian Ragland, Texas Department of Transportation
Mallory Sumner, Blue Cross and Blue Shield of Texas

2. Joint Meeting of the ERS Board of Trustees and Investment Advisory Committee

1. CALL TO ORDER

1.1 Call Meeting to Reconvene the Board of Trustees

Mr. Craig Hester, Chair of the Board of Trustees (Board) for the Employees Retirement System of Texas (ERS), called to reconvene the meeting with the Investment Advisory Committee (IAC) to take up the following Joint Meeting Board of Trustees and Investment Advisory Committee agenda items.

A public notice of the ERS Board of Trustees meeting containing all items on the proposed agenda was filed with the Office of the Secretary of State at 2:54 p.m. on Monday, May 13, 2019 as required by Chapter 551, Texas Government Code, referred to as "The Open Meetings Law."

1.2 Call Meeting of the Investment Advisory Committee to Order

Investment Advisory Committee Chair Ms. Caroline Cooley called the meeting to order and read the following statement:

> A public notice of the Joint Meeting of the ERS Board of Trustees and Investment Advisory Committee containing all items on the proposed agenda was filed with the Office of the Secretary of State at 3:53 p.m. on 2:54 p.m. on Monday, May 13, 2019 as required by Chapter 551, Texas Government Code, referred to as "The Open Meetings Law."

2. MINUTES

2.1 Review and Approval of the minutes to the March 6, 2019 Joint Meeting of the Board of Trustees and IAC meeting – (Action)

Chair Cooley opened the floor for a motion on the approval of the minutes from the March 6, 2019 Joint Meeting of the Board and IAC.

Prior to the motions, Mr. Hester detailed edits to the March 6, 2019, Joint Meeting minutes as presented.

The IAC then took the following action:

> **MOTION** made by Mr. Gene Needles, seconded by Mr. Robert Alley, and carried unanimously by the members present that the Investment Advisory Committee of the Employees Retirement System of Texas approve the minutes, as edited, of the Joint Meeting of the Board and IAC held on March 6, 2019.

The Board of Trustees then took the following action:

> **MOTION** made by Mr. Doug Danzeiser, seconded by Ms. Ilesa Daniels, and carried unanimously by the members present that the Board of Trustees approve the minutes, as edited, of the Joint Meeting of the Board of Trustees and Investment Advisory Committee held on March 6, 2019.

3. INVESTMENT PERFORMANCE

3.1 Review of the Investment Performance for First Calendar Quarter 2019

Mr. Tom Tull, Chief Investment Officer, Carlos Chujoy, Risk Officer, Mr. Sam Austin and Mr. Tim Bruce, NEPC, presented the investment performance for the first calendar quarter of 2019.

Mr. Austin explained that markets were recovering from the fourth quarter of 2018. He discussed the ERS Trust Dashboard and noted the Trust returned 6.4% versus 8.2% for the policy benchmark, underperforming calendar year-to-date. He explained that performance was slightly even fiscal year-to-date, with the Trust and policy benchmark returning 0.3% and 0.6%, respectively. He noted that the tracking error increased to 1.52%.

Mr. Austin noted that the Trust exceeded the actuarial target in the 3-year and 10-year periods, and underperformed during the tough fourth quarter of 2018. The Trust lost $1.68 billion in the fourth quarter and gained back $1.46 billion in the first quarter of 2019.

He explained that the three-year Sharpe ratio was 1.53 compared to 1.15 for the policy benchmark and shows a much more efficient investment mix compared to the policy benchmark. Similarly, the Sortino ratio, which shows sensitivity to down side risk, was 1.51 compared to 1.15 for the policy benchmark. He further explained that the results were similar over the 5-year period. This indicates that asset allocation and active management worked for the Trust. Mr. Austin explained that the $1 billion net cash outflow between contributions and withdrawals is within the bounds of monitoring liquidity.

Mr. Austin discussed allocation targets and noted all asset classes were within long-term targets with the exception of cash, which was 0.9% above the target of 1%. He highlighted that Public Equity was slightly above its long-term target because the MSCI ACWI IMI and S&P were both up double digits for the quarter. Mr. Austin noted that over the three-year period the Trust had better risk-adjusted returns over the policy benchmark.

Mr. Austin explained that Private Equity was the largest detractor to returns during the first quarter and noted that it was likely due to a challenging fourth quarter market environment. Due to the nature of the asset class, private equity valuations are adjusted one quarter behind. He highlighted that Private Equity was the biggest contributor to performance for the 1-year ending March 31, 2019 and stressed the importance of not being fixated on one quarter of performance.

Mr. Austin explained that over a rolling 10-year period the Trust performed in line with the long-term benchmark. He further explained the 3-year information ratio[1] ticked down slightly, but was solidly positive.

Mr. Austin concluded that the Trust is very healthy and performing well over the longer periods. He noted that NEPC is confident that the fund will continue to perform in line with expectations.

Mr. Tull explained that consistent with previous discussions the team would present a risk perspective at each Board meeting.

Accordingly, Mr. Chujoy presented a quarterly risk report that the team is currently developing. He presented example slides that illustrate the health and performance of the Trust. He noted that the Trust's funding status has been challenged since the 2000s due to events such as the great financial crisis. He noted that the expected returns of US pension plans have been trending down for the last two decades. He indicated that it would affect liability valuations and challenge return expectations on a going forward basis. The Plan has exceeded the actuarial rate of return over the 3-year and 5-year periods and has slightly missed over the 25-year period. Since the great financial crisis, the Trust's success rate exceeded the rate assumption 50% of the time.

