



WYOMING LEGISLATIVE SERVICE OFFICE

Memorandum

DATE July 15, 2022 [Revised July 22, 2022]

TO Select Committee on Capital Financing and Investments

FROM Polly Scott, Senior Fiscal Analyst

SUBJECT Priority #6: Performance Compensation

This memo provides a summary of the statutorily authorized program that allows performance compensation for investment staff of both the State Treasurer's Office and the Wyoming Retirement System. The specific description of the Select Committee's interim study for performance compensation is below.

Priority #6: Performance Compensation. The Select Committee will review the benchmarks, custom benchmarks, measures of risk and methodology for determining performance compensation within the State Treasurer's Office and the Wyoming Retirement System. The Select Committee will consider the appropriate persons to whom performance compensation should be offered and examine how performance compensation is handled by other, comparable organizations.

EXECUTIVE SUMMARY

In 2019, the Legislature authorized performance compensation awards to specified staff directly engaged in investing assets in the State Treasurer's Office (STO) under W.S. 9-1-409(e) through (f) and in the Wyoming Retirement System (WRS) under W.S. 9-3-406(a) and (d). Both agencies are required to submit annual reports to the Select Committee on performance compensation payments, specifically addressing three statutory directives:¹

- (i) Payments and methodology of calculating payments under the plan;
- (ii) A measurement quantifying the risk resulting from the variation between the prior year's investment benchmarks and the prior year's actual investments; and
- (iii) An estimate of future payments under the plan and future expected investment benchmarks.

The reports STO and WRS submitted for FY 2020 and FY 2021 are included as Attachment A, and an overview of the performance compensation program follows in this memorandum. LSO staff did not replicate performance compensation determinations, and nor does LSO opine on these determinations. Similarly, LSO staff did not research comparator practices pertaining to staff included for performance compensation eligibility; the Select Committee requested that information come from STO. To address additional questions posed by the Select Committee, LSO interviewed officials with both the STO and the

¹ The statutory directives for the annual performance compensation reports are identical for both agencies and are found in W.S. 9-1-409(f) and W.S. 9-3-406(d).

WRS (staff and Board), and reviewed relevant reports, materials, and publications. The final section of this memorandum includes some potential considerations for the Select Committee.

For the two years that performance compensation has been in place (FY 2020 and FY 2021), both WRS and STO exceeded benchmark performance at the total portfolio level to where staff qualified for the maximum performance compensation allowed. Some staff on STO's investment team did not earn the maximum award, because specific individual asset classes fell short of established benchmarks. WRS and STO reported good outcomes pertaining to investment staff retention. Both agencies report risk metrics for their portfolios that compare reasonably to established benchmarks. The Investment Funds Committee may play a stronger role overseeing benchmarks for STO than it does for WRS.

OVERVIEW OF PERFORMANCE COMPENSATION

Summary of performance compensation awards for FY 2020 and FY 2021. STO's performance compensation awards are determined by equally weighting total fund performance and individual asset class performance as specified in W.S. 9-1-409(e)(v)(A) and (B). The total earned payout for all staff was \$624,076 and \$663,104 for FY 2020 and FY 2021, respectively. For both years, STO reported awarding the maximum performance compensation allowed for the total fund; however, not all individual asset classes earned the maximum. Staff overseeing real estate qualified for performance compensation of approximately 30 percent of the maximum for that asset class in FY 2020 (approximately \$21,248 of the \$70,875 maximum possible bonus). Staff overseeing hedge funds did not qualify for performance compensation for that asset class in either year (maximum possible bonus for this asset class was \$35,438 for FY 2020 and \$70,875 for FY 2021).²

WRS' performance compensation plan is based fully on total fund performance per W.S. 9-3-406(a)(v). WRS reported awarding the maximum allowed for performance compensation -- \$706,104 and \$745,687 for FY 2020 and FY 2021, respectively.³

Statute also provides requirements for the payment methodology and specifies future payouts of performance compensation. Both STO and WRS discuss this in the required annual reports.

Turnover since inception of performance compensation. Generally, one goal for performance compensation is to positively impact staff recruitment and retention. To incentivize retention, statutes specify that performance compensation earned in any one year be paid out over three years – 25 percent the first year, 25 percent the second year and 50 percent the third year.⁴

WRS and STO report good outcomes pertaining to investment staff retention. WRS staff stated performance compensation stabilized the longevity of senior investment team members, and there has been no turnover among the senior investment officers or the chief investment officer since the enactment of performance compensation. One non-senior investment team member resigned and accepted a position with the University of Wyoming Foundation, reportedly for more pay. Consistent with statute, this employee relinquished some awarded but unpaid performance compensation. STO reports there has been no turnover among its investment staff since the enactment of performance compensation, although there are some vacancies that have not been filled.⁵

² STO Performance Compensation Reports for FY 2020 and FY 2021.

³ WRS Performance Compensation Reports for FY 2020 and FY 2021.

⁴ W.S. 9-3-406(a)(x) and W.S. 9-1-406(e)(x).

⁵ Interviews with WRS officials 6/1/2022; and STO official 6/9/2022.

Benchmark setting and approval/review by the Investment Funds Committee (IFC). For the STO, the IFC oversees benchmarks for purposes of performance compensation. Under W.S. 9-1-409(e)(iv), benchmarks for measuring STO performance compensation are established by the IFC, and no performance compensation shall be paid under the plan unless the IFC determines that the established benchmarks have been exceeded.

For WRS, per W.S. 9-3-406(a)(iv), the performance compensation plan is to:

be based solely on investment performance exceeding investment benchmarks established pursuant to this paragraph. The board shall establish investment benchmarks, which shall be approved by the investment funds committee created by W.S. 9-4-720, for each fund and account for an investment period. No performance compensation shall be paid under the plan unless the board determines, subject to review by the investment funds committee, that the established benchmarks have been exceeded;

The WRS Board is primarily responsible for establishing benchmarks, which are approved by the IFC. WRS officials shared with LSO that a subcommittee of the Board, the WRS Investment Committee rigorously debates benchmarks before submitting them for WRS Board approval, and also indicated the IFC approval has not resulted in changes to the benchmarks.⁶

Risk measurements. It could be possible to outperform benchmarks by adding risk to a portfolio. As such, W.S. 9-1-409(f)(ii) and W.S. 9-3-406(d)(ii) require STO and WRS to report on risk measures as part of the annual performance compensation report. This information is useful to demonstrate whether a portfolio has similar or dissimilar risk to benchmarks. Both agencies reported risk metrics for their portfolios that compare reasonably to benchmarks.

Process for verifying performance compensation awards. The processes for determining and verifying performance and related performance compensation seem reasonable based upon LSO's limited review for the Select Committee's interim topic. Observations from the reports include:

- It is not clear from STO's reports which entity is making the performance compensation determinations. LSO learned STO staff calculates the payments based on performance data provided by RVK using a spreadsheet. STO has a contract with the accounting firm, MHP, to review compliance with STO's Performance Compensation Plan and the spreadsheets used to calculate performance compensation before finalization. MHP does not validate the underlying data or compliance with benchmarks in State Loan and Investment Board's (SLIB) approved Master Investment Policy (MIP).⁷ STO provided MHP representation letters and MHP provided reports on its review; these are included as Attachment B. STO gives an information packet to the IFC as the IFC considers performance compensation awards and votes on approval.⁸
- For purposes of calculating STO's performance compensation, some assets are excluded. W.S. 9-1-409(e)(v)(A) directs STO to exclude public purpose investments and investments that the Treasurer or the SLIB specifically directs that are not made at the recommendation of participating employees.⁹ The total fund portion of STO's performance compensation was based on \$15.9 billion

⁶ Interview with WRS officials 6/1/2022.

⁷ Phone call with Brandy Marrou, MHP LLC, Managing Partner 6/20/2022.

⁸ Interview with STO official 6/9/2022.

⁹ W.S. 9-1-409(e)(v) Measure investment performance during an investment period based on the following:

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compared to year-end assets of \$22.7 billion for FY 2020 and \$17.2 billion compared to year-end assets of \$25.0 billion for FY 2021.¹⁰

- STO has adjusted the excluded investments since inception of performance compensation but has not included that information in the annual performance compensation reports. STO included in its initial Performance Compensation Plan a "Memo of Excluded Investments," indicating exclusion of legacy private equity (not selected by current staff), closed-ended real estate (not exit-able without high costs) and legacy non-core real estate (not selected by current staff). (See Attachment C.) The specific exclusions will change over time; for example, current STO investment team members have selected some private equity managers since performance compensation was implemented.¹¹ Beyond the statutorily specified exclusions, STO informed LSO that the IFC approved exclusion of the internal bond ladder strategy and operational cash from performance compensation.¹²
- The benchmarks in the **STO annual report** do not always match those listed in the **MIP approved by the SLIB**.¹³ STO's annual performance compensation reports do not give enough detail to determine which benchmarks were used to determine performance compensation. Additionally, it is not clear if RVK reports performance for STO internal investment strategies net of fees and costs for consistency with other investments.
- According to its reports, WRS's investment team prepared the performance compensation model. WRS internal accounting verified the inputs and the accuracy of the calculation methodology and results. WRS included in reports to the Select Committee a memo from their investment consultant, Meketa, reviewing and supporting the calculation of performance compensation awards. For FY 2021, the WRS internal audit department conducted a risk review of the performance compensation process and reported to the WRS Board that the annual performance compensation process appeared to have an acceptable amount of risk and is in compliance with WRS's Performance Compensation Plan.¹⁴

ADDITIONAL STAFF OBSERVATIONS

WRS use of leverage.¹⁵ LSO staff could not identify unanticipated incentives for the WRS investment team to use portfolio leverage to enhance performance compensation. There is no leverage allowed in the fixed

(A) Fifty percent (50%) related to total fund performance. For purposes of this subsection, "total fund" means the total or overall investment portfolio of funds managed by the state treasurer's office, excluding the following:

(I) Funds invested for a specific public purpose;

(II) Investments specifically directed by the state treasurer or state loan and investment board and not made at the recommendation of participating employees.

¹⁰ STO Performance Compensation Reports and STO Annual Reports for FY 2020 and FY 2021.

¹¹ For example, the State Loan and Investment Board approved hiring the private equity manager Veritas in 2021.

¹² Email 6/16/2022.

