These minutes are Approved and Final. Full Board review and decision took place at the November 15 & 16, 2016 Regular Meeting of the Board.

MONTANA BOARD OF INVESTMENTS
DEPARTMENT OF COMMERCE
2401 Colonial Drive, 3rd Floor
Helena, Montana
MINUTES OF THE MEETING – August 16-17, 2016

BOARD MEMBERS PRESENT:
Mark Noennig, Chairman
Karl Englund, Vice Chairman
Terry Cohea
Quinton Nyman
Jack Prothero
Marilyn Ryan
Jon Satre
Sheena Wilson

BOARD MEMBER ABSENT:
Kathy Bessette

LEGISLATIVE LIAISON PRESENT:
Representative Kelly McCarthy

LEGISLATIVE LIAISON ABSENT:
Senator Bob Keenan

STAFF PRESENT:
Jason Brent, CFA, Investment Analyst
Geri Burton, Deputy Director
Dana Chapman, Board Secretary
Frank Cornwell, CPA, Associate Financial Manager
Joseph M. Cullen, CFA, CAIA, FRM Chief Investment Officer
Roberta Diaz, Investment Accountant
David Ewer, Executive Director
Julie Feldman, CPA, Financial Manager
Julie Flynn, Bond Program Officer
Kirsten Haswell, Investment Analyst
Tim House, Investment Analyst
Douglas Hill, Director of In-State Loan Programs
Ethan Hurley, CAIA, Director of Private Investments
Ed Kelly, Investment Analyst
Teri Kolnik, Investment Analyst
Eron Krpan, CIPM, Investment Analyst
April Madden, Investment Accountant
Rande Muffick, CFA, Director of Public Market Investments
Mary Noack, Network Administrator
Kelsey Gauthier, CPA, Investment Accountant
Jon Putnam, CFA, FRM, CAIA, Investment Officer
John Romasko, CFA, Investment Officer
Steve Strong, Investment Analyst
Louise Welsh, Senior Bond Program Officer
Maria Wise, Administrative Assistant
Dan Zarling, CFA, Director of Risk Management

GUESTS:
Jim Voytko, RVK, Inc.
Mark Higgins, CFA, RVK Inc.
Mike Heale, CEM Benchmarking
Webb Brown, CAE, President/CEO, Montana Chamber Foundation
Bridger Mahlum, Government Relations Director, Montana Chamber Foundation

CALL TO ORDER

Board Chairman Mark Noennig called the regular meeting of the Board of Investments (Board) to order at 11:50 a.m. As noted above, a quorum of Board Members was present. Chairman Noennig advised video recording of the meeting was underway and called for public comment. There was none. Chairman Noennig called for comments or revisions to the May 24-25, 2016 Board Meeting Minutes.

Member Jon Satre made a motion to approve the May 24-25, 2016 Board Meeting Minutes as presented. Member Sheena Wilson seconded the motion. The motion carried.

Chairman Noennig called for comments or revisions to the April 5, 2016 Board Meeting Minutes.

> Member Sheena Wilson made a motion to approve the April 5, 2016 Board Meeting Minutes as presented. Member Terry Cohea seconded the motion. The motion carried.

Chairman Noennig called for comments or revisions to the June 29, 2016 Special Conference Call Board Meeting Minutes.

> Member Sheena Wilson made a motion to approve the June 29, 2016 Special Conference Call Board Meeting Minutes as presented. Member Terry Cohea seconded the motion. The motion carried.

ADMINISTRATIVE BUSINESS

Audit Committee Report

The Audit Committee met prior to the Board meeting. Audit Committee Chairman Jon Satre reported that building security cameras have been installed and cover the reception/entry of each floor and the majority of the outside grounds. Drafting of a camera protocol is underway.

The Board's internal controls auditor, Wipfli, reported on the FY16 Internal Controls Report. Wipfli staff was on site and met with Board staff in March, provided a draft report in May and issued the final report in July, with five recommendations. The Audit Committee voted to approve the FY16 Internal Controls Report, which needs full Board approval.

> Committee Chairman Satre made a motion to accept the FY16 Internal Controls Draft Report as presented. Member Sheena Wilson seconded the motion. The motion carried.

Committee Chairman Satre reported the Committee had an update from Financial Manager Julie Feldman on STIP participation of local governments for the new STIP Resolution. The process is ongoing and has taken considerable staff time. Any questions should be directed to Ms. Feldman. Additionally, accounting staff, along with INTERCAP and Commercial Loan Program staff, will be making presentations at the annual conferences for the Montana Association of Counties (MACo) and the Montana League of Cities and Towns.

Committee Chairman Satre provided an update on the Ethics Policy and noted all staff and Board have turned in their signed policies as revised at the prior Board meeting.

Legislative Auditors were on site in June and will be returning this week for three weeks; BOI's Draft Consolidated Financial Statements are due to the Department of Administration (DOA) by September 30. The Draft will include the new GASB 72 disclosures and write-off of the STIP SIVs. As per national standards, the Annual Report has been revised and the portfolio information will no longer be included.

Human Resource Committee Report

The Human Resource (HR) Committee met prior to the Board meeting. Committee Chairman Karl Englund stated the meeting involving a personnel matter; no action or decision is needed by the Board.

Executive Director David Ewer introduced and welcomed new employee Kirsten Haswell who started August 1 at BOI as part of the fixed income team.

Loan Committee Report

The Loan Committee met prior to the Board meeting. Loan Committee Chairman Jack Prothero reported the Committee approved three INTERCAP loans and two commercial infrastructure loans. The first INTERCAP loan is a $2 million interim loan request from the Town of Fairfield in anticipation of long-term financing for wastewater system improvements, the second is to increase the Craig County Water & Sewer District interim financing commitment of $1,300,000 that the Board approved November 2013 to $2,391,000 for the District's wastewater collection and treatment facility project. The project is subject to a

voter approved bond election scheduled for August 30. The third loan is a request from the City of Glasgow for $3 million for water treatment and distribution system improvements. The Committee approved the three INTERCAP loans as presented.

Chairman Prothero stated the Committee considered an infrastructure loan request from the Missoula County Airport Authority, which is building a hangar for Neptune Aviation. One hangar is currently under construction for a loan of $1,147,500 and a term of 20 years at a 5.19% fixed rate. Infrastructure loans are eligible for a lower rate depending on job creation, so the rate could be reduced to 2.69% if the required qualifying jobs are created. Construction has not yet begun on the second hangar; that loan request is for $2 million with the same loan terms, subject to completion of the appraisal. The Committee approved both loans, no full Board action is required.

Public Employees' Retirement System (PERS) and Teachers' Retirement System (TRS) Updates
Member Sheena Wilson reported the huge overhaul of the computer system went live in mid-July. Things have gone well so far and the portal for employers has been mostly successful, except for a few hiccups. The transfer of information has been a challenge for some; PERS has been assisting the local governments through the process with no major glitches. PERS is also gearing up for the next legislative session.

Member Terry Cohea asked if there has been any additional communication regarding the PERS retiree information request.

Member Wilson stated the requested data was supplied but did not include any identifiers. A minimal charge was collected for producing the information, but no further requests have been received.

Member Marilyn Ryan stated TRS also has not heard back requesting additional information. The TRS computer system upgrade has been ongoing for three years at a cost of $2.7 million, and is six months over schedule, but it has realized $90,000 in savings. Full implementation is in the works, most parts are online and there are only three modules left to go. At the end stage, some additional enhancements will be considered and a determination made on whether they are needed.

TRS is also gearing up for the 2017 legislative session and reviewing their strategic plan, which includes a review of the TRS building. There are two offices with two different groups that are overcrowded and a basement, which has no windows. Options under consideration include looking at different sites or remodeling the current building, which is an older building.

Legislative Liaisons Comments
Representative Kelly McCarthy provided some brief comments. Last week he attended the National Conference of State Legislators in Chicago. The general outlook included lots of doom and gloom; North Dakota has had three special sessions. Alaska is in the red by $5 billion. Montana is $57 million below projected revenues, but nothing requiring a special session. The Montana economy seems to be going well, but agriculture prices and natural resources may take a while to recover. Representative McCarthy added, unlike Montana, some states benefit from full time staff support for their legislators.

Senator Bob Keenan was absent.

EXECUTIVE DIRECTOR'S REPORT

Overall Comments
Executive Director Ewer presented his Executive Director Report. Staff is working on the STIP Reserve Fund Policy and expects to present it to the Board at the November meeting. The quarterly cost report and monthly snapshot are included in the Board packet. The budget update memo details the two general categories of expenses. Budget approval occurs every other year by the legislature for personal services and operations. Other budget items are through appropriations by statute. Expenses are charged to participants.

The tables included in the packet show the actual amounts spent in FY 2015 and FY 2016 and budget projections for FY 2017. Approval of the FY 2017 budget requires a motion; although the rate has already been authorized by the legislature. The current budget reflects a fair amount of money spent on research services. Any questions on research services can be directed to Dan Zarling or Joe Cullen.

Member Jon Satre observed that research costs have increased, and noted there are some new research services and others that have been cancelled.