Mr. Chujoy created a stress test by identifying five return drivers that could explain the return variability of the Plan. The five factors taken together helped explain about 97% of the variability. A subset of the five factors were used to measure the Plan's asset return sensitivity. Public Equity was the primary driver of the Plan's sensitivity. The sensitivities can be used as inputs to test how the assets would perform in stressful conditions. He highlighted that the exercise was not conducted to generate point estimates, but to get a sense of intensity.

[1] The **information ratio** is a measurement of portfolio returns beyond the returns of a benchmark, usually an index, compared to the volatility of those returns.

Mr. Chujoy explained that the team plans on including a heat map of the business cycle, portfolio exposures relative to the policy benchmark, plan liquidity, and a number of other items at subsequent Board meetings.

Mr. Mindell asked if the heat map could be used to predict conditions. Mr. Chujoy said that the team would share information with the investments team at the monthly Risk Committee meetings and suggest potential plans of action.

Mr. Hester asked how Mr. Chujoy would characterize the risk environment today.

Mr. Chujoy explained that the risk environment is very challenging due to geopolitical risks, Brexit, tariffs, Venezuela, and Argentina, which impact risk aversion levels.

There were no questions or further discussion, and no action was required on this item.

4. FIXED INCOME PROGRAM

4.1 Market Update and Program Overview

Mr. Leighton Shantz, Director of Fixed Income, Mr. Peter Ehret, Director of Internal Credit, and Ms. Leticia Davila, Rates Portfolio Manager, presented an update on the Fixed Income Program.

Mr. Shantz discussed the Fixed Income team's structure noting that there is $4.1 billion in the risk-reducing Rates Portfolio and $3.1 billion in the return-seeking Credit Portfolios. Approximately $500 million of the credit portfolio is externally managed.

Mr. Shantz discussed performance as of March 31, 2019. Rates returned 392 bps over a 1-year period, amounting to $166 million, and 12 bps of relative out-performance. Credit returned 524 bps over a 1-year period, amounting to $162 million, and -69 bps of relative under-performance. He explained that the bulk of the underperformance was from the internally managed portfolio in-line with its greater asset weighting, highlighting that it was not due to a credit event and thus not a permanent impairment.

Mr. Shantz discussed cumulative excess returns for the 12-months ending March 31, 2019 and noted internal credit detracted roughly $15 million. He noted the External Credit portfolio underperformed the benchmark by roughly $7 million. He further noted that the performance of the External Credit portfolio lags other asset classes, so the performance reflects these timing differences.

Noting that the portfolios are risk constrained, Mr. Shantz discussed the rolling 12-month tracking errors. He explained that the Credit tracking error move from 87 bps to 158 bps from December to January was a non-event since the average tracking error is 100 bps. He noted that there were no violations to policy.

Mr. Shantz presented the rolling 12-month return dispersions and explained that 12-month returns are calculated monthly and ranked. He highlighted the similarities of the portfolios to their benchmarks in terms of magnitude and range of returns. He further highlighted the differences between the portfolios. The Rates and Credit portfolios have smaller return ranges than their benchmarks with slightly higher average returns, representing smaller betas and a positive alpha, respectively. The average rolling annual excess Rates return was 24 bps and Credit's was 145 bps.

Mr. Shantz discussed the eight external credit partnerships noting one recently fully distributed partnership that resulted in an internal rate of return[2] (IRR) of 14.34%. He noted seven of the strategies are draw structures which periodically call capital. Since the managers control when the capital is called, it is difficult to evaluate total rates of return. The capital calls are components of Rates and Credit portfolios that are measured on their total return. He noted a new fund showing a negative total return is due to the early stages of its investment life cycle. The strategy has currently returned $35,000 with an 86

[2] The internal rate of return is a discount rate that marks the net present value of all cash flows from a particular project equal to zero.

bps IRR. He commented that the team looks at the external credit landscape for mispricing opportunities. The preference is to use exchange-traded funds or the internal team because it is quicker to exit investments. External managers are used when the opportunity is resource prohibitive or transitory.

Credit is benchmarked against the Barclays Cash Pay 2% Capped High Yield index. Excess return is expected to overcome the risk of being private. The expected returns vary with the strategy.

Mr. Shantz provided an update on the market capitalizations of the three seeded Exchange Traded Funds (ETF). As of March 31, 2019, one fund was up to $2.7 billon, and represents less than 3% of Trust assets. The other two funds have not attracted capital since being seeded in January 2018, but have performed as expected as investments. He noted that both funds could be liquidated and rolled up into the other fund if needed.

Mr. Ehret noted energy is a large space in high yield and an area that the team has been reducing due to volatility in the space in response to a question from Ms. Cooley.

Mr. Tull commented that a report is available through the board portal that breaks down asset classes by sector exposures. The updated report will be provided quarterly.

Mr. Hester noted Federal Reserve Chairman Jerome Powell's comments on the collateralized loan obligation[3] (CLO) market and the market's concerns about its vulnerability. He then asked what the Trust's exposure to the CLO market was.