¹³ For example, the SLIB approved benchmark for U.S. Equity is the S&P 500 Index and the STO FY 2021 Annual Report page 25 compares U.S. Equity to the All Cap US Equity Custom Index. Another example, the SLIB approved benchmark for fixed income is either the Bloomberg U.S. Aggregate Bond Index or the Bloomberg U.S. Intermediate Aggregate Bond Index. The STO FY 2021 Annual Report page 26 uses many different custom indices for different fixed income managers.

¹⁴ WRS Investment Committee Packet, September 2021, pages 117-118.

¹⁵ Leverage is an investment strategy of using borrowed money to increase the potential return of an asset. Shorting is negative exposure to a security and could be considered a form of leverage.

income or equity portions of the WRS portfolio. Relevant portions of the **WRS Investment Policy Statement** (IPS) are copied below.

Fixed Income Guidelines: "No holdings-level or portfolio-level leverage shall be permitted. Reverse repo agreements and forward commitments to manage duration and yield-curve exposure (i.e., to manage risk), are permissible, however." **WRS IPS Appendix IV Asset Class Guidelines.**

Equity Guidelines: "No manager that uses investment leverage as part of its strategy will be allowed within the Equity asset class. To the extent that any manager does use leverage, such as for managing cash flows on a short term basis, the Board will calculate any impact on returns, and adjust the portfolio return accordingly." **WRS IPS Appendix IV Asset Class Guidelines.**

WRS policies allow leverage in the marketable alternatives portion of the portfolio.¹⁶ Specifications about allowable uses of leverage are found in Appendix II of WRS's IPS - Investment Strategy Description, **Section V. Private Markets**, and **Section VI. Marketable Alternatives**.

The benchmark for marketable alternatives is the HFRI Equity Hedge long/Short Directional Index and HFRI Fund of Funds Composite Index.¹⁷ WRS officials indicated many of the funds in these benchmarks use leverage, and in that way, the HFRI benchmarks align with the WRS portfolio and performance compensation measurement. (The information available online for these benchmarks does not include specifics on leverage within the comparators.)

Additional guidelines about leverage for WRS investments are found in IPS **Section 8. Manager Due Diligence/Guidelines**:

8. MANAGER DUE DILIGENCE/ GUIDELINES The Board expects that Staff shall create guidelines for each separately managed account, stating the expectations for the strategy being funded. Depending on the asset class in question, guidelines may limit leverage, specific securities, duration, or derivatives. Generally speaking, leverage is only permitted by Investment Managers if it is explicitly stated in their fund offering documents and/or guidelines. Staff shall track guidelines and contractual obligations with each investment manager. Should there be a compliance breach as set forth within the manager contract/guidelines, Staff shall take any necessary corrective action.

¹⁶ Section 8.3 of The SLIB Master Investment Policy allows some leverage in the alternative investments portion of the portfolios overseen by STO.

¹⁷ Direct link to HFRI index descriptions: <https://www.hfri.com/hfri-indices-index-descriptions> [Accessed June 14, 2022.]

HFRI EH: Long/Short Directional Index: A global, equal-weighted index of single-manager funds that report to the HFR Database. The HFRI EH: Long/Short Directional Index is comprised of Equity Hedge funds that are not considered Equity Market Neutral. The HFRI EH: Long/Short Directional Index includes funds that are classified as Fundamental Growth, Fundamental Value, Multi-Strategy, Quantitative Directional and sector-focused (i.e., Energy/Basic Materials, Healthcare and Technology).

HFRI Fund of Funds Composite Index: Fund of Funds invest with multiple managers through funds or managed accounts. The strategy designs a diversified portfolio of managers with the objective of significantly lowering the risk (volatility) of investing with an individual manager. The Fund of Funds manager has discretion in choosing which strategies to invest in for the portfolio. A manager may allocate funds to numerous managers within a single strategy, or with numerous managers in multiple strategies. The minimum investment in a Fund of Funds may be lower than an investment in an individual hedge fund or managed account. The investor has the advantage of diversification among managers and styles with significantly less capital than investing with separate managers. PLEASE NOTE: The HFRI Fund of Funds Index is not included in the HFRI Fund Weighted Composite Index.

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WRS allowance of tactical trades.¹⁸ Tactical trades are staff-initiated positions intended to be held for a year or less; the IPS allows the use of leverage for these positions.¹⁹ The IPS includes **Appendix III – Tactical Trading Policy**, which specifies that up to five percent leverage is allowed in tactical trades. The relevant portion of the IPS is copied below:

APPENDIX III - Tactical Trading Policy

Tactical Trades shall be focused on opportunities having an intended duration of less than year, and shall be reviewed by Investment Staff no less frequently than on a monthly basis within the following parameters:

1. Trades shall be executed using an institutional, independent third party, and that party shall provide profit/loss reports for each trade on a periodic basis.

2. The gross notional exposure limits at inception of all trades as a percentage of total WRS portfolio value is as follows: *[Note: The ability to execute one-sided trades allows for portfolio leverage equal to the aggregate value limit of 5%.]*

	One-Sided Trades (%)	Two-Sided Trades ¹ (%)
Single Trade	2.5%	5.0%
Aggregate Value	5.0%	10.0%
Aggregate Value of Both	10%	

3. The maximum loss (realized + unrealized) of an individual trade is 0.3 percent of total Fund market value (-\$25.5 million based on total WRS portfolio market value as of July 2018).

Any deviations from the trading parameters described above shall require approval of the Investment Committee. Investment Staff shall notify the Investment Committee within 2 business days from notification by a Third Party of the need for a deviation. (Emphasis in original.)

Because WRS's performance-compensation statutes have no excluded investments, tactical trades are included in performance compensation. It does not appear the use of tactical trades increased with the implementation of performance compensation. WRS shared a summary of WRS's tactical trade history; this is included as Attachment D. Within the performance compensation period for FY 2020, Overlay Tactical Trade #7 in gold futures had short positions (leverage) that changed over time. Within the upcoming performance compensation period for FY 2022, Physical Trade #1 in a uranium Exchange Traded Fund (ETF) does not involve a short position.

WRS officials reported the uranium tactical trade is benchmarked against itself because it is an index-like fund. WRS officials reported that the WRS Investment Committee participated in the determination of the benchmark, and it was a straightforward determination.²⁰ According to WRS officials, although discussed with the WRS Investment Committee, the benchmark for the uranium tactical trade had not been presented for approval to the WRS Board or the IFC.²¹ WRS may yet obtain benchmark approvals before the next performance compensation determination.

¹⁸ Prior to its tactical trading policy, WRS officials indicated there may have been less formality around the use of leverage in the portfolio and a lack of awareness by the WRS Board.

¹⁹ Interview with WRS officials 6/1/2022.

²⁰ Interviews with WRS officials 6/1/2022 and WRS officials and Meketa Consultants, 6/7/2022.

²¹ Ibid.

General Investment Performance Standards (GIPS). Generally, the foundation for determining performance compensation is performance measurement and reporting. **GIPS standards** are set by the Chartered Financial Analyst (CFA) Institute and are voluntary, ethical principles for the reporting of investment performance results and are considered to be an industry best practice for investment performance reporting.²²

Neither STO nor WRS comply with GIPS. An example of one GIPS compliant public investment organization is **Vestcor** of New Brunswick, Canada, which invests approximately \$19.4 billion in public pension assets.²³ Achieving GIPS compliance is a significant endeavor; asset owners can comply on a going-forward basis by adding one year of compliant data at a time.²⁴

Attachment A: STO and WRS Performance Compensation Reports for FY 2020 and FY 2021

Attachment B: STO Representation Letters to MHP and MHP Reports

Attachment C: STO Memo of Excluded Investments 5/01/2019

Attachment D: WRS Tactical Trade Record

²² Direct link: <http://gipsstandards.org>. [Accessed June 14, 2022.]

²³ Direct link: <http://vestcor.org>. [Accessed June 14, 2022.]

²⁴ CFA Institute Global Investment Performance Standards, *Assistance to Asset Owners Considering Compliance with the GIPS Standards* (page 10), 2021.



DAWN A. WILLIAMS, DEPUTY STATE TREASURER

MEMORANDUM

To: Joint Appropriations Committee
Select Committee on Capital Financing & Investments

From: The Honorable Curt Meier, State Treasurer

Date: December 28, 2020

Re: Treasurer's Office Performance Compensation Plan Payment Update

Introduction

The Treasurer's Office is incredibly appreciative to the Legislature for its support of the Performance Compensation Plan (PCP). The plan is critical for the investment program's success and is integral to the Treasurer's Office's ability to attract and retain highly qualified individuals to the investment team. An engaged investment team is critical to maximizing risk adjusted investment returns to the State.

Purpose

2019 House Enrolled Act 32 requires the Treasurer's Office to report on the status of the Performance Compensation Plan. The statutory language specifically includes these sections:

- (i) Payments and methodology of calculating payments under the plan;
- (ii) A measurement quantifying the risk resulting from the variation between the prior year's investment benchmarks and the prior year's actual investments;
- (iii) An estimate of future payments under the plan and future expected investment benchmarks.

Statutory Requirements

(i) Payments and methodology of calculating payments under the plan;

Background

After passage of 2019 House Enrolled Act 32, which authorized performance compensation, the Treasurer's Office adopted a Performance Compensation Plan. The section pertaining to methodology (Article 4) is included as Appendix A. The first measurement period ended June 30, 2020 for fiscal year 2020 (FY2020). Since this is the first year for incentive compensation to eligible employees, this means that for FY2020 the formula relies entirely on a one-year performance calculation. Next year will be a two-year average calculation, and beginning in the third year and beyond it will be a rolling three-year period computation.

Payments for performance compensation are to be paid over three years with 25%



being paid in each of the first two years and 50% paid in the third year. This is to help incentivize employee retention and evaluate staff over a longer time horizon. Each investment team member can earn performance compensation up to a maximum percentage that varies by individual salary, with more senior employees able to earn higher percentages. The performance compensation plan also requires that payments do not exceed 2% of the net investment returns above the established benchmarks.

For the Treasurer's Office, performance compensation is based 50% on the performance of the Total Fund and 50% based upon investment team member individual asset classes. This year the assigned asset classes changed for three members halfway through the fiscal year, further complicating these calculations.