Mr. Dan Zarling explained some of the new services, such as Green Street Advisors, provide tools for analysis and commentary resources, including a quarterly/monthly newsletter. When the team looked at the kind of intelligence needed, Green Street was often cited in real estate presentations given by managers. Staff receives a lot of free information, but this subscription will allow specific information to round out the intelligence on private equity and real estate markets.

Chairman Noennig inquired how staff knows whether the new tool is worth the cost, and if a trial subscription is available for review.

Mr. Zarling replied staff receives many solicitations and can view sample reports to see what information is provided before subscribing; Green Street is a reasonable cost.

Chairman Noennig asked if staff was on the lookout for new services, or if firms marketed to staff.

Mr. Zarling stated it is a bit of both. Staff was looking for real estate and private equity market information. Green Street has a database with the ability to create peer groups and conduct searches. Staff asked for a pension fund discounted price, so the price was negotiated a bit. Another new service is the S&P ratings which is a standard in the industry and provides fixed income users with an understanding of credit ratings and the rationales for ratings. It is a service BOI had in the past. There are other considerations as well; if a vendor's client service does not meet expectations, staff lets them know. Mr. Zarling added BOI has a new service representative for the S&P ratings, not the same one from prior to disengagement of the service.

Member Cohea asked what services are included under prospective data licenses for benchmark data.

Mr. Zarling stated it is a placeholder for some databases and investment services; staff needs to make room for it well in advance and although we may need it in the future, staff has not signed up yet.

Member Wilson asked for a breakdown of the $10,000 in magazine subscriptions.

Mr. Zarling replied staff receives various publications, including Pensions & Investments for industry news.

Member Satre asked why the subscriptions have increased to $10,000.

Deputy Director Burton noted the line item reporting has changed a bit. The membership line item was previously reported in a different line item, so it is not an additional cost, but is now contained within the subscriptions' line item.

Vice Chairman Englund asked for details on the 18% increase in personal services between the FY 2016 actual figures and the FY 2017 budget projections.

Ms. Burton explained there are four non-budgeted items included in personal services.

Vice Chairman Englund asked for clarification on those non-budgeted items.

FY 2016 personal services includes non-budgeted Compensated Absences, non-budgeted State Fund Dividend, non-budgeted Pension Contribution and non-budgeted Other Post-Employment Benefits. Ms. Burton stated staff does not receive those cost items until fiscal year end. For FY 2016 actual, non-

budgeted items are included, but for FY 2017 they are not, as these will not be known until the end of the fiscal year.

Chairman Noennig noted that on the whole, personal services show an increase of $200,000.

Ms. Burton stated that is correct. Classified staff will get a legislative raise, investment staff have been reorganized and exempt staff increases are included.

Chairman Noennig called for a motion to approve the FY 2017 budget and associated budget tables as presented.

> Vice Chairman Karl Englund made a motion to approve the FY 2017 budget, and the amounts contained in Tables I, IA and II as presented. Member Marilyn Ryan seconded the motion. The motion carried.

Executive Director Ewer noted that for the 2019 biennium, staff is recommending more off site due diligence and an increase in research services. Additionally, a change in software from the current Oracle system is necessary and is estimated at $200,000-$300,000. No dollar amount is set at this time; however, it is expected the 2019 biennium budget will increase several thousand dollars. Director Ewer added the request for an additional FTE was denied. BOI will support the governor's budget.

Representative Kelly McCarthy asked if the increases are all internal service funds and if clients pay for those increases.

Director Ewer stated that is correct.

Representative McCarthy asked if Director Ewer had considered other options to pursue funding the FTE, such as having an individual legislator take it forward.

Director Ewer stated no, it was not a consideration, adding this legislative session is expected to be a cut session.

Vice Chairman Englund asked if a motion was needed to have staff work with Commerce on the budget.

Director Ewer stated no Board motion is required, although the Board approves the budget each year. The driver of the budget is the Administration more than BOI. Staff works through Commerce to prepare and submit the budget.

BOND PROGRAM REPORTS

Activity Report

Ms. Louise Welsh reviewed the Activity Summary Report for the quarter ending June 30, 2016 and noted staff has been busy. There were 22 commitments this quarter and 15 new applications received, including three new borrowers this quarter. The annual loan detail report, provided each fiscal year end, is included. The report shows loan concentration by county, state agency and university.

Member Terry Cohea asked for information on the Cascade High School District borrowing to pay FY 2017 taxes, and whether it will be an issue in subsequent years.

Ms. Welsh replied no, as they will have a levy in place to pay both old and new taxes.

Ms. Welsh presented the staff approved loans. Borrowing from Colstrip High School has been in the news; they requested $1 million for a 10-year term, which they then reduced to $500,000 for a 5-year term. The loan commitment was in June, then in July, it was announced that Colstrip Units 1 and 2 would be shut down. However, maturity of the loan will coincide with the shutdown schedule.

CEM BENCHMARKING ANALYSIS

Mr. Mike Heale, CEM Benchmarking

Mr. Heale presented the CEM Benchmarking Results. The report provides an independent and objective analysis of activity and costs ending December 31, 2015. There are 131 U.S. funds in the database, representing $2.7 trillion in assets; however, we will focus on a universe of 50 U.S. public funds in the database. For the cost analysis, we will focus on a peer group of 18 public funds representing assets ranging from $4.1 billion to $17 billion; this neutralizes the economies of scale impact.

Member Cohea asked if BOI is at the top of that range.

Mr. Heale explained the figures are for pension funds only, not total fund, and due to privacy, the demographic sketch does not name the funds in the universe. The metrics focus on returns – asset mix and policy return based on strategic asset mix, the implementation impact, detailed costs and whether they are reasonable: what you paid for vs. what you received. For 5-year total net returns, BOI placed very high, in the 10th percentile realizing 8.4% net asset return vs. 7.2% for the peer median, and 8.5% vs. 7.9% policy return if you simply invested in benchmarks according to policy weight; the impact is 50 basis points.

For private equity, CEM uses a different benchmark since they are so diverse and create noise. The CEM benchmark is applied for everyone; all other asset classes use the BOI benchmarks.

Vice Chairman Englund asked how the CEM benchmark for private equity compares to BOI's.

Mr. Heale stated it is much more highly correlated; a lagged small cap public equity benchmark is used, which eliminates most of the noise.

Mr. Jim Voytko added the total public market plus 400 basis points would be a higher benchmark than the one CEM uses.

Vice Chairman Englund asked if the noise is because benchmarks for private equity vary widely, and how BOI's benchmark compares to others.

Mr. Heale stated he would strongly discourage using the premium 400 basis points, but rather to use a lag benchmark. Small cap public equity has the best correlation to private equity, although it still has noise, but if you lag the benchmark, you find they are comparable. Lagging optimizes it and it has an 80% plus correlation to private equity.

Mr. Heale reviewed the policy return piece, and noted asset mix is the most important factor. If invested in the BOI benchmark vs. the CEM private equity benchmark, BOI is still in the top quartile.

Mr. Heale reviewed market performance for the 5-year period. Again, asset mix is the biggest driver of returns. Over the last 5 years, private equity and equities have done very well; hedge funds did not do very well, which is good for BOI. Reviewing the average policy mix, BOI is in the top quartile. Having more U.S. stock, 36% compared to 24% for peers, BOI performed near the top. Other positive factors include BOI's allocation to private equity over the last 5 years at 12% vs. 8% for peers, along with no participation in hedge funds while the peer average was 4%.

Additionally, the contribution of active management shows implementation impact higher than peers and the U.S. public universe, using BOI benchmarks and the CEM private equity benchmark.

Looking at asset classes starting with implementation, the impact from active management shows 5-year results are positive for three of the four asset classes, and a bit below for real estate. The net return for asset classes is positive in all categories and three out of four outperformed their peer average and the U.S. public universe.

Member Cohea asked why BOI returns varied widely compared to peers for each year of the last five years, from much better performance in some years to much worse in others, such as in 2013.

Mr. Heale explained the issue is mainly related to private equity and BOI returns vs. the benchmark, although it evens out over a 5-year period.

Director Ewer noted the differences are amplified and asked if the volatility goes away if the small cap equity correlated benchmark is used.

Mr. Heale stated the benchmark CEM uses is still not perfect.

Mr. Voytko added that 2013 was the best performing year for public equity, and therefore the private equity lag was magnified, but in any given year, the difference will be accentuated and in 2013 BOI was pushed down.

Mr. Heale added the extremes normalize over the long term.

Mr. Heale then presented the cost aspect of the report. CEM captures all the costs; however, it does not reflect transaction costs collected from BOI or other funds, and it does not compare private equity performance fees at this time. The recent ILPA reporting form is a good step toward tracking those costs.

Mr. Voytko asked if the transaction costs for hiring and firing of managers is included in the cost structure.

Mr. Heale replied no, they are not.

Mr. Voytko added a plan that churns through managers could therefore look better.

Mr. Heale agreed they could.

Mr. Heale reviewed investment cost comparisons. Costs for 2015 are broken down by internal and external management, which equals 55 basis points; and costs for oversight, custodial and other costs, which equals 2.5 basis points for BOI for a total of 57.5 basis points.

Mr. Heale stated overall cost trends decreased from 2011 to 2015 from 66.6 basis points to 57.5 basis points due to the increased use of lower cost internal and passively managed assets, and private equity costs decreased from 12.6 to 10.6 basis points, which is an expensive asset class.