Mr. Shantz explained that the CLO mandate is currently worth about $220 million, with some additional capacity. He highlighted that the team holds veto rights on potential additional investments. He added that the Asset Class Investment Committee (ACIC) recently approved a warehouse facility investment that provides financing to a CLO issuer that will add $150 million max over two warehouse lines at a time. The max CLO exposure would be $400 million. He noted that the team monitors the CLO market and shares the concern.

Mr. Ehret noted that the internal high yield team also watches CLOs because it is a competing source of financing for companies, which could be troubled if there is a loss of liquidity. He added that another concern is that if investment grade company bonds moved into the high yield space it could result in a large expansion of the high yield space and create a technical problem that would reprice assets.

Mr. Shantz explained that the team likes that CLOs are permanent structures that avoid forced selling when margin is called during constrained markets.

There were no questions or further discussion, and no action was required on this item.

4.2 Review of Securities Lending

Director of Fixed Income Leighton Shantz explained that ERS runs an intrinsic value securities lending effort that aims to add value by generating a scarcity premium from lending securities. The goal of the ERS program is to lend securities through its securities lending agent that are on special and have a high margin. In order to reduce risk, ERS restricts the collateral that can be posted for margin to overnight government repurchase agreements, eliminating gap and credit risk. The rebate is set at a minimum spread to the overnight bank funding rate. The program is structured so that the Trust is indemnified from losses both for the failure to return securities and losses in the collateral pool. The market's perception of the agent's credit is watched closely to manage risk-adjusted returns.

Mr. Shantz explained that on December 26, 2018, the agent's credit default swap spread, which serves as a gauge of default expectations, increased. In response, the team limited the lending to only exchange traded funds for liquidity. The action was taken to manage risk-adjusted returns even though

[3] A collateralized loan obligation is a single security backed by a pool of debt.

there were no known immediate credit concerns with the agent. He noted that the spread decreased three weeks later and the full securities lending program was restored.

Mr. Shantz noted that fiscal year to date 2019 revenue from securities lending was at an all-time low at $1.7 million. He explained that it was partly due to the restriction on lending imposed in December. The bulk of the shortfall came from reduced lending amounts. He explained that an uptick in lending amounts during April and May of previous years was caused by tax arbitrage used during the European dividend season that has now been reduced.

Ms. Cooley asked if Mr. Shantz had any recommendations for changes to the program.

Mr. Shantz replied that he does not recommend any changes and noted that in its current state the program does not require many resources to manage.

There were no questions or further discussion, and no action was required on this item.

5. REAL ESTATE PROGRAM

5.1 Market Update and Program Overview

Director of Real Estate Robert Sessa, and Ms. Annie Xiao, Real Estate Portfolio Manager, presented a market update on the ERS Real Estate Program.

Mr. Sessa discussed the Real Estate Portfolio's 9% and 3% split between private and public markets, respectively. He noted the 7.3% underweight to private real estate as of March 31, 2019 was due to the recent asset allocation change. He estimated that the target would be reached by 2020 to 2021. The public real estate portfolio is at its target allocation.

Mr. Sessa introduced Simon Mok as the team's new portfolio manager.

Ms. Xiao provided an update on the public portfolio and noted that the $875 million portfolio is split 55% US and 45% International. By geographic region, Asia, Continental Europe, and the United Kingdom account for 26%, 11%, and 4%, respectively.

Ms. Xiao presented the public portfolio's over and underweights noting a 1.5% overweight to North America and underweights of -1.8%, -0.8% and -0.4% for Continental Europe, Asia, and the United Kingdom, respectively. She explained that the overweight to North America was due to stock selection.

Ms. Xiao discussed cumulative excess total returns since the 2005 inception of the portfolio. The US Real Estate Investment Trust (REIT) portfolio added 25%. The internal portfolio made up of US and international REITs returned 21%. She indicated that the externally managed portfolios ended in 2016.

Mr. Sessa noted that the team has the ability to hire external managers to supplement internal efforts, if needed, but no immediate plans to do so.

Ms. Xiao discussed attribution and noted that the portfolio outperformed the benchmark by 30 bps over a one-year period. Stock selection was the primary driver of the outperformance. She highlighted that Japan, Australia, Continental Europe, and the UK added the most value during the period. Stock selection was also the primary driver of performance over a 5-year period. The portfolio outperformed the benchmark by 8 bps. She highlighted that Japan and Continental Europe added the most value during the period.

Mr. Sessa discussed the Private Real Estate Portfolio noting the portfolio is split 90% equity and 10% debt. He explained that the leverage ratio is at 52% with a limit of 65%. The portfolio is in compliance with real estate guidelines. He noted that for Fiscal Year 2019 capital called and distributed were even.

Mr. Sessa noted an over allocation to non-core of 72% on a 57% target and an under allocation to core of 28% on a target of 43%. He expects to be overweight non-core for the near future due to attractive relative value.

Mr. Sessa discussed property type exposure for the US. The portfolio is weighted more heavily to residential and less to retail and office. He discussed a pivot away from industrial due to attractive relative values elsewhere and the current stage of the market cycle. He explained that the pivot from industrial was slightly early but noted the good returns captured from the previous overweight. He highlighted that an exhibit is available in the board portal detailing weighting over time.

Mr. Sessa explained that the US represents 77% of geographic weights based on the net asset value of the portfolio on a target of 70%. Europe and Asia are equally split on the international side with the expectation that the Asia weight will grow, absent of valuation changes in Europe.