Results

I am happy to report that the investment team outperformed the Total Fund benchmark by 0.49% for FY2020. This resulted in an estimated excess Total Fund alpha of around \$78 million for the fiscal year. Per the Treasurer's Office performance compensation plan, the Total Fund accounts for half of the potential performance compensation payout to eligible employees, while the other half of the payout is dependent on individual asset classifications. For the Total Fund portion of performance compensation, the investment team has earned the maximum payout.

Individual asset classes saw fixed income and public equities achieve the maximum payout for the entire year, while real estate earned a payout which was around 30 percent of the maximum for the entire year. Alternatives (hedge funds) performed below the benchmark so do not qualify for a performance compensation payout for the entire year. As mentioned, these calculations are complicated by the fact that three team members had individual asset class assignments change halfway through the year. This required breaking out each asset class into half-year performance comparisons, as well. If an eligible employee was within a single asset class over the entire year, the total year performance of that asset class was used. If an eligible employee changed individual asset classes during the year, his performance was based on the respective asset class for the appropriate period.

All calculations for both the total year and half-year calculations were based on the monthly alpha and monthly average market value to come up with an estimated alpha dollar value for each asset class for each month. Total year calculations were based upon the total of these calculations, while the half-year was divided for team members with split individual asset allocations.

Please see the attached appendices B-1 through B-5 for the estimated dollar alpha and payout percentages for performance compensation of Total Fund and each individual asset class calculations.

Of note, the amount of the performance compensation earned is 0.80% of the additional alpha produced by the investment team. In addition, the amount paid in this first year is 0.2% of the additional alpha produced.



(ii) Provide a measurement quantifying the risk resulting from the variation between the prior year's investment benchmarks and the prior year's actual investments;

RVK, the Treasurer's Office's investment consultant, provided two different risk metrics for the Total Fund. The Total Fund Sharpe Ratio of 0.16 was higher than the benchmark (0.12) and peer median (0.10), indicating a greater level of return per unit of risk (standard deviation). In addition, RVK provided the Information Ratio, which measures the return per unit of risk relative to the index. The Information Ratio shows that with a value of 0.81 the Total Fund consistently added value versus the benchmark performance. RVK noted that an Information Ratio greater than 0.4 or 0.5 is generally considered strong and the tracking error of 0.55 is also modest. See Appendix C1 and C2 for RVK's Sharpe Ratio and Information Ratio analysis.

(iii) Provide an estimate of future payments under the plan and future expected investment benchmarks.

Table 1 below displays the FY2020 payments for the seven investment team members as approved by the Investment Funds Committee.

Table 1: FY2020 IFC PCP Approved Payments to the Treasurer's Office Investment Team.

Position	Annual Salary (total)	Max Potential of Bonus (% of Salary)	Total Earned Payout	Year 1 Payout (25%)	Year 2 Payout (25%)	Year 3 Payout (50%)
Total	\$1,050,000		\$624,076	\$156,019	\$156,019	\$312,038
CIO	\$250,000	100%	\$250,000	\$62,500	\$62,500	\$125,000
SIO 1	\$189,000	75%	\$99,155	\$24,789	\$24,789	\$49,577
SIO 2	\$189,000	75%	\$88,921	\$22,230	\$22,230	\$44,460
SIO 3*	\$189,000	75%	\$129,938	\$32,484	\$32,484	\$64,969
Senior Analyst	\$93,000	25%	\$23,250	\$5,813	\$5,813	\$11,625
Analyst 1	\$70,000	25%	\$15,313	\$3,828	\$3,828	\$7,656
Analyst 2	\$70,000	25%	\$17,500	\$4,375	\$4,375	\$8,750

Note: * SIO 3 qualifies for 11/12ths of performance compensation since the employee began working August 1, 2019.

Potential future performance compensation payments will depend on the estimated alpha versus the benchmarks. The minimum amount is the amount that has already been earned. The maximum amount is based on the assumption that performance will exceed the benchmark in each of the next two fiscal years by an adequate amount to earn maximum performance compensation. Table 2 shows the estimated



payouts assuming the maximum payout.

Table 2: Potential Future Payment Scenarios.

Scenario	2020 Payout	2021 Payout	2022 Payout
Minimum Payments (current earned amounts)	\$156,019	\$156,019	\$312,038
Maximum Future Year earned Payments	-	\$183,375	\$366,750
Maximum Total Payments	\$156,019	\$339,394	\$678,788

Note: Assumes current staffing levels and compensation.

It should be noted this estimate does not include amounts for the three additional investment team positions, which will be made available to the Treasurer's Office on January 1, 2021. The positions consist of one senior investment officer, one investment officer and one analyst. Based on current salaries for these positions, this could generate an additional \$225,250 in performance compensation payments (\$56,312 the first two years; \$112,625 the third year) if these positions were filled for an entire year. These payments would be prorated based upon time of service.

The Treasurer's Office is meeting with the Investment Funds Committee in the spring of 2021 to discuss asset allocations for the upcoming year. Depending on the outcome of those discussions, any new asset classes would have a consideration of the proper benchmarks but no other changes to the benchmarks are expected.

Conclusion:

The Treasurer's Office is grateful to the Legislature for the adoption of the PCP and for the support of the IFC, as well as the top five elected officials. The Performance Compensation Plan is critical for the investment program's success and is integral to the Treasurer's Office's ability to attract and retain highly qualified individuals to the investment team. The Treasurer's Office appreciates the Legislature's continued support.

Appendix A

Article IV. Performance Compensation Calculation

Section 4.01 Quantitative Performance. The determination of whether investment performance has exceeded established investment benchmarks is weighed as follows: fifty percent (50%) based on the Total Fund Performance and fifty percent (50%) based on the Participating Employee's individual Assigned Asset Class Performance, as set forth below.

Section 4.01.01 Total Fund Performance. The Plan Administrator in conjunction with the Investment Consultant shall calculate Performance Compensation for a particular Investment Period for the Total Fund by comparing the Total Fund's actual performance to the Total Fund Benchmark as established by the Investment Funds Committee prior to the Investment Period, set forth in Appendix A, and incorporated herein by this reference. Performance shall be calculated to the nearest 1/10th of a basis point. The Treasurer shall provide the calculation to the Investment Funds Committee for its determination regarding whether Performance Compensation was earned for a given Investment Period.

Section 4.01.02 Assigned Asset Class Performance. The Plan Administrator in conjunction with the Investment Consultant shall calculate Performance Compensation for a particular Investment Period for each Participating Employee for the employee's Assigned Asset Class by summing the employee's Assigned Asset Class actual total performance (the total Alpha dollars generated from the Assigned Asset Class) and comparing it to the Assigned Asset Class Benchmark's actual performance, using the Asset Class Benchmarks as established by the Investment Funds Committee prior to the Investment Period, set forth in Appendix A, and incorporated herein by this reference. Performance shall be calculated to the nearest 1/10th of a basis point. The Treasurer shall provide the calculation to the Investment Funds Committee for its determination whether Performance Compensation was earned for a given Investment Period.

Example: If the Total Fund return equals 10% and the benchmark return was 9.75%, then the fund would have outperformed the benchmark by 25 basis points (0.25%) for that Investment Period.

The Treasurer shall recommend for the Investment Funds Committee's determination the dollar amount of outperformance for any given Investment Period by multiplying the portfolio value by the percentage outperformance for that Investment Period. Portfolio value for calculating pro-rated performance shall be determined by averaging the monthly values of the Total Fund portfolio over the course of an Investment Period.

Example: If the average value of the Total Fund for an Investment Period was \$20 billion, that amount would be multiplied by 25 basis points outperformance (0.0025), resulting in a dollar amount equal to \$50,000,000.

Section 4.02 Maximum Performance Compensation. Prior to the beginning of each Fiscal Year, the Treasurer shall estimate the maximum performance compensation that may become payable to Participating Employees for the Investment Period. The maximum performance compensation that may be earned in any given Investment Period for each Participating Employee shall not exceed the following:

Eligible Employee Position**Maximum Performance Compensation**

Chief Investment Officer	One Hundred Percent (100%) of Base Salary
Senior Investment Officer	Seventy-Five Percent (75%) of Base Salary
Investment Officer	Fifty Percent (50%) of Base Salary
Senior Analyst	Twenty-Five Percent (25%) of Base Salary
Analyst	Twenty-Five Percent (25%) of Base Salary

Total payments to all Participating Employees for Performance Compensation earned in a given Investment Period shall not exceed two percent (2%) of the net investment returns above the established benchmark of the Total Fund for that Investment Period and two percent (2%) of the net investment returns above the established benchmark of the Participating Employee's Assigned Asset Class. The amount of outperformance needed to achieve maximum performance compensation payout for any given Investment Period shall be determined by dividing the aggregate total of maximum performance compensation for each Participating Employee by two percent (2%). For examples, see Appendix B.

Section 4.03 Calculating Performance Compensation. At the conclusion of each Investment Period, the Treasurer shall recommend for the Investment Funds Committee's determination the amount of Performance Compensation earned for each Participating Employee. If the Investment Funds Committee determines that the Total Fund Benchmark or any Asset Class Benchmarks have been exceeded for a given Investment Period, then the performance compensation shall be proportional up to the maximum determined amount derived from the 2% factor and salary percentage caps. For examples, see Appendix B.

Section 4.04 Performance Compensation Payments. Payments for Performance Compensation for any one Investment Period shall be as follows:

(a) Payments of Performance Compensation for Fiscal Year 2020, if any, shall be based upon Investment Performance Measurement beginning July 1, 2019 and ending June 30, 2020.

(b) Payments of Performance Compensation for Fiscal Year 2021, if any, shall be based upon the arithmetic average of the Investment Performance Measurement beginning July 1, 2019 and ending June 30, 2020 and the Investment Performance Measurement beginning July 1, 2020 and ending June 30, 2021.

(c) Payments of Performance Compensation for Fiscal Year 2022 and each Fiscal Year thereafter, if any, shall be based upon the arithmetic average of the Investment Performance Measurement beginning that Fiscal Year and the two immediately preceding Fiscal Years.