BOI's investment cost of 57.5 basis points is a bit below peers at 59.3 basis points for the peer median. There is a huge range in costs for peer groups, from under 40 to over 100, a big variation. To benchmark your costs, it is as if we gave your program to peers and asked them to manage on behalf of BOI; then the actual costs are compared to it.

The total cost of 57.5 basis points was below your benchmark cost of 64.1 basis points, resulting in a cost savings of 6.7 basis points.

Reviewing the breakdown of the lower cost implementation style choices, BOI realized $4.6 million in savings by using less external active management and fewer fund of funds paying less than peers. Implementation style has a large impact providing significant savings by investing in lower cost styles. BOI saved $1.6 million with internally managed assets and less expensive external active management.

Although BOI pays somewhat more in some areas vs. peers, total net cost savings for external asset management equals 0.9 basis points below peers. For example, BOI has more limited partner (LP) structures, but is paying less than peers pay for their LP structures. BOI assets managed internally are about the same as peers.

Reviewing oversight, consulting, and custody, BOI has a cost saving of 1.1 basis points vs. peers; consistently lower costs with the exception of custodial costs. BOI has a more complex structure than most plans with some additional challenges. The peer median cost for custodial services is 0.6 basis points; however, they average two plans vs. Montana's nine plans.

Mr. Voytko agreed the typical pension plan has one or two underlying plans and BOI relies on State Street Bank to provide additional services associated with the more complex structure.

In summary, BOI has made lower cost implementation style choices, including less fund of funds and less active management. BOI's relative cost position is low cost over a 5-year period. The BOI 5-year net total return was 8.4%, which is in the top decile for the public median universe, and the 5-year implementation impact was 50 basis points, ranking in the top quartile.

Mr. Heale noted U.S. fund costs have grown by 21 basis points over 10 years. The factors for rising costs include increased policy weights for real estate, private equity and hedge funds; real assets have become higher cost. Another factor is the rise in external active management from 71% to 73% over 10 years, which is more expensive. Asset mix is by far the most important driver of total return, a 90% plus return factor; costs consume 70% of gross value added. The net value added over a 25-year average is 19 basis points. There has been an empirical reward for active management.

Over 25 years benchmark returns for major asset classes and self-reported for private equity benchmarks, private equity and small cap equity have done very well, and Barclays long bonds have done better than equity assets.

Mr. Heale reviewed the historical net value added by major asset class for the past 25 years. U.S. large caps were modestly negative and have been challenging, but U.S. small caps, emerging stock, real estate and private equity have done better. The characteristics of funds with better net value added are fund size, larger is better than smaller, and asset mix helps. Funds with more internal management perform better than those with less and funds with less total cost do better. Corporate and public funds have both done equally as well.

Vice Chairman Englund stated the CEM report is a great benefit for the Board and it is good to see every year; however, he asked if it needs to be done every year or would every other suffice.

Mr. Heale responded fiduciary duty makes sense to complete it each year, yes.

Executive Director Ewer stated staff had the choice on whether the report should be continued, and noted he maintains that it is needed. The report has settled the argument that BOI is an outlier. The BOI cost structure was different 15-20 years ago – we now have slightly better performance with slightly less cost. Staff spends a lot of staff time to get the data right, which is necessary. Historically, the report is presented to the Board in August; it is a valuable exercise, and now we have 5 years of data rolled up. He added 10 years of CEM data would get us through a business cycle.

Montana In-State Loan Program

Mr. Doug Hill provided a recap of the In-State Loan Program. The commercial loan portfolio balance as of July 31, 2016 was $110,392,711 made up of 103 loans. There are nine loan reservations totaling $14 million and 18 commitments. The current portfolio yield is 3.72% with six loans past due over 90 days. Shoot the Moon is almost $6.9 million and BOI is in the process of collecting on the USDA guarantee.

The residential loan portfolio balance is $7.5 million; there is no activity in the program due to interest rates continuing much lower than what BOI can offer. There are three loans over 90 days past due; all are FHA guaranteed. The VA home loan balance is $31 million with nine current reservations totaling $1.8 million; there is one loan past due over 90 days totaling $200,977. The current interest rate to veterans is 1.866%, which is about 1.5% below current market rate.

Chairman Noennig asked what risk is involved with Shoot the Moon.

Mr. Hill responded there are actually three properties involved: two Chili's restaurants, one in Helena and one in Great Falls; those loans have USDA guarantees so there is no risk to BOI. The guarantee will pay the principal plus interest. The third loan is to On the Border in Great Falls and has no guarantee. BOI may see a loss depending on the property sale price.

Member Jack Prothero noted the judge has not yet released the property.

Mr. Hill explained the Chili's properties are included in the 10 or 12 other properties, which have a buyer, so they are essentially sold. Once the On the Border property is released from the bankruptcy, it can be sold. All but one of the guarantors has declared bankruptcy. The Montana State Securities Commission Office has filed felony criminal charges against one of the owners.

CONSULTANT REPORT

Foreign Currency Review - RVK, Inc. – Mr. Jim Voytko and Mr. Mark Higgins, CFA

Mr. Voytko presented a review of foreign currency. In the flow from left to right you receive contributions that move into your asset base in dollars. If you buy domestic equity or fixed income, you do so in the same currency. If you run a diversified portfolio and choose to buy in foreign markets, those are denominated in a different currency, as are the returns in their home countries. When the assets are brought back to pay benefits, they must be converted back into dollars, which involves an extra step that can affect the end price. Why invest in an asset that has the extra step of conversion? All countries have a home currency; the issue is far bigger for smaller countries; however, even in U.S. markets that are highly diversified, there is currency risk, which affects returns.

Mr. Mark Higgins explained because international markets have lagged behind for so long, investors are questioning if they are worth investing in. The mechanics of the foreign exchange varies by the countries and by exchange rate, most work with a floating rate.

Member Satre asked what determines that floating rate.

Mr. Voytko stated the floating market has no fixed prices. For example, to change dollars into Euros it changes from day by day; the rates float based on supply and demand.

Mr. Higgins added there are many different factors involved.

Chairman Noennig asked if the cost of making a trade itself matters.

Mr. Higgins stated yes, but you are not always trading in those currencies.

Mr. Voytko added it is a very controversial topic, such as with custodian banks that have landed in hot water. Dealing with huge amounts, tiny changes in exchange rates can make a big difference. Protocols are being developed for foreign currency. It could work to a custodial bank's advantage, because it is not completely transparent and some banks have actually been sued over it.

Mr. Higgins provided an example of what determines supply or demand for currency. If a country has higher interest rates, demand is increased which causes appreciation of that currency. Inflation of currency depreciates that currency. With Brexit, investors fled to the U.S. for safety. With so many different factors, any one factor is difficult to predict.

Mr. Higgins reviewed the top currencies related to BOI's exposure. The top 10 traded currencies include the U.S. Dollar, Canadian Dollar, South Korean and New Zealand; about 42% of all global trade is in U.S. dollars, even oil is a dollar-based market. For BOI, most foreign currency holdings are in the international equity portfolio. Almost 72% of BOI's international portfolio is in the top 10 traded currencies.

Member Terry Cohea added if you look at domestic equity, maybe 50% of business conducted by American companies is done with foreign currencies.

Mr. Higgins added some may hedge their foreign currency holdings, but may have some foreign in their domestic portfolios due to business done with foreign entities.

Member Satre asked if the Swiss are now pegged to float.

Mr. Voytko stated no, but they are landlocked inside the EU. However, they are also deemed as a safe haven, so the appreciation of the Swiss franc has caused trouble, as it is very expensive to do business in. They have tried to cap how much the Swiss franc can appreciate. Swiss National Bank has an enormous amount of holdings in Euros.

Mr. Higgins continued, when investing in international securities you have a return reflected in the local market, which is the first layer, then what the currency did over that specific time frame. If you have an appreciating dollar and the local currency increases, you do not see the gain, but if the dollar depreciated, you do see a gain. It is a double hit, international markets have not done well and U.S. dollars have appreciated.

Mr. Voytko noted for all the performance reports, all returns assume all foreign investments have been transferred into U.S. dollars; it does affect returns, should you have to sell to pay benefits.

Mr. Higgins added the reports show figures as if converted into U.S. dollars on the day of the report.

Member Cohea asked if the custodian bank marks the currency to market.

Mr. Voytko stated yes, State Street Bank marks to market.

Responding to a question from Vice Chairman Englund, Mr. Higgins noted marking to the currency market uses GAAP accounting standards. He added a number of factors affect currency and all are difficult to predict.

Mr. Voytko stated Japan is trying to depreciate their currency, but so far, it has not worked.

Chairman Noennig asked when you hear the dollar is weak or strong, is it better if it is strong?

Mr. Voytko replied there are advantages to strong and weak currencies. A strong currency over the long term is perceived as stable currency; however, exporting countries like weak currencies when they go to buy.

Mr. Higgins stated when reviewing performance numbers, along with currency issues, it is a double hit, so why invest in international. One, it is a large portion of the equity market and makes up a 47% of portion of the market. With the spike starting in 2014, a big source of international underperformance has been due to the strengthening dollar. Since 1967, the trend has been a depreciating dollar, creating a slight head wind.

Mr. Voytko added investors have faced heavy currency penalties.