Mr. Sessa discussed accomplishments and noted the internal REIT and Private Real Estate portfolios outperformed the benchmark over a 1-, 3- and 5-year period and since inception. He added that one manager is approaching the 15% manager concentration limit due to acquiring other managers in the portfolio. The concentration is mitigated since one of its mandates (about 1/3 of the overall exposure to the manager) is to source co-investment deals from other general partners and not manage the assets.

Mr. Sessa noted that when the real estate program was envisioned, ERS anticipated seven to eight people would be added as the portfolio grew. The team is hoping to add one analyst in Fiscal Year 2020, contingent on budget approval.

There were no questions or further discussion, and no action was required on this item.

5.2 Review and Approval of Proposed Revisions to the Real Estate Guidelines – (Action)

Mr. Robert Sessa, Director of Real Estate, Ms. Amy Cureton, Real Estate Portfolio Manager, and Mr. Tony Cardona, Real Estate Portfolio Manager, presented proposed revisions to the Real Estate guidelines.

Ms. Cureton explained that the first proposed change is to simplify the guidelines by eliminating sub-category geographic guidelines. The change will remove the NCREIF weighting targets for the domestic portfolio. On the international side, it would remove the underlying regional targets. She said that the change will simplify the process. Staff will remain mindful of diversification and cognizant of weightings.

Ms. Cureton proposed expanding the asset class to include investments in Real Estate Technology and Services, also known as PropTech. She explained that technology is disrupting the real estate market as it has in other industries. PropTech refers to technological solutions that solve problems in the real estate market. Investments would be in the technology, through venture capital, or in companies innovating how properties are constructed and managed. The allocation could be through fund structures and amount up to 5% of the real estate portfolio. The allocation should enable the team to stay better informed on industry developments that may affect real estate investments and be able to make better investment decisions while earning better risk-adjusted returns. The allocation would reside in the Real Estate Program based on the real estate knowledge on the team. Real Estate team members will utilize the expertise of the private equity team and the real estate consultant who has venture capital experience.

Ms. Cureton discussed the PropTech universe and emphasized its ability to alleviate pain points in the real estate market. She highlighted the breadth, depth, and fund stage of the PropTech opportunities.

Ms. Cooley asked the team to discuss how venture capital fits into the Real Estate Program stated objectives of hedging inflation, volatility, diversification, and risk-adjusted returns.

Mr. Sessa explained that it would supplement the goals of the program. He explained that technology impacts industries so quickly that it is important to understand technologies that could disrupt the industry. He noted that the team is cognizant of the risks and he feels the proposed change will improve the team’s investment knowledge.

Mr. Sessa explained that the target returns would be between 500 to 1000 bps above the Real Estate expected return. He noted that each investment size would be roughly $10 million.

Mr. Kee explained that he understands the importance of the asset class but is concerned about its placement in real estate. He added that PropTech moves more with the technology sector than the real estate sector.

Ms. Cooley asked if the PropTech investments could go into the special opportunities allocation.

Mr. Tull explained that the special opportunities portfolio could be an alternative and discussed the spinning of infrastructure out of private equity because it needed to be its own allocation.

Ms. Cooley said that she agrees with the allocation’s merits but wonders if it should be in another portfolio due to its return characteristics. She then asked how other plans have dealt with this type of allocation.

Mr. David Glickman of Meketa, the real estate consultant, explained that Meketa is supportive of the allocation being in the real estate portfolio because of its ability to reduce risk and enhance returns. Real estate team members understand what goes on at the property level, providing them knowledge about which opportunities to pursue. The proposal to use closed-end structures and relying on partners familiar within the space will reduce risk.

Mr. Mindell commented that as investments progress, the lines between asset classes have become blurred and noted he is supportive of the allocation. He asked how active the team would be with fund managers to gain the knowledge of the industry as technology progresses. Mr. Sessa explained that the team has done research for years and has a good idea of the marketplace. The investments would also provide ERS with additional information and data they cannot currently access.

Mr. Mindell added that the allocation would increase the knowledge base of the Trust because it applies to other asset classes.

Mr. Needles commented that the long-term nature of real estate could act as a hedge and the lack of liquidity in real estate speaks to placing it within the asset class.

Ms. Dotter added that the real estate knowledge would help determine if managers or owners would find the technology as equitable or marketable. She added that including established industry venture capital guidelines would help structure the program.

Mr. Sessa explained that the team would lean on the real estate consultant. Though the private equity program does not have a venture capital allocation, there is exposure to venture capital through secondaries, where insight could be gained. He explained that to avoid allocations from competing on investments, capital would be spread across the various venture capital stages.

Ms. Dotter noted that debt and public securities are already within the Real Estate portfolio, in addition to equity investments. She agreed with Mr. Needles on the hedging benefits.

Mr. Hester agreed with the allocation and explained that if venture capital investments appear in other asset classes it may make sense to place it within the private equity portfolio.

Mr. Sessa noted that a separate line item could be carved out to track the venture capital allocation.

Mr. Mindell added that the Trust is under allocated to venture capital and this could be the genesis of a larger allocation in the future.

Ms. Caroline Cooley, IAC Chair, opened the floor for a motion on the approval of the Real Estate Program guidelines.

The IAC then took the following action:

MOTION made by Mr. Ken Mindell, seconded by Mr. Gene Needles, and carried unanimously by the members present that the Investment Advisory Committee of the Employees Retirement System of Texas approve the ERS Real Estate Program Guidelines as presented in Exhibit A.