Appendix B-1: Total Fund Alpha Above/Below the Benchmark FY2020

Asset Category	Total Year	Half Year	
	Total Estimated Alpha Above/Below Benchmark	Estimated Alpha Above/Below Benchmark First Half	Estimated Alpha Above/Below Benchmark Second Half
Total Fund	\$77,796,276	\$14,073,783	\$63,722,493
Fiscal Year June 2020 Portfolio Values	Year Total Portfolio Average MV	First Half Portfolio Average MV	Second Half Portfolio Average MV
Average Market Value	\$15,889,442,077	\$16,128,775,239	\$15,650,108,916
Maximum Potential Bonus Pool	\$360,844	\$180,422	\$184,797
Maximum % of Alpha Available for Bonuses	2%	2%	2%
\$ Alpha Required to Earn Max Bonus	\$18,042,188	\$9,021,094	\$9,239,844
% Return Outperformance Equivalent	0.114%	0.056%	0.059%
Estimated \$ Alpha	\$77,796,276	\$14,073,783	\$63,722,493
\$ Alpha Required for Max Bonus	\$18,042,188	\$9,021,094	\$9,239,844
% of Maximum Bonus	431%	156%	690%
% of Max Bonus Target Earned	100%	100%	100%

Note: Maximum Potential Bonus Pool is the total amount of performance compensation payments possible for all eligible employees in the asset class. This is divided by 2% to determine the \$ of alpha required by the asset class to earn the maximum payment.

Appendix B-2: Fixed Income Alpha Above/Below the Benchmark FY2020

Asset Category	Total Year	Half Year	
	Total Estimated Alpha Above/Below Benchmark	Estimated Alpha Above/Below Benchmark First Half	Estimated Alpha Above/Below Benchmark Second Half
Fixed Income	\$53,978,071	(\$7,180,314)	\$61,158,386
Fiscal Year June 2020 Portfolio Average Values	Year Total Portfolio Average MV	First Half Portfolio Average MV	Second Half Portfolio Average MV
Average Market Value	\$7,682,089,657	\$7,379,720,009	\$7,984,444,886
Maximum Potential Bonus Pool	\$136,625	\$88,219	\$68,313
Maximum % of Alpha Available for Bonuses	2%	2%	2%
\$ Alpha Required to Earn Max Bonus	\$6,831,250	\$4,410,938	\$3,415,625
% Return Outperformance Equivalent	0.089%	0.060%	0.043%
Estimated \$ Alpha	\$53,978,071	(\$7,180,314)	\$61,158,386
\$ Alpha Required for Max Bonus	\$6,831,250	\$4,410,938	\$3,415,625
% of Maximum Bonus	790%	-163%	1791%
% of Max Bonus Target Earned	100%	0%	100%

Note: Maximum Potential Bonus Pool is the total amount of performance compensation payments possible for all eligible employees in the asset class. This is divided by 2% to determine the \$ of alpha required by the asset class to earn the maximum payment.

Appendix B-3: Public Equity Alpha Above/Below the Benchmark FY2020

	Total Year	Half Year	
Asset Category	Total Estimated Alpha Above/Below Benchmark	Estimated Alpha Above/Below Benchmark First Half	Estimated Alpha Above/Below Benchmark Second Half
Public Equity	\$49,054,339	\$15,465,735	\$33,588,603
Fiscal Year June 2020 Portfolio Values	Year Total Portfolio Average MV	First Half Portfolio Average MV	Second Half Portfolio Average MV
Average Market Value	\$4,940,932,635	\$4,662,864,560	\$5,219,000,710
Maximum Potential Bonus Pool	\$73,719	\$56,766	\$36,859
Maximum % of Alpha Available for Bonuses	2%	2%	2%
\$ Alpha Required to Earn Max Bonus	\$3,685,938	\$2,838,281	\$1,842,969
% Return Outperformance Equivalent	0.075%	0.061%	0.035%
Estimated \$ Alpha	\$49,054,339	\$15,465,735	\$33,588,603
\$ Alpha Required for Max Bonus	\$3,685,938	\$2,838,281	\$1,842,969
% of Maximum Bonus	1331%	545%	1823%
% of Max Bonus Target Earned	100%	100%	100%

Note: Maximum Potential Bonus Pool is the total amount of performance compensation payments possible for all eligible employees in the asset class. This is divided by 2% to determine the \$ of alpha required by the asset class to earn the maximum payment.

Appendix B-4: Real Estate Alpha Above/Below the Benchmark FY2020

Asset Category	Total Year	Half Year	
	Total Estimated Alpha Above/Below Benchmark	Estimated Alpha Above/Below Benchmark First Half	Estimated Alpha Above/Below Benchmark Second Half
Real Estate	\$1,062,498	\$1,046,149	\$16,349
Fiscal Year June 2020 Portfolio Values	Year Total Portfolio Average MV	First Half Portfolio Average MV	Second Half Portfolio Average MV
Average Market Value	\$1,206,903,062	\$999,779,648	\$1,414,026,476
Maximum Potential Bonus Pool	\$70,875	\$17,719	\$35,438
Maximum % of Alpha Available for Bonuses	2%	2%	2%
\$ Alpha Required to Earn Max Bonus	\$3,543,750	\$885,938	\$1,771,875
% Return Outperformance Equivalent	0.294%	0.089%	0.125%
Estimated \$ Alpha	\$1,062,498	\$1,046,149	\$16,349
\$ Alpha Required for Max Bonus	\$3,543,750	\$885,938	\$1,771,875
% of Maximum Bonus	29.98%	118.08%	0.92%
% of Max Bonus Target Earned	29.98%	100.00%	0.92%

Note: Maximum Potential Bonus Pool is the total amount of performance compensation payments possible for all eligible employees in the asset class. This is divided by 2% to determine the \$ of alpha required by the asset class to earn the maximum payment.

Full year was not used as there was only half year assignments

Appendix B-5: Alternative (Hedge Funds) Alpha Above/Below the Benchmark FY2020

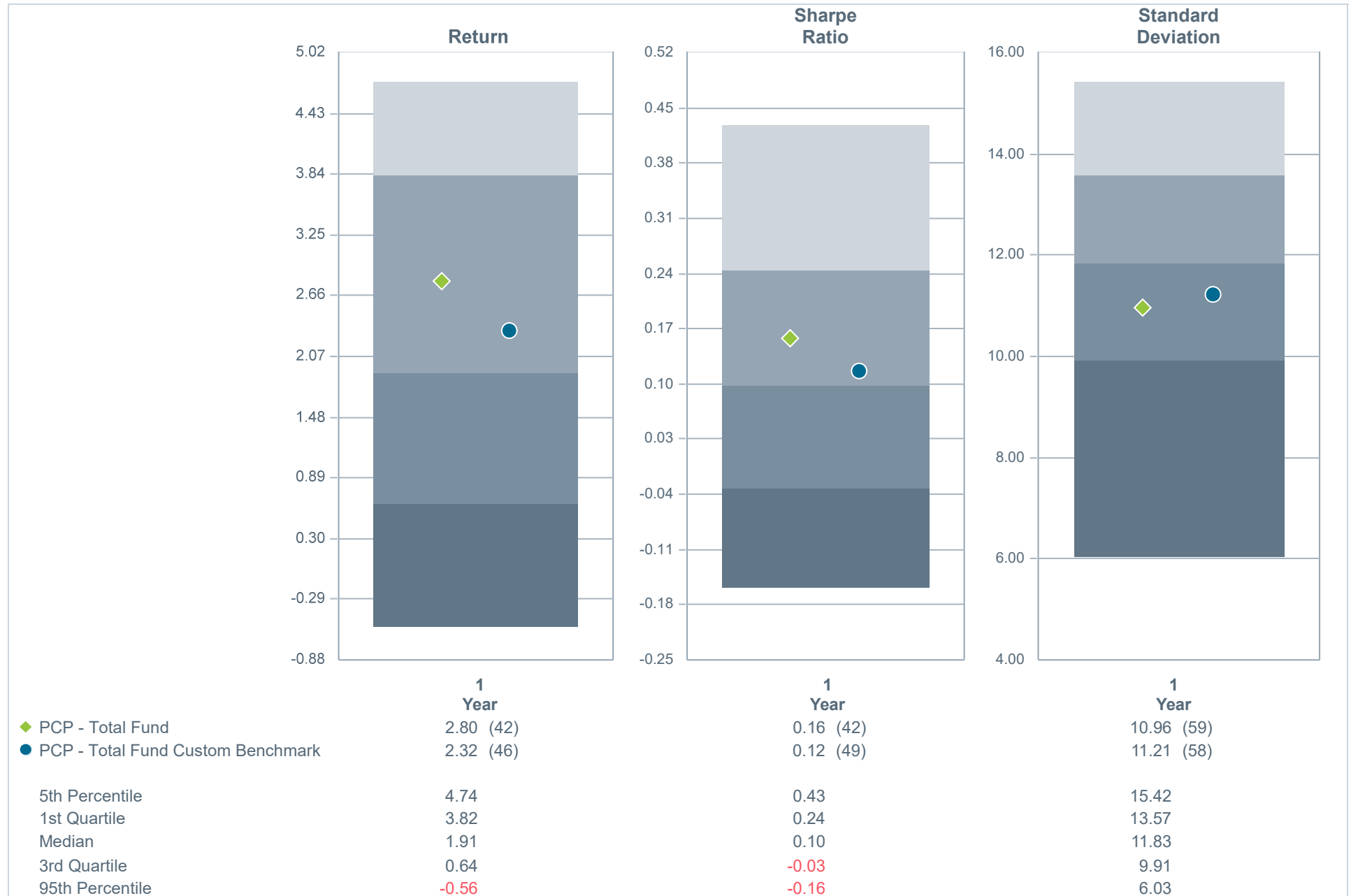
Asset Category Alternatives (Hedge Funds)	Total Year	Half Year	
	Total Estimated Alpha Above/Below Benchmark (\$10,311,653)	Estimated Alpha Above/Below Benchmark First Half \$528,062	Estimated Alpha Above/Below Benchmark Second Half (\$10,839,715)
Fiscal Year June 2020 Portfolio Values	Year Total Portfolio Average MV	First Half Portfolio Average MV	Second Half Portfolio Average MV
Average Market Value	\$740,537,252	\$745,109,934	\$735,964,569
Maximum Potential Bonus Pool	\$35,438	\$17,719	\$35,438
Maximum % of Alpha Available for Bonuses	2%	2%	2%
\$ Alpha Required to Earn Max Bonus	\$1,771,875	\$885,938	\$1,771,875
% Return Outperformance Equivalent	0.239%	0.119%	0.241%
Estimated \$ Alpha	(\$10,311,653)	\$528,062	(\$10,839,715)
\$ Alpha Required for Max Bonus	\$1,771,875	\$885,938	\$1,771,875
% of Maximum Bonus	-581.96%	59.60%	-611.77%
% of Max Bonus Target Earned	0.00%	59.60%	0.00%

Note: Maximum Potential Bonus Pool is the total amount of performance compensation payments possible for all eligible employees in the asset class. This is divided by 2% to determine the \$ of alpha required by the asset class to earn the maximum payment.