Member Satre noted when interest rates are high and the dollar strengthens as it did in 2013 to 2015, is it the differential that matters?

Mr. Higgins replied for U.S. funds, and the relative interest rates, it was a flight to safety.

Mr. Voytko added the U.S. is the only one talking about raising interest rates, no other country is.

Mr. Higgins reviewed the rolling periods since 1978 for all monthly returns, viewing the maximum fluctuation over the period. For MSCI EAFE over three months you can have a large fluctuation on returns, but over time that diminishes. When you compare rolling 10-year periods, as you move over a longer time, the currency translation will affect returns less.

Mr. Higgins stated an important factor to consider is the diversification benefit of international equity. Comparing large cap U.S. and mid-cap U.S., you see how international large cap and mid-cap offer a diversification benefit. When faced with long stretches of underperformance, sometimes valuations become more attractive. Looking forward for international equity, expectations have gone up. From the horizon survey there is an expectation of a premium going forward. We are in the eighth year of the U.S. equity bull market, which could provide an international advantage.

Mr. Voytko added it may not happen in the next year necessarily, but it is expected over a longer period.

Chairman Noennig asked if BOI is on the low end compared to other public funds for international equity: 28% vs. the peer median at 33%, which has shown as an advantage.

Mr. Voytko clarified; he is not suggesting BOI should have a higher international allocation, although perhaps it should be considered going forward, as portfolio characteristics change.

Mr. Higgins stated despite the additional volatility of international equity, it is a substantial part of the market; it offers diversification and over the long term, it looks favorable. BOI has a meaningful allocation to international equity. Recent dollar appreciation has a created a headwind for international returns.

Vice Chairman Englund asked about the mechanics, for example when BOI sells an asset and receives pounds, State Street Bank then converts into U.S. dollars.

Director Ewer stated yes, State Street converts into dollars.

Mr. Voytko noted he doubts the contract allows State Street to do speculation on currency.

Director Ewer stated the dividend payments go to owners, BOI does not tell managers to use State Street, they can use whatever foreign exchange brokers they want. Most activity is outside of State Street, they only get involved for the payments and dividends.

Vice Chairman Englund asked if BOI's managers are allowed to speculate.

Mr. Muffick responded we do allow them to hedge currency, but limit it to defensive hedging only. Currency speculation is not allowed.

Mr. Voytko added it costs money to hedge, and if a manager does it poorly or they are incorrect, they will suffer.

Mr. Muffick added BOI managers choose not to play the currency markets as it is too risky.

Mr. Voytko stated there are a handful of traders that invest by betting on currency speculation, but the track record not very good.

Member Sheena Wilson asked if there are additional costs in the transaction process.

Director Ewer stated yes, bid and ask.

Mr. Higgins added those costs are reflected in returns.

Mr. Voytko stated the bid and ask are really close together on large amounts, but the retail currency business is lucrative.

MONTANA INTERNATIONAL EQUITY POOL (MTIP) REVIEW

Asset Class Review – Mr. Joe Cullen, CIO and Mr. Rande Muffick, CFA

Mr. Cullen noted the Montana International Equity Pool presentation will be very similar to the previous one for the Montana Domestic Equity Pool. The revised policy statement was approved earlier this year.

Mr. Cullen reviewed the reasons for investing in international equity. It is a significant asset class, the third largest, it offers liquidity, as it can be traded in short order, compared to private real estate or private equity, although performance can be volatile. Within the pension plan standpoint, it represents about 15% of the policy with a range of 14%-22%; domestic equity is almost 38%; BOI policy is 22-44%. Historically, the asset ratio of domestic vs. international equity has been 2 to 1 and is currently 2.4 to 1. The public equity allocation ratio is about 70%/30% for U.S. vs. non-U.S., and is underweighted relative to the benchmark.

Representative McCarthy asked if the underweight in the international pool vs. the domestic pool is due in part to performance.

Mr. Cullen stated yes, the increased performance by domestic equity has increased the ratio, although on an ongoing basis staff rebalances and cash for pension plan payments has come out of domestic equities. The current weighting is more deliberate than due to market performance. Brexit was clearly a meaningful event because it was a surprise, and any surprise affects markets, and Brexit will take a few years to figure out. No one knows yet how it will unfold. BOI is positioning the portfolio, but there has been no great impact as of yet and the immediate impact to markets was short lived.

Member Satre asked if, as the U.S. dollar is stronger, you are more inclined to buy international equities.

Mr. Cullen stated a strong dollar looks into the past, going forward the market has some consensus that the U.S. dollar will do better than foreign currencies.

Mr. Muffick stated MTIP is the third largest pool and is close to the private equity pool in size; therefore, it has a major impact on pension plans. The characteristics shaping the pool include trading hours, which are global in nature, so trading is always going on somewhere. For example, New Zealand markets open and investors start trading for the day as we are leaving for the day. Most market action takes place when we are not at work, although staff does monitor in the morning and most trade until mid-morning Montana time, so staff can monitor activity. BOI allows international managers to hold ADRs, which are dollar denominated shares, but limit them to 5% maximum; 95% are local shares, ordinaries. Each new country opening has to go through a process with State Street; for each country a manager wants to invest in, staff follows procedures and sometimes we have to hire a tax agent. A lot of work goes into international pools; it is very different and additional to domestic markets.

Currency movements affect returns on the pool. The benchmark used for MTIP is the MSCI ACWI ex US IMI. MSCI is a company, which used to be part of Morgan Stanley, it is an all country world index, ex U.S. Staff chose the benchmark to allow for emerging market exposure and emerging markets are a significant slice in the index; for example, China is significant. The EAFE is developed markets only; however, we also wanted exposure to small caps to a significant degree, as is the case in the domestic pool. Therefore, the benchmark is appropriate; the pool had 14% small caps as of June 30.

Director Ewer noted it is interesting to see how big the UK is; they are not twice the size of Germany or France, but they make up twice the size in the index.

Mr. Cullen stated it depends on the countries and where the companies are headquartered. London is a financial center and many companies base their headquarters there, although all company business is not necessarily conducted there. The index shows the market cap of the company separated into countries.

Mr. Muffick stated staff looks for diversification, and international small caps can provide a higher rate of return, so we overweight them. Although they are more volatile, small caps provide higher longer-term returns, while we choose to index large caps; the market is efficient. Staff believes international small cap is somewhat less efficient than large cap domestic equities, therefore, we may choose more active management in large cap international. Emerging markets offer a growth opportunity, and therefore make up about 20-24% of the benchmark.

Member Prothero asked if managers pick just one or two countries within emerging markets.

Mr. Muffick replied some are top down, yes, although BOI's managers are more stock by stock, looking for attractive companies.

Executive Director Ewer asked if any dollars are invested in Russia.

Mr. Muffick stated we could, but do not allow managers to invest in Russian shares, and have not opened Russia or India. However, although we do not allow direct investments in Russia, managers are allowed to buy GDRs which are similar to ADRs.

Chairman Noennig asked if for each manager hired, each country has to be set up.

Mr. Muffick replied, yes, each requires a lot of paperwork.

Director Ewer added State Street has to subcontract with others since they do not have banks in each country. Some are more of a hassle so we do not invest, such as India.

Mr. Muffick added we may allow ETFs, exchange traded funds, in that country. When a new manager is hired if they do not have a market open, they request opening that market for them; although at times we tell them no, if it is not worth it.

Vice chairman Englund asked who opens a new market.

Mr. Muffick responded he makes the decision and accounting does the paperwork.

Ms. Feldman added accounting sends a letter of direction to State Street and they regularly provide BOI with a list of the open foreign markets.

Director Ewer noted there is an overweight in domestic vs. international, and asked why staff thinks emerging markets, which are more long-term assets, are favorable.

Mr. Muffick stated emerging markets give the best opportunity for growth; it is the developing world and is exposed to commodities. For instance, China is a large chunk of emerging markets; there are a lot of people there.

Mr. Cullen added that some countries have moved from emerging to developed; for example China is expected to make that transition to developed. A lot of countries, whether emerging, developing, or frontier, over time will transition. Some frontier will move to emerging, some emerging will move to developed.

Mr. Cullen noted one emerging market factor is commodities and we expect to have more upside return over time, but that comes with a fair amount of risk.

Mr. Muffick stated the pool structure is set with IMI and includes emerging markets, active index ranges and sector exposure, which are all monitored. For MTIP vs. MDEP we have a larger small cap allocation, but not for midcaps vs. domestic equity. There are no partial long/short portfolios as there are not a lot of choices at this time.

Mr. Voytko added executing shorts on international markets is more challenging.

Mr. Muffick reviewed the pool structure and the approved ranges. The approved range for small caps is 8-16% and active large cap is at 25%. Staff is inclined to carry more actively managed large caps in international markets, as they are not quite as efficient. Separate and comingled accounts are both used, although staff prefers separate accounts. For the index portfolios and traditional long only, the pool is heavily tilted towards fundamental managers.

MTIP active managers are split between traditional long only, quantitative and fundamental. Lazard, Baillie Gifford and Investco were hired a little over a year ago. DFA is the only active core portfolio. Diversification is key; staff aims for complimentary active managers that correlate to each other. There is a small cap overweight bias and cash levels are under 5% at the pool level, and managers have a 5% maximum limit on cash as well. Fees have been reduced through the years due to passive management within large caps which is more cost effective in a more efficient segment of the market. Fees rose a bit from three years ago, bumped up due to market appreciation and the small cap manager additions, as they have the largest fees in basis points.