The Board of Trustees then took the following action:

MOTION made by Ms. Ilesa Daniels, seconded by Ms. Catherine Melvin, and carried unanimously by the members present that the Board of Trustees approve the ERS Real Estate Program Guidelines as presented in Exhibit A.

There were no questions or further discussion on this item.

5.3 Review and Approval of Proposed Private Real Estate Annual Tactical Plan for Fiscal Year 2020 – (Action)

Director of Real Estate, Robert Sessa, and Mr. Kenneth McDowell, Real Estate Portfolio Manager, presented the proposed Real Estate Program annual tactical plan for Fiscal Year 2020.

Mr. Sessa highlighted that the tactical plan is a joint effort between the Real Estate team and the real estate consultant. The real estate market is monitored, as well as other asset classes, to allow adjustments to be made based on market conditions.

Mr. McDowell provided an update on the Fiscal Year 2019 tactical plan and noted investments in four funds with a total commitment amount of $270 million. The investments include a retail fund, a diversified US fund, and two co-investments. The investments would bring total commitments to $450 million.

Mr. McDowell discussed the proposed Fiscal Year 2020 tactical plan's pacing projections through Fiscal Year 2023. He noted that the projections account for reaching the 9% Private Real Estate Program target. The 9% target should be reached by Fiscal Year 2021.

Mr. Sessa reiterated that the target is based on assumptions and the 5-year outlook may change.

Mr. McDowell discussed projected cash flows and noted higher contributions in 2020 and 2021 to help achieve the 9% target. He further discussed allocation changes at various levels of Trust growth.

Mr. McDowell noted that the team's strategy is to continue to build relationships with strong partners and find niche funds that will be resilient during economic downturns. He highlighted that co-investments will help reduce fees and provide additional details about the purchased asset. Co-investments give the team more discretion in exploring investment opportunities. The team will also be looking at one or two property technology funds.

Mr. McDowell noted that later in the year the team is looking to add a core plus fund to help round up the core portfolio.

Mr. Mindell asked if the low allocation to core was due to lack of opportunity set and if there are co-investment opportunities that can help make core investments more appealing.

Mr. Sessa explained that the team looks at the relative value between core and non-core. Compared to the great financial crisis, where investors were not paid to take risk due to mispricing, investors are still being compensated to take risk. He added that opportunities in the core space continue to be vetted and since core investments are stable and fully occupied, performance is dependent on the market. Non-core offers the ability to add excess returns and offer the better risk adjusted return. He noted that they are looking for non-core investments with low levels of leverage.

Mr. McDowell said that the team would be looking to add exposure to Asia, emerging Asia, and possibly Europe.

Ms. Caroline Cooley, IAC Chair, opened the floor for a motion on the approval of the Real Estate Program tactical plan for Fiscal Year 2020.

The IAC then took the following action:

MOTION made by Ms. Laurie Dotter, seconded by Mr. Gene Needles, and carried unanimously by the members present that the Investment Advisory Committee of the Employees Retirement System of Texas approve the ERS Private Real Estate Portfolio Annual Tactical Plan for Fiscal Year 2020, as presented in Exhibit A.

The Board of Trustees then took the following action:

MOTION made by Ms. Catherine Melvin, seconded by Mr. James Kee, and carried unanimously by the members present that the Board of Trustees approve the ERS Private Real Estate Portfolio Annual Tactical Plan for Fiscal Year 2020, as presented in Exhibit A.

There were no questions or further discussion on this item.

6. PRIVATE EQUITY PROGRAM

6.1 Review and Approval of Proposed Revisions to the Private Equity Annual Tactical Plan for Fiscal Year 2019 – (Action)

Mr. Ricky Lyra, Private Equity Portfolio Manager, presented proposed revisions to the Fiscal Year 2019 annual tactical plan.

Mr. Lyra noted that revisions to the Fiscal Year 2019 tactical plan are being proposed due to an approved commitment at a March 28, 2019 Board meeting. The revision would increase the Private Equity Program's commitment target range from $1.1 to $1.8 billion.

Mr. Lyra discussed the updated allocation forecast through 2024, which shows the allocation to the Trust returning to 13% by 2024, using a 7.5% growth assumption. He then presented the forecast with a 3.75% growth assumption and adjusted annual commitment levels.

Mr. Lyra said that valuations are running at pre great financial crisis levels and noted that the best companies come to market when the market is very strong, which results in high valuations. He explained that the private equity managers take cyclicality and other factors into consideration given current valuations.

Mr. Tull added that the team would not do a deal unless it benefited the Trust as an investment and the additional adjustment is being brought to the Board to be conservative.

Mr. Lyra commented that the Fiscal Year 2018 tactical plan targeted $1 billion but just under $700 million was committed because the team is diligent about where capital is deployed.

Ms. Caroline Cooley, IAC Chair, opened the floor for a motion on the approval of the revisions to the Private Equity Fiscal Year 2019 annual tactical plan.

The IAC then took the following action:

MOTION made by Mr. Bob Alley, seconded by Mr. Gene Needles, and carried unanimously by the members present that the Investment Advisory Committee of the Employees Retirement System of Texas approve the proposed revisions to the ERS Private Equity Annual Tactical Plan for Fiscal Year 2019.

The Board of Trustees then took the following action:

MOTION made by Ms. Ilesa Daniels, seconded by Mr. Doug Danzeiser, and carried unanimously by the members present that the Board of Trustees approve the proposed revisions to the ERS Private Equity Annual Tactical Plan for Fiscal Year 2019.