Appendix C1

Wyoming State Treasurer's Office - Performance Compensation Plan Risk & Return Statistics vs. All Endowments & Foundations > \$1B Plan Sponsor Peer Group Analysis

As of June 30, 2020



Performance shown is net of fees. Calculation is based on monthly periodicity. Parentheses contain percentile ranks.

Appendix C2

Wyoming State Treasurer's Office
PCP - Total Fund
Information Ratio

As of June 30, 2020

	1 Year
vs. PCP - Total Fund Custom Benchmark	
Tracking Error	0.55
Info Ratio	0.81
Excess Return	0.45

Performance shown is net of fees. Calculation is based on monthly periodicity.





MEMORANDUM

To: Joint Appropriations Committee
Select Committee on Capital Financing & Investments

From: The Honorable Curt Meier, State Treasurer

Date: December 23, 2021

Re: Treasurer's Office Performance Compensation Plan Payment Update FY21

Introduction

The Treasurer's Office is incredibly appreciative to the Legislature for its support of the Performance Compensation Plan (PCP). The plan is critical for the investment program's success and is integral to the Treasurer's Office's ability to attract and retain highly qualified individuals to the investment team. An engaged investment team is critical to maximizing risk adjusted investment returns to the State.

Purpose

W.S. 9-4-109(f) requires the Treasurer's Office to report on the status of the Performance Compensation Plan. The statutory language specifically includes these sections:

- (i) Payments and methodology of calculating payments under the plan;
- (ii) A measurement quantifying the risk resulting from the variation between the prior year's investment benchmarks and the prior year's actual investments;
- (iii) An estimate of future payments under the plan and future expected investment benchmarks.

Statutory Requirements

(i) Payments and methodology of calculating payments under the plan;

Background

After passage of 2019 House Enrolled Act 32, which authorized performance compensation, the Treasurer's Office adopted a Performance Compensation Plan. The section pertaining to methodology (Article 4) is included as Appendix A. The second measurement period ended June 30, 2021 for fiscal year 2021 (FY2021). Since this is the second year for incentive compensation to eligible employees, this means that for FY2021 the formula relies on a two-year performance calculation. Next year will be a three-year average calculation, and from that point on it will be a rolling three-year-period calculation.

Payments for performance compensation are to be paid over three years with 25% being paid in each of the first two years and 50% paid in the third year. This is to help



incentivize employee retention and evaluate staff over a longer time horizon. Each investment team member can earn performance compensation up to a maximum percentage that varies by individual salary, with more senior employees able to earn higher percentages. The performance compensation plan also requires that payments do not exceed 2% of the net investment returns above the established benchmarks.

For the Treasurer's Office, performance compensation is based 50% on the performance of the Total Fund and 50% based upon investment team member individual asset classes.

Results

I am happy to report that the investment team outperformed the Total Fund benchmark by 0.30% for FY2021. This resulted in an estimated excess Total Fund alpha of around \$52 million for the fiscal year. Per the Treasurer's Office performance compensation plan, the Total Fund accounts for half of the potential performance compensation payout to eligible employees, while the other half of the payout is dependent on individual asset classifications. For the Total Fund portion of performance compensation, the investment team has earned the maximum payout.

Individual asset classes saw fixed income, public equities and real estate achieve the maximum payout for the entire year. Hedge funds performed below the benchmark so do not qualify for a performance compensation payout for this year. It should be noted the opportunistic asset class also exceeded the benchmark, but no investment team member is assigned to that class, so is not used for individual asset class determination.

Calculations for each asset class were based on the monthly alpha and monthly average market values to determine an estimated alpha dollar value for each asset class for each month. These values were totaled to arrive at a fiscal year alpha calculation.

Since this year is a two-year calculation, the alpha percentages for FY2020 and FY2021 are averaged, as are the market values for each year. These are multiplied for each of the two years to arrive at an estimated alpha over the two-year period. The required alpha for each year is combined for comparison to the estimated alpha to arrive at a percentage of the maximum bonus calculation. See the attached appendices (B1 through B5) for these calculations.

The overall result is that fixed income, public equities and real estate asset classes earned the maximum payout. Please see the attached appendices (B-1 through B-5) for the estimated dollar alpha and payout percentages for performance compensation of the Total Fund and each of the individual asset class calculations.

Of note, the amount of the performance compensation earned is 1.28% of the additional alpha produced by the investment team. In addition, the amount paid in this first year (FY2021) is 0.3% of the additional alpha produced.



(ii) Provide a measurement quantifying the risk resulting from the variation between the prior year's investment benchmarks and the prior year's actual investments;

RVK, the Treasurer's Office's investment consultant, provided the Total Fund Sharpe Ratio and standard deviation information. The FY2021 Sharpe ratio of 3.54 is very good but somewhat lower than the benchmark of 3.70. The Sharpe Ratio this year is improved from FY2020, which had a Sharpe Ratio of 0.16. The two-year (FY2020 – FY2021) Sharpe Ratio was 0.81, which was higher than the benchmark of 0.77.

In terms of the absolute level of risk, the overall standard deviation of 4.59 is fairly low and much lower than the previous year (FY2020) standard deviation of 10.96. The two-year (FY2020 – FY2021) standard deviation was 11.05, which was lower than the benchmark of 11.17. See Appendix C for RVK's return, Sharpe Ratio and standard deviation analysis against the benchmark for both FY2021 and the two-year average.

(iii) Provide an estimate of future payments under the plan and future expected investment benchmarks.

Table 1, below, displays the FY2021 payments for the seven investment team members as approved by the Investment Funds Committee.

Table 1: FY2021 IFC PCP Approved Payments to the Treasurer's Office Investment Team.

Position	Annual Salary (total)	Max % of Bonus (% of Salary)	Total Earned Payout	Year 1 Payout (25%) (Dec 2021)	Year 2 Payout (25%) (July 2022)	Year 3 Payout (50%) (July 2023)
Team Total	\$1,051,917		\$663,104	\$165,776	\$165,776	\$331,552
CIO	\$250,000	100%	\$250,000	\$62,500	\$62,500	\$125,000
SIO 1	\$189,000	75%	\$70,875	\$17,719	\$17,719	\$35,438
SIO 2	\$189,000	75%	\$141,750	\$35,438	\$35,438	\$70,875
SIO 3	\$189,000	75%	\$141,750	\$35,438	\$35,438	\$70,875
Senior Analyst	\$93,000	25%	\$23,250	\$5,813	\$5,813	\$11,625
Analyst 1	\$70,000	25%	\$17,500	\$4,375	\$4,375	\$8,750
Analyst 2 /Sen. Analyst*	\$71,917	25%	\$17,979	\$4,495	\$4,495	\$8,990

Note: *Analyst 2/Senior Analyst was promoted in June 2021 so the salary is 11/12ths Analyst and 1/12th Senior Analyst.

Potential future performance compensation payments will depend on the estimated alpha versus the benchmarks. The minimum amount is the amount that has already



been earned. The maximum amount is based on the assumption that performance will exceed the benchmark in each of the next two fiscal years by an adequate amount to earn maximum performance compensation. Table 2 shows the estimated payouts assuming the maximum payout.

Table 2: Potential Future Payment Scenarios.

Scenario	2021 Payout	2022 Payout	2023 Payout
Minimum Payments (current earned amounts)	\$321,795	\$477,814	\$331,552
Maximum Future Year earned Payments	-	\$189,188	\$378,375
Maximum Total Payments	\$321,795	\$667,002	\$709,927

Note: Assumes current staffing levels and compensation.

This estimate does not include amounts for two additional investment team positions, which have been authorized but not filled. The positions consist of one senior investment officer and one investment officer. It should be noted that one of the original three authorized positions has been filled and that is the investment analyst, which is included in the estimate. Based on current salaries for the two unfilled positions, this could generate an additional \$207,750 in performance compensation payments (\$51,937 the first two years; \$103,875 the third year) if these positions were filled for an entire year. These payments would be prorated based upon time of service.

The Treasurer's Office is meeting with the Investment Funds Committee in the spring of 2022 to discuss asset allocations for the upcoming year. Depending on the outcome of those discussions, any new asset class benchmarks would be considered, but no other changes to the benchmarks are expected.

Conclusion:

The Treasurer's Office is grateful to the Legislature for the adoption of the PCP and for the support of the IFC, as well as the top five elected officials. The Performance Compensation Plan is critical for the investment program's success and is integral to the Treasurer's Office's ability to attract and retain highly qualified individuals to the investment team. The Treasurer's Office appreciates the Legislature's continued support.

Appendix A

Article IV. Performance Compensation Calculation

Section 4.01 Quantitative Performance. The determination of whether investment performance has exceeded established investment benchmarks is weighed as follows: fifty percent (50%) based on the Total Fund Performance and fifty percent (50%) based on the Participating Employee's individual Assigned Asset Class Performance, as set forth below.

Section 4.01.01 Total Fund Performance. The Plan Administrator in conjunction with the Investment Consultant shall calculate Performance Compensation for a particular Investment Period for the Total Fund by comparing the Total Fund's actual performance to the Total Fund Benchmark as established by the Investment Funds Committee prior to the Investment Period, set forth in Appendix A, and incorporated herein by this reference. Performance shall be calculated to the nearest 1/10th of a basis point. The Treasurer shall provide the calculation to the Investment Funds Committee for its determination regarding whether Performance Compensation was earned for a given Investment Period.

Section 4.01.02 Assigned Asset Class Performance. The Plan Administrator in conjunction with the Investment Consultant shall calculate Performance Compensation for a particular Investment Period for each Participating Employee for the employee's Assigned Asset Class by summing the employee's Assigned Asset Class actual total performance (the total Alpha dollars generated from the Assigned Asset Class) and comparing it to the Assigned Asset Class Benchmark's actual performance, using the Asset Class Benchmarks as established by the Investment Funds Committee prior to the Investment Period, set forth in Appendix A, and incorporated herein by this reference. Performance shall be calculated to the nearest 1/10th of a basis point. The Treasurer shall provide the calculation to the Investment Funds Committee for its determination whether Performance Compensation was earned for a given Investment Period.