Mr. Muffick stated due diligence and monitoring for MTIP is managed much the same as MDEP. Staff evaluates managers and keeps manager scorecards, which track manager changes or organizational changes. On site visits are conducted when possible, and will be increasing. Staff uses analytical tools and is developing a bench as a "go to" list, in case a manager change becomes necessary. RVK assists staff on due diligence.

Member Satre asked how a bench of possible managers is compiled.

Mr. Muffick stated it is a combination of factors; RVK has a database of managers and staff conducts conference calls. Generally, staff starts with two to three dozen, and then whittles that down to about 10. Of that 10, maybe six or seven are then reduced to three or four which are monitored over time.

Fact Set Demonstration – Steve Strong, Investment Analyst

Mr. Steve Strong presented a demonstration of FactSet to provide a snapshot of the due diligence conducted by staff. FactSet has many capabilities including research, market overviews, news stories and market activity for the day. There is a list of top stories, including headlines for international markets when they open. Staff is able to look at the geographic breakdown of revenues obtained from financial statements, and when specific geographic breakdowns are not available, FactSet research derives its own estimated breakdowns. Staff can view prior day manager holdings, performance and other factors including the ability to drill down to country and sector breakdowns, showing data on who is contributing to relative performance. While not in real time, the information is prior day and most managers have low turnover. For example, to see the attribution information on American Century, a BOI international small cap growth manager, we can break down manager performance through many different views, including sector, country and holdings. Prior to quarter end conference calls, staff analyzes the position of the portfolio and performance including sector breakdowns, which shows how each contributes or detracts from performance. Staff can drill down as far as the individual stock level and if there are any flags, we can ask the manager how they plan to address it.

Mr. Muffick added attribution is something staff relies on for the quarterly calls.

Mr. Strong stated managers have the discretion to invest in the countries they choose; staff can see which countries contributed or detracted from performance.

Member Cohea asked on the India ETFs why no specific data is shown.

Mr. Strong replied the ETFs are listed as headquartered in the U.S. BOI has one manager invested in Russia via ADRs and GDRs, which is the only way our managers are allowed to invest in Russia. Portfolio Attribution (PA) is based on the underlying holdings, whereas SPAR provides returns-based style analysis

and allows staff to see returns vs. the benchmark, standard deviation, alpha, beta and tracking error. Staff also uses these tools when screening for new managers, although there may not be a good look at holdings unless they are specifically requested from a prospective manager. Staff compares return patterns with current managers to see whether a new one would be a good fit.

Staff is able to drill down for specific manager attributes to see how they compare to their index, and determine whether they are making decisions different from the index, since investing in the index would be much less expensive.

Mr. Muffick added staff typically wants any new manager to have an active share, which measures the degree of difference from the benchmark, of at least 80%.

Mr. Strong stated staff looks at manager holdings that are not a component of the benchmark, or benchmark holdings that vary compared to the benchmark, either higher or lower.

Member Cohea asked if BOI's peers use this same technology.

Mr. Strong replied BOI staff uses it extensively, which is probably not standard. However, it is common for a manager to have access to the same technology.

Member Satre asked how Bloomberg functions contrast to Factset.

Mr. Strong stated the platform vendors are converging in their functionality. Bloomberg has a similar product to FactSet called Alpha, but it is not as robust or as well accepted. Staff uses Wilshire for fixed income analytics, although Factset is developing a fixed income platform, but it is not as far along. Staff uses Bloomberg for order management.

Mr. Voytko noted Bloomberg started in the fixed income market, whereas Factset started in Equity but is now gravitating to fixed income.

Mr. Zarling added FactSet does great job providing historical databases. BOI's cost is based on five terminals, but each program used has additional costs; Factset costs BOI $200,000 per year.

Mr. Voytko stated not many plan sponsors would subscribe to both Bloomberg and FactSet. BOI staff has a do it yourself approach and staff's monitoring process is as good or as deep as any RVK has seen. Staff prepares well, although pays a hefty price. If you pay for it, use it. RVK is usually cautious of recommending the use of these systems unless they will get used.

Mr. Muffick reviewed the investment guidelines for current managers. BOI places limits on ADR's and prohibits derivatives. There are also market cap limits, usually more geared towards the small cap managers and policy allows hedging limits to defensive hedging only.

Mr. Muffick reviewed future considerations. MTIP is a large pool with readily available liquidity and staff utilizes it for monthly cash flow needs, although recently not as much as the domestic pool. Staff will continue with the small cap overweight, and is dedicated to emerging market exposure and the ongoing selection process of managers. Staff uses an ISpiff futures product from State Street, although we are looking to replace it with ETFs. Staff recently added $50 million to two international large cap managers.

The meeting adjourned for the day at 4:56 p.m.

CALL TO ORDER

Board Chairman Mark Noennig called the regular meeting of the Board of Investments (Board) to order at 8:33 a.m. As noted above, a quorum of Board Members was present. Chairman Noennig advised video recording of the meeting was underway and called for public comment on matters within the Board's

jurisdiction. There was none. Chairman Noennig introduced two guests from the Montana Chamber Foundation, Mr. Webb Brown and Mr. Bridge Mahlum.

CONSULTANT REPORT

RVK, Inc. – Mr. Jim Voytko and Mr. Mark Higgins, CFA

Mr. Higgins presented the consolidated review for the quarter ending June 30, 2016 and calendar year to date. Overall, the 2nd quarter and so far in the 3rd quarter, markets have been surprisingly positive. There was concern over China and an overly aggressive Fed; markets have been benign. Asset classes BOI invests in, with the exception of international equity, have been positive. There were a few positive and negative market drivers: the unexpected Brexit vote for the UK to leave the Euro zone; the next day the most popular search on google was "what is the EU?" A spasm of selling occurred, at the worst point, Europe markets were down 10%, but then markets quickly recovered. The second negative driver of markets has been the relative weakness of U.S. growth, which came in at roughly 1% and prompted the Fed to step off the aggressive monetary policy they had – interest rates have not risen as had been expected. There was a flight to quality in the U.S. due to Brexit, and a dovish outlook for the Fed. There was high yield market movement; one big factor of down pressure on U.S. rates. There are a lot of countries in the Eurozone and Japan, which have negative rates. One positive has been the supply and demand rebalancing to the energy market; oil is in the $50/barrel range.

Mr. Higgins noted there is continued real estate market strength, and fundaments look relatively good in the U.S., which has benefited the BOI portfolio. In the 2nd quarter the S&P 500 was up 2.5 %, MSCI EAFE was down about 1.5%, the Barclays Aggregate index was up 2.2%. Calendar year to date looks stronger at 8.5% for the S&P 500, the Russel 2000 is up 8%, MSCI EAFE is up 2% and emerging market is up 17.3%.

Mr. Higgins reviewed the pension portfolio report, which shows the breakdown of the different pension plans and total assets. The plan crossed the $10 billion mark at June 30. Looking at PERS as a proxy for all plans for net and gross, the quarter was slightly positive at 1.5% net of all fees, ranking at the median. Rankings vs. peers are exceptional for all time periods and for the 3 and 5 year BOI is ranked number one. The net return is at the actuarial return, a positive in keeping up with liabilities. The high U.S. equity allocation has been beneficial, along with strong fixed income returns over 10 years, which have been positive. The private equity lag and benchmark effect shows the portfolio lagging the benchmark, but total returns are good. The lack of hedge funds has also helped.

Mr. Voytko added the absence of a major allocation mistake for BOI has helped; one big loser can color the entire performance. When building an institutional portfolio, part of winning the game is not losing, making one big mistake. Other peer funds have made bets on undeveloped real estate, which hugely effected performance, no large impulsive moves has helped.

Member Satre observed BOI is very equity centric and after seven or eight years of a bull market, are we sitting on a potential mistake?

Mr. Voytko stated it is an issue we will want to discuss.

Mr. Higgins reviewed the risk and return dynamic. The five-year look back is similar to prior meetings. The portfolio is ideal, as it has been over the past five years. The generated return for the quarter is a bit higher with only slightly more risk. The portfolio Sharpe Ratio is at the 17th percentile; very good risk adjusted returns over five years, and it is even stronger over the 10-year period. BOI has generated higher annualized returns than the peer median, while taking less risk with a Sharpe Ratio in the top decile at 8th.

Member Cohea asked what the difference between the benchmark and the median is.

Mr. Higgins replied the benchmark performance is vs. BOI's performance, whereas the median is the comparison to the peer group.

Mr. Voytko added the two should not be that far apart, it is a test vs. peers in a risk adjusted world, and also how well the benchmark has done. Over the last 10 years, performance has been exceptional; we may see a regression away from median, and a decline from the top decile is a normal movement.

Member Englund asked when comparing the risk in the BOI portfolio, what have we done over the last five years to increase risk?

Mr. Higgins stated the risk for 10 years is actually higher than the five.

Mr. Voytko added absolute volatility has not increased.

Mr. Higgins stated it is more a function of markets than anything staff has done. There is some volatility over the 10-year period that is not reflected in the last five years.