There were no questions or further discussion on this item.

7. PRIVATE INFRASTRUCTURE PROGRAM

7.1 Market Update and Program Overview

Director of Infrastructure, Pablo De La Sierra Perez, Mr. Ryan Wilkinson, Infrastructure Portfolio Manager, Mr. Asif Hussain and Mr. Diel Bakalli, CBRE Caledon, presented an update on the Infrastructure Program.

Mr. Perez explained that the infrastructure team remains the same and expects to fill a job vacancy in the coming weeks. He noted the difficulty finding expertise and experience in infrastructure.

Since the portfolio's inception in 2013 through March 31, 2019, the Infrastructure Program consisted of 15 funds and 14 co-investments amounting to $1.578 billion in commitments. As of March 31, 2019, the net asset value of the portfolio was $683 million, or 2.4% of Trust assets, up from the 1.9% presented during the 2018 Infrastructure update. The portfolio has progressed into the positive return territory of the j-curve and has $806 million in unfunded commitments. In Fiscal Year 2018, $468 million was committed of a $450 million target. He expects Fiscal Year 2019 commitments to be within the Fiscal Year 2019 tactical plan ranges approved in March 2018.

Mr. Perez noted diversification targets are not expected to be met during the ramp up stage of the portfolio; however, the targets are considered during portfolio construction.

Mr. Wilkinson discussed the broad geographical targets to emerging markets and developed economies. He explained that the portfolio is at the lower bound of the 30% emerging market target. Though there are not broad sector targets, the team adds diversity where possible. He noted that power represents 51% of the portfolio weighting with additional allocations to telecom due to market growth. The portfolio is broadly in line with strategy targets, which change as investments are de-risked.

Mr. Wilkinson explained that construction risk is one of the risks prudently incorporated in the portfolio and noted a key theme of the portfolio is the use of co-investments, which represents 36% of the portfolio and will continue to be a key focus. The portfolio has vintage year diversity with Fiscal Year 2018 representing the largest allocation at 30%.

Mr. Perez illustrated the economics of the portfolio noting the portfolio averaged 0.89% management fees and 12.1% carry. As of March 31, 2019, realized fee savings were $35.6 million with a forecast of $131.5 in total savings during the life of the existing assets in the portfolio.

Mr. Perez noted that infrastructure continues to see a strong fundraising environment with roughly $80.4 billion raised in 2018 over 53 funds. Fund sizes have also trended upwards, with 32% fewer funds raising more capital.

Energy, power, and utilities remain the largest subsectors and specifically midstream and renewables continue to receive particular attention. He explained that telecommunications has consolidated as a new subsector representing the second largest in the portfolio. He explained that aging infrastructure around the world is providing opportunities for new construction projects. Standardization and market information continues to improve. Governments remain key influencers of infrastructure projects.

Mr. Perez discussed Fiscal Year 2020 objectives and noted co-investments and portfolio diversity would continue to be pursued. The team will seek one analyst for Fiscal Year 2020.

Mr. Perez discussed long-term goals and objectives and noted the team expects to commit approximately $450 million each year for the next few years. He expects to reach the Infrastructure Program target allocation by Fiscal Year 2022 or 2023.

Mr. Perez explained that the team had been working on the transition to the new infrastructure consultant and detailed the team's working relationship with the new consultant. He discussed the consultant's input on the infrastructure guidelines and their ACIC investment analysis.

Mr. Perez said that the team takes an opportunistic approach and noted that the biggest difficulty was finding qualified managers with experience in a particular region. He added that the team is exploring the need and viability of adding additional Asia exposure now.

Ms. Cooley asked how return expectations vary between emerging markets and domestic markets.

Mr. Perez explained that no two investment assets are the same and returns differ among emerging markets. Typically, the team places a premium of 150 bps to 400 bps on emerging markets, while also assessing currency volatility.

Mr. Mindell asked if the commitments should be increased to reach the allocation target.

Mr. Perez explained that as opportunities are found, allocation targets may be adjusted, but it is generally deemed prudent to build a vintage-diversified portfolio in order to mitigate event risk. Staff agreed and noted the current vintage year allocations and targets seem appropriate.

Mr. Hester noted the inception date of the portfolio and asked when the portfolio would be compared to the benchmark.

Mr. Perez explained the portfolio was created in Fiscal Year 2013 and that the Infrastructure Program would be in the deployment stage for the next three years to reach the 7% target. He expected benchmark comparisons to begin within the next 18 months.

Mr. Tull added that the benchmark comparison could happen sooner and noted the 5-year timeframe used in the deployment of the Private Equity portfolio.

Mr. Hester commented that some investments in the infrastructure portfolio are reaching the 5-year mark.

Mr. Hussain indicated that in their experience, infrastructure portfolios are typically benchmarked between 5 and 7 years of the creation of the portfolio.

Mr. Hussain introduced and discussed the CBRE Caledon (CBRE) team and firm history.

Mr. Bakalli presented an overview of the infrastructure portfolio. Based on the current market value of the Trust, the target allocation of the infrastructure portfolio would be $1.98 billion. CBRE explained that the portfolio is well diversified and in compliance with Board approved targets. He highlighted that the portfolio is heavily weighted in North America and renewables. He is confident the portfolio will continue to diversify as it matures. CBRE recommends that the Trust focus on core managers operating in Europe, Canada, and Australia-Asia. If the team commits to fewer managers with larger commitments sizes, it will allow the team to receive favorable fees, governance rights, and more access to co-investments. Lastly, CBRE recommends lifting the manager concentration limits to avoid manager proliferation as the program grows.