Example: If the Total Fund return equals 10% and the benchmark return was 9.75%, then the fund would have outperformed the benchmark by 25 basis points (0.25%) for that Investment Period.

The Treasurer shall recommend for the Investment Funds Committee's determination the dollar amount of outperformance for any given Investment Period by multiplying the portfolio value by the percentage outperformance for that Investment Period. Portfolio value for calculating pro-rated performance shall be determined by averaging the monthly values of the Total Fund portfolio over the course of an Investment Period.

Example: If the average value of the Total Fund for an Investment Period was \$20 billion, that amount would be multiplied by 25 basis points outperformance (0.0025), resulting in a dollar amount equal to \$50,000,000.

Section 4.02 Maximum Performance Compensation. Prior to the beginning of each Fiscal Year, the Treasurer shall estimate the maximum performance compensation that may become payable to Participating Employees for the Investment Period. The maximum performance compensation that may be earned in any given Investment Period for each Participating Employee shall not exceed the following:

Eligible Employee Position**Maximum Performance Compensation**

Chief Investment Officer	One Hundred Percent (100%) of Base Salary
Senior Investment Officer	Seventy-Five Percent (75%) of Base Salary
Investment Officer	Fifty Percent (50%) of Base Salary
Senior Analyst	Twenty-Five Percent (25%) of Base Salary
Analyst	Twenty-Five Percent (25%) of Base Salary

Total payments to all Participating Employees for Performance Compensation earned in a given Investment Period shall not exceed two percent (2%) of the net investment returns above the established benchmark of the Total Fund for that Investment Period and two percent (2%) of the net investment returns above the established benchmark of the Participating Employee's Assigned Asset Class. The amount of outperformance needed to achieve maximum performance compensation payout for any given Investment Period shall be determined by dividing the aggregate total of maximum performance compensation for each Participating Employee by two percent (2%). For examples, see Appendix B.

Section 4.03 Calculating Performance Compensation. At the conclusion of each Investment Period, the Treasurer shall recommend for the Investment Funds Committee's determination the amount of Performance Compensation earned for each Participating Employee. If the Investment Funds Committee determines that the Total Fund Benchmark or any Asset Class Benchmarks have been exceeded for a given Investment Period, then the performance compensation shall be proportional up to the maximum determined amount derived from the 2% factor and salary percentage caps. For examples, see Appendix B.

Section 4.04 Performance Compensation Payments. Payments for Performance Compensation for any one Investment Period shall be as follows:

(a) Payments of Performance Compensation for Fiscal Year 2020, if any, shall be based upon Investment Performance Measurement beginning July 1, 2019 and ending June 30, 2020.

(b) Payments of Performance Compensation for Fiscal Year 2021, if any, shall be based upon the arithmetic average of the Investment Performance Measurement beginning July 1, 2019 and ending June 30, 2020 and the Investment Performance Measurement beginning July 1, 2020 and ending June 30, 2021.

(c) Payments of Performance Compensation for Fiscal Year 2022 and each Fiscal Year thereafter, if any, shall be based upon the arithmetic average of the Investment Performance Measurement beginning that Fiscal Year and the two immediately preceding Fiscal Years.

Appendix B-1: FY21 Total Fund Returns Above/Below the Benchmark

Asset Category	FY21 Estimated Returns Above/Below Benchmark Total	FY21 Total Average Market Value	FY20 Estimated Returns Above/Below Benchmark Total	FY20 Total Average Market Value
Total Fund	\$51,618,052	\$17,206,017,307	\$77,796,276	\$15,889,442,077
Alpha Percentage Return	0.30%		0.49%	
Fiscal Year June 2021 Performance	FY21 Total Portfolio Performance		FY20 Total Portfolio Performance	
Maximum Potential Bonus Pool	\$375,740		\$360,844	
Maximum % of Alpha Available for Bonuses	2%		2%	
\$ Alpha Required to Earn Max Bonus	\$18,786,979		\$18,042,188	
% Return Outperformance Equivalent	0.109%		0.114%	
Estimated \$ Alpha	\$51,618,052		\$77,796,276	
\$ Alpha Required for Max Bonus	\$18,786,979		\$18,042,188	
% of Maximum Bonus Calculation	274.75%		431%	
% of Max Bonus Target Earned	100.00%		100%	

FY21 PCP Calculation (2 year calculation)		
Average % alpha	0.39%	
Average Market Value	\$16,547,729,692	
Alpha over 2 years	\$130,662,506	Average portfolio value X average alpha X 2
\$ Alpha Required for Max Bonus	\$36,829,167	2020 required alpha + 2021 required alpha
% of Maximum Bonus Calculation	354.78%	Actual alpha/required alpha
% of Max Bonus Target Earned	100.00%	Lesser of 100% and formula above

NOTES: Maximum Potential Bonus Pool is the total amount of performance compensation payments possible for all eligible employees in the asset class. This is divided by 2% to determine the \$ of alpha required by the asset class to earn the maximum payment.

Appendix B-2: FY21 Fixed Income Returns Above/Below the Benchmark

Asset Category	FY21 Estimated Returns Above/Below Benchmark Total	FY21 Total Average Market Value	FY20 Estimated Returns Above/Below Benchmark Total	FY20 Total Average Market Value
Total Fixed Income	\$21,934,269	\$8,444,674,138	\$53,978,071	\$7,682,089,657
Alpha Percentage Return	0.26%		0.70%	
Fiscal Year June 2021 Performance	FY21 Total Portfolio Performance		FY20 Total Portfolio Performance	
Maximum Potential Bonus Pool	\$136,625		\$136,625	
Maximum % of Alpha Available for Bonuses	2%		2%	
\$ Alpha Required to Earn Max Bonus	\$6,831,250		\$6,831,250	
% Return Outperformance Equivalent	0.081%		0.089%	
Estimated \$ Alpha	\$21,934,269		\$53,978,071	
\$ Alpha Required for Max Bonus	\$6,831,250		\$6,831,250	
% of Maximum Bonus Calculation	321%		790%	
% of Max Bonus Target Earned	100.00%		100%	
FY21 PCP Calculation (2 year calculation)				
Average % alpha	0.48%			
Average Market Value	\$8,063,381,898			
Alpha over 2 years	\$77,601,112			
\$ Alpha Required for Max Bonus	\$13,662,500			
% of Maximum Bonus Calculation	567.99%			
% of Max Bonus Target Earned	100.00%			
				Average portfolio value X average alpha X 2
				2020 required alpha + 2021 required alpha
				Actual alpha/required alpha
				Lesser of 100% and formula above

NOTES: Maximum Potential Bonus Pool is the total amount of performance compensation payments possible for all eligible employees in the asset class. This is divided by 2% to determine the \$ of alpha required by the asset class to earn the maximum payment.

Appendix B-3: FY21 Public Equity Returns Above/Below the Benchmark

Asset Category	FY21 Estimated Returns Above/Below Benchmark Total	FY21 Total Average Market Value	FY20 Estimated Returns Above/Below Benchmark Total	FY20 Total Average Market Value
Total Equities	\$35,573,898	\$5,930,948,205	\$49,054,339	\$4,940,932,635
Alpha Percentage Return	0.60%		0.99%	
Fiscal Year June 2021 Performance	FY21 Total Portfolio Performance		FY20 Total Portfolio Performance	
Maximum Potential Bonus Pool	\$79,865		\$73,719	
Maximum% of Alpha Available for Bonuses	2%		2%	
\$ Alpha Required to Earn Max Bonus	\$3,993,229		\$3,685,938	
% Return Outperformance Equivalent	0.067%		0.075%	
Estimated \$ Alpha	\$35,573,898		\$49,054,339	
\$ Alpha Required for Max Bonus	\$3,993,229		\$3,685,938	
% of Maximum Bonus Calculation	891%		1331%	
% of Max Bonus Target Earned	100.00%		100%	

FY21 PCP Calculation (2 year calculation)

Average % alpha	0.80%	
Average Market Value	\$5,435,940,420	
Alpha over 2 years	\$86,573,688	Average portfolio value X average alpha X 2
\$ Alpha Required for Max Bonus	\$7,679,167	2020 required alpha + 2021 required alpha
% of Maximum Bonus Calculation	1127.38%	Actual alpha/required alpha
% of Max Bonus Target Earned	100.00%	Lesser of 100% and formula above

NOTES: Maximum Potential Bonus Pool is the total amount of performance compensation payments possible for all eligible employees in the asset class. This is divided by 2% to determine the \$ of alpha required by the asset class to earn the maximum payment.

Appendix B-4: FY21 Real Estate Returns Above/Below the Benchmark

Asset Category	FY21 Estimated Returns Above/Below Benchmark Total	FY21 Total Average Market Value	FY20 Estimated Returns Above/Below Benchmark Total	FY20 Total Average Market Value
Total Real Estate	\$31,253,243	\$1,628,409,725	\$1,062,498	\$1,206,903,062
Alpha Percentage Return	1.92%		0.09%	
Fiscal Year June 2021 Performance	FY21 Total Portfolio Performance		FY20 Total Portfolio Performance	
Maximum Potential Bonus Pool	\$70,875		\$70,875	
Maximum% of Alpha Available for Bonuses	2%		2%	
\$ Alpha Required to Earn Max Bonus	\$3,543,750		\$3,543,750	
% Return Outperformance Equivalent	0.218%		0.294%	
Estimated \$ Alpha	\$31,253,243		\$1,062,498	
\$ Alpha Required for Max Bonus	\$3,543,750		\$3,543,750	
% of Maximum Bonus Calculation	881.93%		29.98%	
% of Max Bonus Target Earned	100.00%		29.98%	

FY21 PCP Calculation (2 year calculation)		
Average % alpha	1.00%	
Average Market Value	\$1,417,656,393	
Alpha over 2 years	\$28,456,396	Average portfolio value X average alpha X 2
\$ Alpha Required for Max Bonus	\$7,087,500	2020 required alpha + 2021 required alpha
% of Maximum Bonus Calculation	401.50%	Actual alpha/required alpha
% of Max Bonus Target Earned	100.00%	Lesser of 100% and formula above

NOTES: Maximum Potential Bonus Pool is the total amount of performance compensation payments possible for all eligible employees in the asset class. This is divided by 2% to determine the \$ of alpha required by the asset class to earn the maximum payment.