Mr. Voytko stated plans with a lot of volatility can get penalized for it and it may not be worth the volatility risk to produce a little bit of return. The risk/reward tradeoff may not pay off.

Mr. Cullen noted when discussing risk/volatility it is better, given the markets we have been in, to think of the information as volatility. Risk does not have one definition; risk is multi-dimensional.

Mr. Voytko stated that is an excellent point. A plan in constant negative cash flow, which has to convert equities into cash, increases risk of having to sell securities within a volatile market, whereas a plan without that scenario does not have that concern.

Mr. Higgins stated there are different types of risk. Liquidity risk is one that BOI has managed well; in fact there are a lot of risks that BOI has managed well.

Mr. Voytko added over the next year, a comparison of downside risk and liquidity risk can be reviewed, to measure the different aspects of risk.

Director Ewer asked if the liquidity risk is shown.

Mr. Voytko replied when RVK conducts an asset allocation review for BOI, it captures different scenarios rather than just one metric.

Mr. Higgins summarized that overall performance continues to be positive. BOI is in the top decile or at the top, which means there is only one direction to go and to not be discouraged if BOI moves closer to the median over time.

Mr. Voytko noted all institutional investors are humans achieving career success by accurately assessing people. The tendency is to focus more on managers than asset allocation and more on managers than asset class structure. We are wired to assess people, the point is, the structure of composites matters a great deal. Active share is something you may want to pursue, it means managers and mandates go far away from the benchmark not close to passive indices, and returns can vary substantially up and down. It is important to create composite structures and mandates to select managers that are not alike, as you do not want all of your stocks and bonds to react in the same way. The recent restructuring of MDEP and MTIP has been positive. In the end, the structure of composites matters more than the managers you hire to manage the pieces.

The domestic equity contribution to meet benefits has been exceptional; a measure of efficiency over time, but it should not dissuade you from the ability to pay benefits.

MTIP has outperformed the benchmark over 3, 5 and 7 years but absolute returns are low. The RFBP has done well in both absolute and relative returns; a reflection of interest rates falling, and it has pushed up the

value of the bond portfolio. A 4.5% bond is really valuable in a 1.5% world. The fixed income world should expect capital gains to reduce; fixed income has made a meaningful a contribution to portfolio return.

The real estate pool is a reflection of the domestic equity pool, underperforming the index, but absolute returns for 1, 3, 5 and 7 have been a very meaningful addition to asset allocation in regards to paying benefits. A portion of return comes in cash which helps maintain liquidity in the pool.

For private equity, when the equity market rises, private equity does not mark to market producing negative returns vs. the index, plus the 400 basis point premium above the benchmark. Looking at the benchmark, over 10 years, private equity has performed at a +200 basis point premium, providing a very meaningful contribution towards meeting the actuarial assumption.

Mr. Higgins stated there is no perfect private equity benchmark, the CEM benchmark is not a 4% addition. Managing private equity requires a lot of work and there are illiquidity issues; there is a reason to add the +400 basis point premium.

Mr. Voytko added RVK prefers the BOI benchmark for private equity, to the CEM method. The clarity of this benchmark gauges how much return you expect for taking on the added risks and illiquidity factors.

Chairman Noennig asked for some clarity on the benchmark CEM uses.

Mr. Higgins stated CEM uses the small cap index, while RVK uses a broader index and applies a lag.

Chairman Noennig observed BOI always makes a disclaimer for not reaching the benchmark.

Mr. Higgins noted RVK agrees that the 4% premium is a good target to shoot for.

Chairman Noennig noted if private equity were not tracked vs. our benchmark, which we do not meet, it would be outperforming.

Mr. Voytko stated yes, however returns would be the same. You do not want a benchmark that is either too easy or too hard, which makes it appear as if the program is a failure when it is not. Both benchmarks are arbitrary; you want to communicate what you expect from the allocation, you do not want to compare it to small cap.

Mr. Higgins added this has been an extended period of private equity lag and it goes back many years due to years of a strong bull market. In a different market, it would be the reverse.

Mr. Voytko stated when public markets paused, private equity caught up and the lag disappeared; then the premium returns from private equity showed up.

Member Satre stated he appreciated Chairman Noennig bringing up the subject. The Board talks about the private equity benchmark more than any other topic. The benchmark should not be too easy or too hard, you want reality. However, looking at the reports, when private equity is not doing well compared to the benchmark, the explanation is to not pay attention, since markets are strong it is not applicable.

Mr. Higgins stated private equity should be viewed over the long term as short term you will see wild fluctuations. Looking at the 10-year return, private equity has performed better than any other asset in the portfolio; it is +3%, or 300 basis points, stronger than other assets with a nice premium.

Mr. Voytko stated if no benchmark were set and you look at returns relative to other allocations, it looks tremendously successful. It is only when you look at the 4% premium that it looks less so.

Chairman Noennig asked how common the 4% premium benchmark is.

Mr. Voytko replied it used to be very common; however, 3% is more common now. BOI has set the additional premium to account for the additional risk.

Member Englund stated the Board has the same discussion each meeting because we think of a benchmark as being useful for analysis down the line. If we are meeting the benchmark by taking huge risks, is that a good thing.

Mr. Voytko stated you can exceed a benchmark by taking risks, but you can also fall very far short. You should see the additional return on private equity vs. public equity; however, the size of the differential you see depends on risk and illiquidity. You take on substantial illiquidity risk with private equity, but currently liquidity is not an issue, although it may become more of an issue in the coming years.

Mr. Higgins stated when you look at the 10-year return, private equity has a stronger absolute return, and provides diversification. It has trailed slightly but at +300 basis points is very strong and years of a bull market colors the picture.

Mr. Cullen stated it is a great topic and will be covered at the October Board meeting. It should be part of the asset allocation discussion. RVK, CEM and BOI staff have some commonality; the Board should understand what benchmarks are used and why. Staff will provide education and perhaps propose changes in the benchmarks.

Chairman Noennig stated with all of the discussions on benchmarks, does it apply that other benchmarks are worth reexamining as well. If 4% is realistic, we can explain why we have it, instead of always saying it should not have too much emphasis on it.

Director Ewer added if you look at bond returns, how are we able to achieve 85 basis points over five years? Is the Barclay's index representative of a retirement fund, loaded up on corporates? BOI always beats the benchmark, but there is additional risk involved. We have not pushed to look at the benchmark we always beat. STIP has never been below the benchmark, which is statistically improbable; there is a structural arbitrage that never goes away with the benchmark.

Mr. Cullen agreed it is true we have corporates and mortgages, which have higher risk than the benchmark.

Mr. Voytko agreed it is a topic deserving of its own discussion. Overall, RVK is not recommending any major portfolio reconstruction. The structure has served BOI well for about 10 years – although there are big unknowns out there. The question is what happens if there is a return to more normal capital market conditions. The British fixed income market is at 336-year lows, no one knows what will happen. We see no big portfolio changes for the immediate future. We monitor sensitivity of the total fund return compared to the stock market, equity beta in '06 and '07 was high, but now BOI has lowered moderately the sensitivity to equity markets. We are not sure why equity beta has declined a bit. If a revaluation of risk assets occurs, you have taken the edge off your exposure to it. Lower returns are likely due to central bank actions and odds are the next five years will have a tough time keeping up with the last five years.

Mr. Voytko reviewed other big picture issues. Global economic growth has slowed for both developed and growth markets; Europe is barely positive and growth numbers are not encouraging. Wealth creation reflected in security valuations does not have as strong a footing as it has had. What happens if global GDP is 50-100 basis points lower than past trends? We know the domestic equity market has substantially exceeded international markets, but things do not continue forever; at some point, even bad companies or countries get cheap enough to be a good value. Currently there is not much to cheer about in international markets.

INVESTMENT ACTIVITIES/REPORTS

Executive Director Ewer mentioned as a follow-up that staff is actively working on the STIP Investment Policy to clarify the function of the reserve fund.

State Operating Funds – STIP and Treasurer's Fund - John Romasko, CFA
Mr. Romasko reviewed STIP and stated there was not much to report. Rates slightly increased for the quarter, and the portfolio is well within policy including liquidity and asset guidelines. Staff added 3% to U.S. treasuries and moved all money market from prime funds to government funds. The percent of STIP made up by local governments is near historic highs.

Member Prothero asked if staff would consider making presentations to promote STIP.

Ms. Julie Feldman stated staff has been promoting STIP, although the focus has been more educational and related to the new STIP Resolution rather than a pitch to invest in STIP.

Mr. Cullen added the key is education. The money market industry revolves around 2A-7 funds, which STIP is not. Participants have been surprised when they thought they should have liquidity. Staff needs to stress the fund is not completely invested in very short treasuries; it is invested as well in longer term assets for better returns, which comes with reduced liquidity. The money market industry has separated money market funds between those that have 100% government investments, providing less return and more liquidity and those holding non-government assets for higher yield and less liquidity. It is a very appropriate liquidity vehicle for all participants in the fund. Participants need to understand fully the function of the STIP pool.

Member Englund asked if BOI has a mandate to offer and market STIP to local governments.