Mr. Hussain explained that a lot of capital has been raised in the infrastructure space over the past 10 years. Europe accounts for much of the investment deal flow and renewables account for roughly 53% of the sector. The United States continues to be a solid environment for infrastructure in certain markets, such as airports and toll roads. Europe sees more core infrastructure investments in transportation and utilities. Latin America and Asia provide opportunities for new construction.

The majority of the portfolio is equity and 10% of the portfolio is in more senior securities, such as preferred equity or mezzanine debt.

Mr. Hester noted the growth of public and private partnerships on infrastructure projects and asked if that could accelerate the growth of the asset class.

Mr. Hussain explained that the number of partnerships has not grown as quickly as imagined. Some projects have not reached the final stages due to public pressure, but infrastructure projects will continue to be needed as infrastructure around the United States continues to age.

Mr. Hester asked if other investors have demonstrated a track record of success in infrastructure or if the asset class is still too new of a space to evaluate.

Mr. Hussain explained that Canada and Australia pension plans have invested since the 1990s and 2000s, respectively, with returns in the low net double digits. He added that they were early investors and benefited from being early.

Mr. Alley asked if technological change is shortening the useful life of infrastructure investments.

Mr. Perez explained that it is difficult to predict and noted that long-term contracts are used in many infrastructure investments, such as in generation plants (renewable energy or otherwise), that limits disruptions from new technologies.

Ms. Dotter asked how the portfolio is being constructed to be recession resistant.

Mr. Perez explained that infrastructure offers inflation and interest rate linkages, long-term contracts and has a longer dated view that helps mitigate underperformance in recessions.

Mr. Kee asked if the rising government debt levels affect the availably of infrastructure opportunities.

Mr. Perez explained that the inability of governments to finance projects should open up opportunities for investment by the private sector.

There were no questions or further discussion, and no action was required on this item.

7.2 Review and Approval of Proposed Revisions to the Infrastructure Guidelines – (Action)

Mr. Pablo De La Sierra Perez, Director of Infrastructure, presented proposed changes to the Infrastructure Program Guidelines.

Mr. Perez discussed the proposed changes to the Infrastructure Program Guidelines, which include consolidating single-transactions to 0.6% of the Trust, including co-investments. He also discussed increasing the manager concentration target and limit to 15% and 25%, from 10% and 20%, respectively. He explained that the change was supported by the previous infrastructure consultant and noted the current consultant shares the view. He highlighted that the concentration increase will help with building strategic relationships.

Mr. Mindell asked Mr. Perez to discuss the manager risk associated with the proposed concentration change.

Mr. Perez explained that the concentration would be on a number of funds, vintages, and possibly strategies, and never on a single asset. He noted that when the different funds and strategies are accounted for the risk is reduced.

Mr. Cooley asked how the manager concentration change compares to the rest of the Plan as a percentage of the Trust.

Mr. Tull explained that there have been challenges finding managers and staff believe that increasing the target will aid in finding the best opportunities. He highlighted that the change is consistent with the other asset classes. He noted that it would provide more diversification and a greater probability of getting deals done.

Mr. Mindell commented that the investments would be spread out over a number of vintage years, countries, and sectors.

Ms. Caroline Cooley, IAC Chair, opened the floor for a motion on the approval of the Infrastructure Program Guidelines.

The IAC then took the following action:

> **MOTION** made by Mr. Ken Mindell, seconded by Mr. Bob Alley, and carried unanimously by the members present that the Investment Advisory Committee of the Employees Retirement System of Texas approve the ERS Infrastructure Program Guidelines as presented in Exhibit A.

The Board of Trustees then took the following action:

> **MOTION** made by Mr. James Kee, seconded by Ms. Catherine Melvin, and carried unanimously by the members present that the Board of Trustees approve the ERS Infrastructure Program Guidelines as presented in Exhibit A.

There were no questions or further discussion on this item.

7.3 Review and Approval of Proposed Infrastructure Annual Tactical Plan for Fiscal Year 2020 – (Action)

Mr. Pablo De La Sierra Perez, Director of Infrastructure, presented the proposed annual tactical plan for Fiscal Year 2020.

Mr. Perez discussed the proposed Fiscal Year 2020 tactical plan targeting four to eight investments with commitments totaling $450 million. He noted the continued focus on diversification, co-investments, and establishing key relationships.

Ms. Caroline Cooley, IAC Chair, opened the floor for a motion on the approval of the Infrastructure Program tactical plan for Fiscal Year 2020.

The IAC then took the following action:

> **MOTION** made by Mr. Gene Needles, seconded by Mr. Ken Mindell, and carried unanimously by the members present that the Investment Advisory Committee of the Employees Retirement System of Texas approve the ERS Private Infrastructure Portfolio Annual Tactical Plan for Fiscal Year 2020, as presented in Exhibit A.

The Board of Trustees then took the following action:

MOTION made by Ms. Ilesa Daniels, seconded by Mr. James Kee, and carried unanimously by the members present that the Board of Trustees approve the ERS Private Infrastructure Portfolio Annual Tactical Plan for Fiscal Year 2020, as presented in Exhibit A.