Appendix B-5: FY21 Hedge Fund Returns Above/Below the Benchmark

Asset Category	FY21 Estimated Returns Above/Below Benchmark Total	FY21 Total Average Market Value	FY20 Estimated Returns Above/Below Benchmark Total	FY20 Total Average Market Value
Total Alternatives (Hedge Funds)	(\$34,656,079)	\$821,450,338	(\$10,311,653)	\$740,537,252
Alpha Percentage Return	-4.22%		-1.39%	
Fiscal Year June 2021 Performance	FY21 Total Portfolio Performance		FY20 Total Portfolio Average MV	
Maximum Potential Bonus Pool	\$70,875		\$35,438	
Maximum% of Alpha Available for Bonuses	2%		2%	
\$ Alpha Required to Earn Max Bonus	\$3,543,750		\$1,771,875	
% Return Outperformance Equivalent	0.431%		0.239%	
Estimated \$ Alpha	(\$34,656,079)		(\$10,311,653)	
\$ Alpha Required for Max Bonus	\$3,543,750		\$1,771,875	
% of Maximum Bonus Calculation	-977.9%		-581.96%	
% of Max Bonus Target Earned	0.00%		0%	

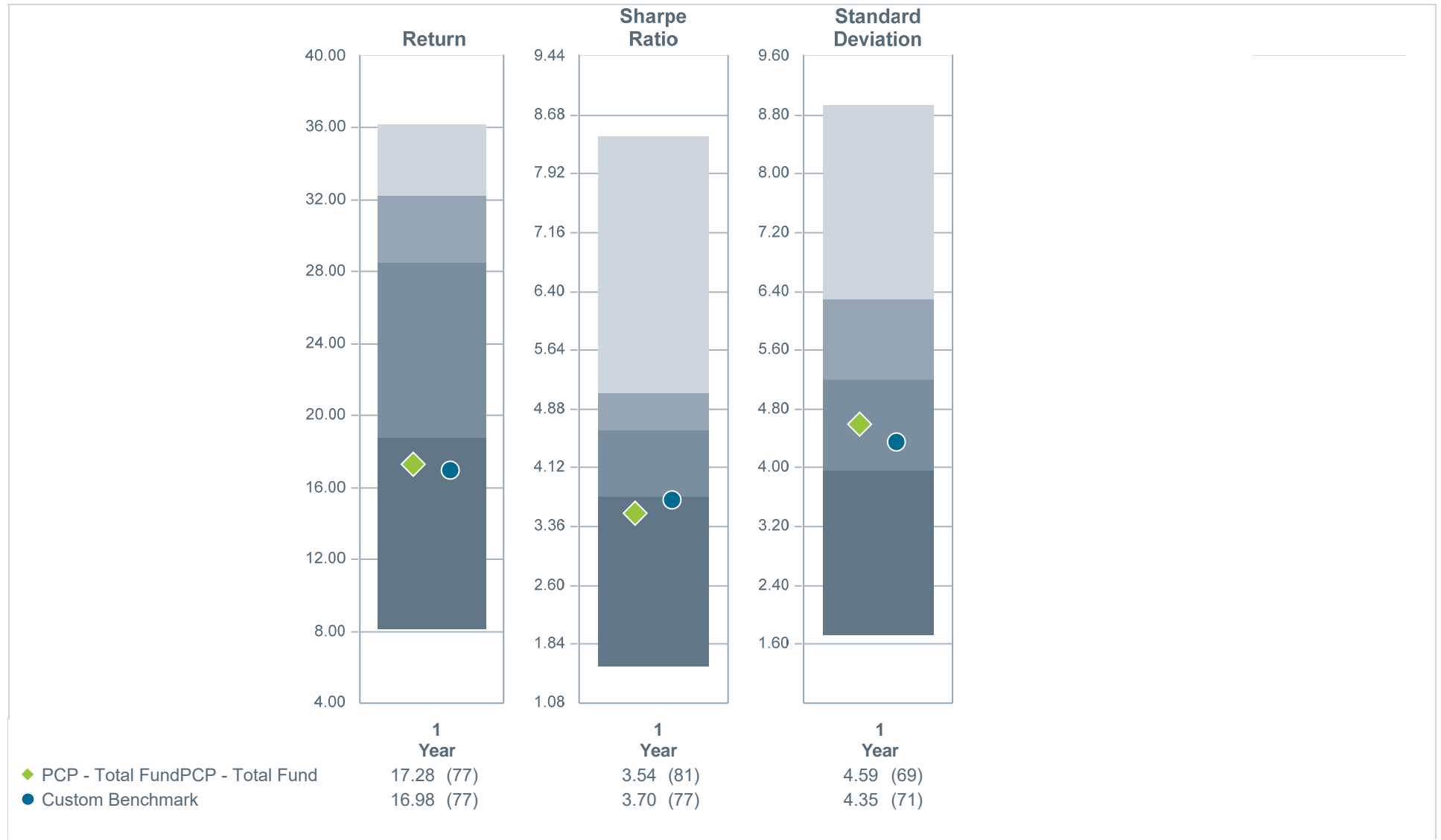
FY21 PCP Calculation (2 year calculation)		
Average % alpha	-2.81%	
Average Market Value	\$780,993,795	
Alpha over 2 years	(\$43,824,254)	Average portfolio value X average alpha X 2
\$ Alpha Required for Max Bonus	\$5,315,625	2020 required alpha + 2021 required alpha
% of Maximum Bonus Calculation	-824.44%	Actual alpha/required alpha
% of Max Bonus Target Earned	0.00%	Lesser of 100% and formula above

NOTES: Maximum Potential Bonus Pool is the total amount of performance compensation payments possible for all eligible employees in the asset class. This is divided by 2% to determine the \$ of alpha required by the asset class to earn the maximum payment.

Appendix C

Wyoming State Treasurer's Office - Performance Compensation Plan Risk & Return Statistics

As of June 30, 2021



Performance shown is net of fees. Calculation is based on quarterly periodicity. Parentheses contain percentile ranks.

Appendix C

Wyoming State Treasurer's Office Multi Timeperiod Statistics

As of June 30, 2021

	2 Years Return	2 Years Sharpe Ratio	2 Years Standard Deviation
PCP - Total Fund	9.80	0.81	11.05
PCP - Total Fund Benchmark	9.40	0.77	11.17

Performance shown is net of fees.

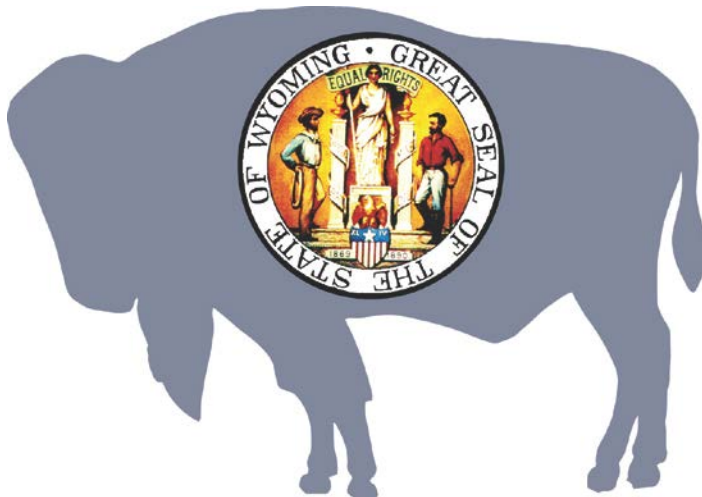




PARTNERING TO BUILD FINANCIAL SECURITY FOR MEMBERS AND THEIR FAMILIES

Performance Compensation Plan Update

10/29/2020





Wyoming Retirement System

Partnering to Build Financial Security for Members and their Families

Mark Gordon
Governor

David Swindell
Executive Director

Select Committee on Capital Financing & Investment
Joint Appropriations Committee
VIA EMAIL c/o Legislative Service Office

October 29, 2020

Senator Eli Bebout, Co-Chair JAC
Representative Bob Nicholas, Co-Chair, JAC
Senator Drew Perkins, Chairman, Select Committee on Capital Financing & Investments

Dear Senator Bebout, Senator Perkins and Representative Nicholas,

House Enrolled Act No. 32 requires WRS to provide an update on the status of the Performance Compensation Plan before November 1st of each year. Our report also includes peer compensation information requested by the committees.

We are grateful to the Wyoming Legislature for supporting this program. It plays an important role in improving the stability of the investment team, which is critical to maximizing risk-adjusted investment returns and increasing the funding ratio. During the past year, we believe that we have already seen a substantial positive impact in both retaining key members of the team and in our recruiting of a new senior investment officer.

We are pleased to report that the investment team outperformed the benchmark by 1.24% for the fiscal year ending June 30, 2020. This represents excess profits of approximately \$106.6 million. Per the terms of the Plan, the investment team has earned the maximum performance compensation. The compensation calculation was verified by WRS' internal accounting department as well as Meketa, WRS' investment consultant. Meketa's review is attached as an exhibit.

The earned amount is only 0.66% of the additional value-add. The amount paid out this year will be only 0.17% of the additional value-add. The remainder is subject to a three-year vesting schedule. We believe this represents an excellent value for all WRS stakeholders.

Our Board takes its fiduciary responsibility very seriously and has spent considerable time on the design, implementation and oversight of the Performance Compensation Plan. We appreciate the Legislature's continued support of this program.

A handwritten signature in blue ink, appearing to read "Tom Chapman".

Tom Chapman,
Board Chair

A handwritten signature in blue ink, appearing to read "David Swindell".

David Swindell,
Executive Director

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Purpose

House Enrolled Act No. 32 (the “Act”) requires WRS to report on the status of the Performance Compensation Plan no later than November 1st of each year.

“The board shall report to the joint appropriations committee and the select committee on capital financing and investments by November 1 of each year on the plan authorized by subsection (a) of this section. The report shall include: (i) Payments and methodology of calculating payments under the plan; (ii) A measurement quantifying the risk resulting from the variation between the prior year's investment benchmarks and the prior year's actual investments; (iii) An estimate of future payments under the plan and future expected investment benchmarks.”

In addition to the statutory reporting requirements, WRS was asked to provide peer compensation data on an annual basis. Base wages enumerated in the budget footnote from the 2019 session will benefit from periodic review, lest they become stale.