Director Ewer stated he would not characterize it as a mandate, although staff has a mandate to educate those who participate in it. We have fully enunciated the actual risks; STIP is not risk free, which is explained in the STIP Resolution. The interesting thing about STIP is that local governments get to have it both ways. The state of Montana does not show as a guarantee, unlike other municipal pools. Local governments get to draft off of state governments having no choice of whether to invest in STIP or not. There is $880 million of $1.9 billion in state monies that cannot go away. There was a huge STIP outflow when the SIV situation occurred. BOI's role is not to wave the flag and promote STIP, but it is a fine line.

Mr. Cullen added the reserve policy will be included as part of the education discussion. It makes sense to have a reserve; it effectively captures yield and saves it for more challenging times, or any bad days ahead. The mechanics of the reserve will be part of the discussion.

Director Ewer noted that with 28% in asset-backed paper, you could have a hiccup.

Mr. Cullen stated any asset could cause an unexpected event or surprise. Staff monitors and manages to reduce those issues, but the reserve over time will help to manage such events.

Mr. Romasko stated the STIP yield remains above the LIBOR index and performance numbers are total return numbers. STIP and LIBOR have been close over the 5-year time frame, the comparison is net of fees and the reserve.

Director Ewer added if the reserve were not being deducted, STIP would be way over the LIBOR.

Mr. Romasko agreed the reserve impact is 10 basis points and he added staff recently wrote off the remaining SIV's.

Mr. Romasko advised the Treasurer's Fund had no activity this quarter, the projected general fund balance continues to go down and by policy, only half of the projected balance can be invested.

Director Ewer explained there is a limit on the Treasurer's Fund in relation to the General fund. The Treasurer's Fund is the allocation you get as a state agency and you do not get to keep your own earnings. If you are allowed to keep your earnings, you get to have a STIP account, if not, you are in the Treasurer's Fund.

Mr. Romasko added there is a limit on securities, which is projected off of the General Fund, and only 50% can be invested. As the projection has decreased, by policy we can only invest in securities up to the projected FYE General Fund balance, the rest goes into STIP.

Mr. Cullen stated staff must manage liquidity risk, and avoid being forced to sell anything. If a security were not maturing, it could sell at a loss. To manage liquidity is where the 50% originates; half of the projected balance of the General Fund must remain in STIP.

Mr. Romasko stated the total general fund is $345.9 million, therefore $172.5 million is available for investment; however, staff has $130 million held in securities, below the limit, to ensure sufficient liquidity.

Member Cohea asked who provides the estimate of the General Fund.

Mr. Romasko stated the Department of Administration provides the fund balance monthly.

Ms. Feldman added it is a combination of using the monthly estimate and looking forward using historical data.

Pension Funds – Joe Cullen, CFA, CAIA, FRM

Mr. Cullen stated Mr. Eron Krpan has put together much of the pension information and the risk management team is key to the ongoing process. Mr. Krpan will speak on how cash flows have impacted the pension plans, something he, Mr. Dan Zarling and Mr. Tim House are focused on day to day. All do excellent work.

Mr. Krpan presented tables on the pension plans. Market value allocation percentages are consistent across the plans with the exception of Volunteer Fire Fighters, which receives a large cash input pushing it out of range for three days before staff is able to rebalance. Allocation changes were small in domestic equity and real estate for the quarter. Pension and pool cash exposure was about 5%; net plan contributions and distributions equaled a sum total of a $71 million cash out flow which was met with dividends, interest and a sale of $36 million of assets.

Member Cohea asked if there was a $97 million increase in assets in excess of asset sales.

Mr. Cullen replied yes, the dollar value added for the quarter increased by $168 million in valuation. Cash distributed included dividends and interest, which helped the fund; the cash outflow resulted in a net $97 million to the positive for the quarter.

Director Ewer asked what the total monthly benefit payouts were.

Mr. Krpan stated current monthly distributions total close to $60 million across all pension funds. Asset allocation changes include reductions in domestic equity and international equity and small increases in private equity and real estate. For performance, all assets did well except for MTIP. Over all, pension funds returned 1.58% for the quarter with domestic equity as the biggest contributor.

Director Ewer asked if most of the negative impact for international is due to the currency impact or from international markets and local currencies going down in value.

Mr. Cullen stated Mr. Muffick will discuss later in the agenda, but yes, it is a combination of both. The international equity pool was a drag to overall pension returns by approximately 11 basis points for the quarter.

Montana Private Equity Pool (MPEP) and Montana Real Estate Pool (MTRP)

Mr. Cullen stated Mr. Ethan Hurley and Mr. Jason Brent would present private equity. Mr. Brent will field any questions on the deals he covered this quarter. There were three commitments since the last Board Meeting; briefs are included in the packet. There was a secondary sale during quarter and it was another positive cash flow quarter, due largely to the $26 million received. There were no structural changes to the portfolio.

Member Satre asked about the results of the secondary sale.

Mr. Hurley stated the sale went well and was in excess of par. It was a non-strategic relationship and an opportunistic sale; staff researched the market pricing and it was a very attractive sale.

Member Prothero asked Mr. Hurley if he could disclose details of the sale and he replied no, as staff is bound by confidentiality.

Member Englund asked why seek a secondary sale.

Mr. Hurley stated they are names staff is not going forward with and may want to divest, and we do receive requests at times. Staff looks at the opportunity, which can relieve some of the administrative burden.

Mr. Englund noted the last time staff did a secondary sale was the first time, and asked whether the process was easier this time around.

Mr. Hurley responded it is always a fairly onerous process, with a lot of paperwork and back and forth. Staff did not engage an advisor this time and therefore saved approximately $100,000 in frictional costs. Staff went directly to a general partner and they offered competitive pricing. An advisor can expand the knowledge of market pricing and expand the buyer pool, possibly creating a bit of competitive pricing. Staff did not do that, upon speaking to all of our secondary general partners, some immediately precluded themselves due to pricing. Staff spoke to a number of advisory firms that offered up their pricing expectations, but at the end of the day, we arrived at a competitive price.

Member Satre asked where the sale proceeds will go and since the allocation to private equity overall is down, if staff expects to increase the allocation.

Mr. Hurley stated staff is not in the process of either increasing or decreasing. The cash goes back into the private equity pool rather than sitting in cash; however, it will be redistributed based on asset allocation needs.

Member Prothero asked Mr. Brent when looking at the private equity briefs, what should Board members focus on?

Mr. Brent responded for example, Kinderhook Capital is a re-up, and at a higher commitment amount than last time. They are a lower middle market manager which staff has wanted to increase exposure to. They are knowledgeable and have the ability to source their sectors. For Warwick Partners, their strategy allows a way to access the most economical areas at a low price.

Mr. Prothero asked if they have any specific risk factors.

Mr. Brent stated Warwick is not a bet on commodity prices, they have the ability to buy cheaply and they actively hedge the portfolio. Kinderhook has a deep domain expertise; they have the ability to attract opportunities that many other managers cannot.

Mr. Hurley presented the Montana Real Estate Pool activity for the quarter. Mr. Ed Kelly can answer any questions as he underwrote GEM Realty Fund. Staff committed to two funds in the quarter, the other one

was Velocis Fund, and on July 6, we received funds from JP Morgan. The pool cash flow was positive and we received $15 million in April. There were no strategic shifts in made in the portfolio.

Member Satre asked if with GEM, in looking at the brief in summary, as they have approximately $1 billion in long/short hedge funds invested in publicly traded securities, are we then venturing into hedge funds, investing in real estate related debt instruments and other distressed assets?

Mr. Kelly explained GEM's platform is made up of different components; they do have hedge long/short trading of public securities; however, BOI is not, we are in private assets of funds for real estate. There are certain advantages of their hedge funds platform, it gives them advantages to use REIT's as sources and can fund buying for the end of transactions. BOI is not in the hedge fund side, but the advantages are strategic and important on the private side.

Member Satre asked if the private side is insulated from the hedge fund side.

Mr. Kelly explained they are separate funds. BOI is exposed to risk only in our fund; the hedge side is a risk only to the limited partners in that fund. GEM is opportunistic, given the widest degree of latitude for leverage, and up to 75% of the portfolio can be in debt. Of multifamily, hotel, retail, senior housing and student housing, REITS have the broadest array of discretion. Staff must have a lot of conviction to invest in them and we have that in GEM. BOI has had two prior funds IV and V. Staff knows them and what they do, and has conviction in them. We like the opportunistic value; they can look at particular investments; they know how to manage, and how to manage debt. We see a wide latitude of options, and while they will not employ all possible options, we have confidence they will do so with success.

Member Cohea asked with a term of five years and then two one-year extensions, do the limited partners have the discretion to stay in or opt out?

Mr. Kelly stated the general partners would have to go through the limited partners and give them the option to extend or not.

Mr. Hurley added no, we could not exit the fund at that point, although we could exit using a secondary sale, but we would have no option to cash out.

Member Englund stated as GEM is opportunistic, do they therefore have a higher leverage?

Mr. Kelly replied yes, for opportunistic they usually set higher levels of leverage.

Mr. Hurley stated outside of 100% leverage or 100% development, the opportunistic lines between value added and opportunistic have been significantly blurred. Historically, GEM operates below their 70% level. Managers can stay leveraged up to 80%.

Executive Director Ewer stated buying debt is not the same as leveraging.

Member Englund asked about carried interest.