There were no questions or further discussion on this item.

8. BENCHMARKS

8.1 Review and Consideration of Investments Benchmarking – (Action)

Chief Investment Officer Tom Tull, Mr. Sam Austin and Mr. Tim Bruce, NEPC, presented proposed changes to investment benchmarks.

Mr. Tull noted that the team has reviewed the Trust's benchmarks with the Board at two previous meetings, following a review by the previous and current general investment consultant.

Mr. Bruce detailed the process of reviewing each asset class benchmark with staff and discussed some best practices in choosing benchmarks. He explained that benchmarks serve as a baseline for choosing risk and compliance monitoring.

Mr. Bruce explained that the Chartered Financial Analyst Institute's SAMURAI Framework was applied to generate the final recommendation to change three investment benchmarks: 1) change the Domestic Public Equity component benchmark to the MSCI USA IMI from the S&P 1500, which would better align with the overall asset class benchmark; 2)Change the Private Equity Program's benchmark to the Wilshire TUCS, which would better align with the incentive compensation benchmark; and 3) change the Absolute Return Portfolio to the US 3-Month Treasury Bill return plus 3.5%, a reduction of 50 bps, to better align with the investment opportunity set.

He added that there is no perfect benchmark. NEPC prefers a public market equivalent to a peer comparison.

Mr. Hester noted that the MSCI USA IMI returns are a little below the S&P 1500 over 1-, 3-, 5- and 10-year returns. He asked if there would be an impact to past incentive compensation.

Mr. Tull explained that the change would not affect past incentive compensation and would take effect September 1, 2019.

Ms. Caroline Cooley, IAC Chair, opened the floor for a motion on the approval of the proposed investment benchmarks.

The IAC then took the following action:

MOTION made by Mr. Gene Needles, seconded by Mr. Bob Alley, and carried unanimously by the members present that the Investment Advisory Committee of the Employees Retirement System of Texas approve the changes proposed in the agenda item for adoption beginning Fiscal Year 2020.

The Board of Trustees then took the following action:

MOTION made by Ms. Catherine Melvin, seconded by Ms. Ilesa Daniels, and carried unanimously by the members present that the Board of Trustees approve the changes proposed in the agenda item for adoption beginning Fiscal Year 2020.

There were no questions or further discussion on this item.

9. LONG-TERM INVESTMENT RETURN PROJECTIONS

9.1 Review and Discussion of Long-Term Investment Return Projections

Chief Investment Officer Tom Tull, Mr. Sam Austin and Mr. Tim Bruce, NEPC, led a discussion on the Trust's long-term return projections.

Mr. Tull explained that at the August 23, 2017 Joint Meeting a 7.5% actuarial rate of return assumption was adopted based on an asset allocation analysis conducted by Aon Hewitt (Aon). Upon adoption, the Board asked to review the assumptions in two years. Aon's original analysis generated a 10-year return assumption of 7.2%. To be consistent with the actuary, a 20-year projected rate of 7.4% and a 30-year projected rate of 7.6% were also calculated.

Mr. Austin explained that market return, volatility, and the correlations of the asset classes were factored into the calculations. Every year NEPC predicts market returns and he noted the variables used by various consultants would differ. He presented a comparison of the Aon and NEPC asset class return projections and noted the time horizon projections. He discussed the building block approach NEPC uses which considers inflation, valuation measures, and liquidity.

Mr. Austin noted the expected 5-7 year return expectations were 6.68%. The 20-year and 30-year assumptions came in at 7.51% and 7.75%, respectively. He highlighted that the assumptions are based on the market environments on December 31, 2018. He added that NEPC's return expectations are roughly in line with Aon's projections in 2017.

Mr. Tull explained that a formal review of the assumptions would likely happen during the next experience study and, as of now, the return assumptions are in line with the 7.5% assumption.

Mr. Mindell asked how the rate assumption would be reached if only half the asset classes are projected to reach the 7.5% return expectation.

Mr. Bruce explained that the return projections presented are only for 5-7 years and explained that the projections would change over the 20-year and 30-year periods.

There were no questions or further discussion, and no action was required on this item.

10. TRUSTEE RECOGNITION

10.1 Presentation of Board of Trustees Recognition

Board Chair Craig Hester and Mr. Porter Wilson, Executive Director, presented a memorial resolution to Jeanie Wyatt honoring her for her service and contributions to the Board.

Mr. Hester noted the value Ms. Wyatt's investment experience brought to the Trust while she served on the Board.

Mr. Wilson explained that it is tradition to present retiring Board members with a resolution signed by the Board. He then read the resolution and presented it to Ms. Wyatt's colleague Mr. Kee who will complete her term on the Board.

Mr. Kee highlighted how much Ms. Wyatt enjoyed serving on the Board.

There were no questions or further discussion, and no action was required on this item.

11. CALENDAR

11.1 Reminder date for the next Joint Meeting of the ERS Board of Trustees and Investment Advisory Committee, the next meeting of the Board of Trustees and the next meeting of the Audit Committee

There were no questions or discussion, and no action was required on this item.

12. ADJOURNMENT

12.1 Adjournment of the Joint Meeting of the Board of Trustees and Investment Advisory Committee

There were no questions or discussion, and no action was required on this item.

12.2 Recess of the Board of Trustees. Following a temporary recess, the Board of Trustees will reconvene to take up the Board agenda items.

There were no questions or discussion, and no action was required on this item.