Mr. Hurley noted the carried interest is after BOI has received its share. All things being equal, BOI will get a higher rate of return as a full participant with Velocis vs. sharing 50/50 with GEM; once GEM catches up, BOI participates 80/20. Mr. Hurley added staff monitors geographic exposure and international diversification.

Montana Domestic Equity Pool (MDEP)

Mr. Rande Muffick presented the Montana Domestic Equity Pool (MDEP) for the quarter ending June 30, 2016 and stated it was a difficult quarter for active management. MDEP performance reflected the impact of JP Morgan; midcaps offset each other. Iridian had some disappointments; small cap outperformed, while Bernstein and others did not. The environment for active management has suffered and small caps

and midcaps performed better than large caps for the quarter. With the elevated cash position, there was a cash drag on the quarter.

There were no significant manager allocation changes; however, staff is making moves within the domestic equity pool. With the elevated cash at 3.8% today, we are reducing the market risk a bit, and taking some cash out of JP Morgan, moving a portion to the index fund and some to other managers. JP Morgan is a high beta manager in the pool, and staff wants to lower the market risk in the pool where there is vulnerability. Staff is moving up the cap scale a bit from the smaller caps to large caps. There has been an overweight in mid and small caps and taking cash out of the S&P 500 index fund has pushed up small and mid-caps a bit. The cash from JP Morgan will go to other active portfolio managers and some will go to Analytic; staff wanted to be sure of who bought them out first; so the cash will go from active manager to active manager.

Chairman Noennig asked if the active/passive ratio is being altered.

Mr. Muffick stated staff is not changing the active/passive allocation. Staff did terminate Nicolas, a mid-cap manager and the cash was moved to the index fund. Nicholas had been struggling and they are a higher beta manager as well.

Member Terry Cohea asked about the transaction costs for terminating Nicolas.

Mr. Muffick stated staff would report on the transition at the next meeting. Staff hired a transition manager and expected a cost of 11 basis points on the $62 million moved, but it was actually nine basis points. Carrying the elevated cash took some risk off the table. Equity markets are expensive, currently trading at 18 times earnings. The market has rallied and a lot has to do with central bank action; the market just completed the 5th quarter of negative earnings growth for the S&P 500. Still, the market believes easy money will come. The recent domestic rally is due to the outlook for expected energy earnings. The Brexit was a boon to the U.S. market, which was viewed as a safe haven, and it looks like the Fed will not take action before the end of the year.

Member Sheena Wilson asked regarding international securities if there is confidence that those running economies around the world know what they are doing.

Mr. Muffick replied we have seen easing for a long, long time by central bankers across the world and it is not working very well. The U.S. works better because it has the greatest entrepreneurial climate in the world. Whether a fiscal stimulus will help is a question; will things turn around or continue as is.

Montana International Pool (MTIP)

Mr. Muffick presented the quarterly report for the Montana International Pool (MTIP) and stated the pool was even with the benchmark for the quarter. Large cap value did well but was offset by large cap growth, and small caps. Templeton and American Century suffered, although they were somewhat offset by DFA. The dollar rallied with the Brexit influence; however, the change in the dollar did not have much impact on global returns. The dollar strength did not penalize international returns that much, although international returns were negative. The French market was down 10% ending June 30, Spain was down 28%, Italy was down 27.5% and in the last 12 months the Nikkei was down 19%. Investors have concerns which is why they are investing in the U.S.

Chairman Noennig asked if considering returns, there were plans to change the international pool.

Mr. Muffick stated no, diversification saves us. For positioning, staff is more comfortable with the international pool vs. the domestic pool, and we are not carrying as much cash in the international pool. Managers will likely do better in downside markets and BOI has more assets with those managers that have lower beta than those with higher beta. Staff added $25 Million to Lazard and Invesco in the large cap area and are seeking a bit more active management in large cap for international assets. Lazard has done well for us, and they have a more conservative portfolio, with a lower risk profile compared to

Acadian; and Invesco has a lower risk profile than Baille Gifford. The two lower beta managers lower the overall risk to the pool, so we took some risk off the table within both MDEP and MTIP.

The MSCI ACWI ex. U.S. IMI benchmark has 14% small caps while BOI has 12.7%. Small caps typically provide a long-term advantage, although currently that is not the case. Although BOI has a smaller exposure to small caps than the benchmark, staff is not inclined to increase it at this time, although typically we will remain overweight in small and mid-caps.

Mr. Muffick stated there were no changes to the public equity external managers watch list.

Vice Chairman Englund asked why Nicholas, as a newly terminated manager, had not been added to the list.

Mr. Muffick stated it was more of a timing issue to take beta out of the pool; $62 million was moved to large cap.

Member Cohea asked if there were performance issues or a change in management.

Mr. Muffick replied although Nicholas had struggled, the overriding factor was to reduce beta in the pool.

Retirement Funds Bond Pool (RFBP) – Rande Muffick, CFA

The RFBP had an interesting quarter. Spreads tightened, which helped the credit portion of the pool as it out performed by about 30 basis points, coming mostly from high yield bonds. The Barclays High Yield Index returned 5.52% for quarter. The pool beat the benchmark by over 3%; the overweight to high yield really paid off, even though the high yield managers Post and Neuberger underperformed for the quarter. Still, it was a good quarter. Reams and the Core Internal Bond Portfolio also performed well. Commodities have rallied including energy; most high yield managers have no exposure to commodities and Post is a downside capture manager so it was a double whammy for them.

Mr. Cullen added interest rates went down in the quarter, which gives a favorable push to investment grade securities in a benchmark like the Barclays Aggregate and does not benefit high yield as much. Investing in high yield securities is a meaningful component due to the benefits of additional return.

Mr. Muffick stated staff strategy for the RFBP is to add on high yield, including a $15 million additional investment in the Post portfolio. Staff is working with RVK and is looking at five managers as potential additions; at least one will likely be a new addition for high yield. Staff is developing a bench of managers.

Mr. Cullen added a bench helps so that staff can avoid being reactive to unexpected events.

Mr. Muffick stated the RFBP had no real changes in duration or average credit quality.

Core Internal Bond Portfolio (CIBP)

Mr. Cullen provided an overview of internal fixed income, which has performed well. Staying consistently longer duration than the benchmark has helped the portfolio and structure has really helped performance. The fund is at 22% treasuries and 6% agencies, staying underweight the highest rated securities vs. the benchmark. This has worked well; however, it comes with a bit more risk. Overall, the portfolio has had good performance.

Trust Fund Investment Pool (TFIP)

Mr. Cullen stated the TFIP also performed well and all asset classes have done well; return was 2.5% for the quarter, and 6.8% for the fiscal year. Investment grade fixed income compiles the bulk of the fund.

Montana State Fund, Jon Putnam, CFA

Mr. Putnam reported State Fund has had decent returns and except for international equity is fairly in line with the benchmark. Real estate is still a strong performer and equity has helped performance. There

were no equity or real estate purchases over the quarter. The bond portion of the fund performed well vs. the benchmark, although the Brexit set us back a bit. The fund stayed up in quality, as it has for a while. Activity for the quarter was in treasuries, agencies and asset backed securities. Staff sold out of the Lehman Brothers position for both State Fund and the TFIP, which had already been written down to 20 cents on the dollar. There was not a big impact and we had been receiving distributions from the trustees, although those were getting smaller.

Vice Chairman Englund asked who buys such an asset.

Mr. Putnam replied there are still a few large players and there is a market for them.

Mr. Putnam reported there were no real structural changes to State Fund. It is still slightly underweight vs. the index on duration, but with no large overall impact. There were no changes in sector weighting.

Mr. Cullen added looking at interest rates for two years vs. 30 years, more recently the curve is flatter with the very short end going up a bit. State Fund is shorter in duration, 3.78 vs. 3.99; as most of the shortness was in the short part of the curve, it did not hurt portfolio performance. Risk is monitored and managed by staff.

RECAP OF STAFF TO DO LIST AND ADJOURNMENT

Executive Director Ewer reviewed items on the "to do" list for the next Board meeting:

1. The write up explaining the status of Shoot the Moon was completed and Chairman Noennig has a copy.
2. STIP reserve policy revisions are ongoing and will be presented at the October Board Meeting.
3. Logistics for a joint October Board meeting with TRS/PERS did not work out.
4. The October Board meeting will include some discussion on Asset Allocation in preparation for the November CIO presentation to the Board.
5. Staff will do a deep dive in real estate at the October meeting but there will be no quarterly reviews.

Member Cohea asked when the deep dive of private equity would presented.

Director Ewer stated private equity is scheduled for the November Board Meeting, along with proxies. It is ideal to do the deep dive on private equity before we have the private equity benchmark deep dive. The private equity benchmark today is the public market plus the 400 basis point spread due to illiquidity, exposures, and other risks associated with private equity.

Having no further business before the Board, the meeting adjourned at Noon.

Next Meeting
The next regular meeting of the Board will be October 6, 2016 in Helena, Montana. *Complete copies of all reports presented to the Board are on file with the Board of Investments.*

BOARD OF INVESTMENTS

APPROVE: Mark E. Noennig
Mark E. Noennig, Chairman

ATTEST: David Ewer
David Ewer, Executive Director

DATE: November 16, 2016

BOI:drc 10/14/2016