Background

The Act was passed during the 2019 legislative session with an effective date of July 1, 2019. It authorizes the payment of performance compensation for WRS investment team members. Material terms are as follows:

- The period used for calculation of performance compensation is based on the rolling three-year return at the end of each June fiscal year. The periods for the first and second year of the program are trailing one-year and two-year performance, respectively.
- The total performance compensation bonus pool is based on 2% of “alpha dollars,” defined as the dollar profit corresponding to the return of the total portfolio above its benchmark.
- Performance compensation is based solely on the performance of the total portfolio. No portion is based on individual asset class performance.
- Each investment team member can earn performance compensation up to a maximum percentage of their salary, with more senior employees earning larger percentages.
- Payments vest over a three-year period (25%/25%/50%).

Statutory Requirements

[Requirement \(i\) Payments and methodology of calculating payments under the plan:](#)

Response: The first performance compensation measurement period was the fiscal year ending June 30, 2020. The methodology for calculating payments is embedded within WRS’ performance compensation plan document (articles 4.01-4.04) and is attached as Exhibit A.

The Board believes that the portfolio investment return relative to benchmark is the primary measure of the investment program’s success. Based on this standard, the investment team performed very well for the most recent fiscal year ending June 30th. The portfolio

outperformed its benchmark by 1.24%, representing \$106 million of added value. The total value of the WRS portfolio was \$8.5 billion as of this date.

Based on the strong outperformance, per the terms of the Plan, the investment team has earned the maximum performance compensation amount. See Exhibit B for the detailed calculations. The earned amount is only 0.66% of the additional value-add, or \$706,103. The amount paid out this year will be only 0.17% of the additional value-add, or \$176,526. The remainder is subject to a three-year vesting schedule. We believe this represents an excellent value for all WRS stakeholders.

Long-term performance has also been very strong. The investment team has substantially outperformed the portfolio benchmark over all rolling periods.

% Annualized Returns (as of June 30, 2020)	June 30 Fiscal YTD (Performance Comp. Period)		Calendar YTD	1-Year	2-Year	3-Year	5-Year	10-Year
WRS	2.46		-3.67	2.46	4.75	5.46	5.61	7.71
Benchmark	1.22		-3.73	1.22	3.23	4.61	5.06	7.04
Difference	+1.24		+0.06	+1.24	+1.52	+0.85	+0.55	+0.67

While the Board believes peer comparisons are a less important measure of the investment program's success, we are frequently asked to present this data. We have been very pleased with both the level and the improvement in our peer ranking. Based on the most recent data available, the one-year and three-year peer rankings are in the top third and the five-year ranking is in the top 40%, which is roughly the period in which the current team has been in place. This is a notable improvement from several years ago when the five-year ranking was usually in the bottom half and frequently in the bottom quartile.

Peer Ranking (as of June 30, 2020)	1-Year	3-Year	5-Year
WRS Percentile Ranking*	32	30	40

*Ranking data is in percentiles, with 1 being the top performing percentile and 99 being the worst performing percentile. The peer set is public defined benefit plans with assets greater than \$1 billion.

[Requirement \(ii\): Provide a measurement quantifying the risk resulting from the variation between the prior year's investment benchmarks and the prior year's actual investments:](#)

Response: The Board measures portfolio risk in a variety of ways, but primarily by measuring the actual portfolio allocation compared to the target, or benchmark, allocation. Based on this approach, the portfolio had a lower risk profile than the benchmark throughout the entire fiscal

year. Cumulative risk assets, which are primarily equities, were below target. Risk reducing assets, such as fixed income, were above target.

The role of the investment team is to adjust the risk profile of the portfolio to be higher or lower than the benchmark, to reflect their view of current market environments and valuations. During this past fiscal year, the team successfully adjusted portfolio risk to add substantial value. They reduced equity exposure in late February based on their view that the corona virus outbreak was going to be worse than anticipated. After the market fell precipitously in March in response to the pandemic spreading, the team bought oversold equities and high-yield fixed income and benefitted from the subsequent market rally. Please see Exhibit C for the fiscal year-end asset allocation and Exhibit D for historical asset allocations.

Another way to measure risk, is to compare the standard deviation (variability) of actual returns and benchmark returns. However, this method has certain limitations when applied to a short period, such as one year because the sample size consists of only 12 monthly data points, or only four when including quarterly private investment valuations.

Regardless, standard deviation has limited value when viewed in isolation. It must be considered in the context of the corresponding portfolio return in order to have much meaning. An industry-wide standard for doing so is to calculate the Sharpe Ratio (excess return divided by standard deviation) to produce a measure of return per unit of risk. Based on the Sharpe Ratio, the WRS portfolio outperformed its benchmark on a risk adjusted basis for the year. See Exhibit E.

WRS limits risk within the portfolio through the use of restrictions at the portfolio, asset class, manager and security levels. These limits are in formal guidelines which were reviewed by the JAC, CapFin and the IFC in 2019. These guidelines are monitored by a combination of WRS internal audit, the external consultant Meketa, the custodian Northern Trust, and the overlay provider Russell investments.

Requirement (iii) - Provide an estimate of future payments under the plan and future expected investment benchmarks.

Response: As previously noted, the investment team outperformed the benchmark by 1.24% for the fiscal year ending June 30, 2020. This represents excess profits of approximately \$106.6 million. Per the terms of the Plan, the investment team has earned the maximum performance compensation.

The earned amount is only 0.66% of the additional value-add. The amount paid out in 2020 is only 0.17% of the additional value-add.

Position	Salary	Max % of Salary for Performance Compensation	Indicated Performance Compensation	2020 Payout	2021 Payout	2022 Payout
CIO	250,000	100.0%	250,000	62,500	62,500	125,000
SIO #1	189,000	75.0%	141,750	35,438	35,438	70,875
SIO #2	189,000	75.0%	141,750	35,438	35,438	70,875
SIO #3*	189,000	75.0%	118,125	29,531	29,531	59,063
3 Analysts	229,500	25.0%	54,479	13,620	13,620	27,240
Totals	\$1,046,500		\$706,104	\$176,526	\$176,526	\$353,052
% of Total Value Added Paid As Bonuses			0.66%	0.17%	0.17%	0.33%
Total Investment Team Value Added ("Alpha")			\$106,667,921			
Vesting Schedule				25%	25%	50%
*Note: Incumbent is prorated for 82.465%, based on hire date						

Potential future payments will depend on returns for the coming two fiscal years. The table below shows the minimum and maximum payments that could be due. The minimum amount is the amount that has already been earned. The maximum amount is based on the assumption that performance will exceed the benchmark in each of the next two fiscal years by an adequate amount to earn maximum performance compensation.

Scenario	2020 Payout	2021 Payout	2022 Payout
Minimum Payments (current earned amounts)	\$176,778	\$176,778	\$353,555
Maximum Future Year Earned Payments	-	<u>\$183,187</u>	<u>\$366,374</u>
Maximum Total Payments	\$176,778	\$359,965	\$719,929

Note: Assumes current staffing levels and compensation.

Meketa, WRS' investment consultant, recommended the WRS portfolio benchmarks. The Board approved the benchmarks, which were then reviewed by the Investment Funds Committee. The JAC and Capital Finance committees also reviewed and commented on the benchmarks prior to the first year of implementation. The only change that was made since then was the incorporation of a 65% currency hedge ratio in the developed market equity benchmark beginning on July 1, 2020. The Investment Fund Committee reviewed this change.

The Board does not anticipate making any changes to the benchmarks in the near future. See Exhibit F for current portfolio benchmarks.

Performance Compensation Audit

The WRS internal accounting department audited the performance compensation calculation. To provide a third-party verification, Meketa, WRS' general consultant, reviewed and verified all of the inputs and methodology for the calculation. See Appendix G. For confidentiality reasons, all actual individual salary information was not included, however, it can be made available to the Legislature's oversight committees upon request.

The WRS Board approved the payout at the September board meeting. The Investment Fund Committee reviewed the calculation and methodology, and had no comments.

Peer Compensation Comparison

WRS was asked to provide a public pension peer compensation analysis as part of its annual reporting package. The following table includes survey data provided by the McLagan company, which is widely considered to be the investment industry's premier source of compensation data. See Exhibit H.

WRS investment team salaries have historically been in the bottom quartile of the peer set and 18%-25% below median. The performance compensation plan has been very helpful in closing this gap.

Approximately half of the WRS peer plans have bonus programs.

McLagan Public Plan 2020 Salary Data (as of October 2020)

Salary

Salary (\$ in ,000s)	Analyst	Sr. Analyst	Sr. Investment Officer	CIO
Public Pension Median	\$93	\$123	\$231	\$343
WRS Actual (maximum authorized)	\$70	\$93	\$189	\$250
WRS - \$ Difference from Median	-\$23	-\$30	-\$42	-\$93
WRS - % Difference from Median	-25%	-24%	-18%	-27%
Quartile	4th	4th	4th	4th

Conclusion

Once again, we are deeply grateful for the Legislature's approval and continued support of the performance compensation plan. It is critical to maintaining a top-tier investment program and maximizing investment returns for the benefit of all WRS stakeholders.

Exhibit A - Performance Compensation Calculation Methodology

Article IV. Calculation of Performance Compensation

Section 4.01 Quantitative Performance. The Plan Administrator shall calculate Performance Compensation for a particular Investment Period by comparing the Total Fund's actual performance for a specified Investment Period to a Total Fund Benchmark established by the Board prior to the beginning of an Investment Period. Performance shall be calculated to the nearest 1/10th of a basis point. The Plan Administrator shall provide the calculation to the Board with its recommendation regarding whether Performance Compensation was earned for a given Investment Period. The Board's final determination regarding whether the Total Fund Benchmark was exceeded for a given Investment Period is subject to review by the Investment Funds Committee.

Example: If the Total Fund Return equals 10% and the Benchmark Return was 9.75%, then the fund would have outperformed the benchmark by 25 basis points (0.25%) for that Investment Period.

The Board shall determine the Alpha for any given Investment Period by multiplying the Portfolio Value by the percentage outperformance for that Investment Period. Portfolio Value shall be determined by averaging the monthly values of the Total Fund Portfolio over the course of an Investment Period.

Example: If the average value of the Total Fund for an Investment Period was \$8.1 billion, that amount would be multiplied by 25 basis points outperformance (0.0025), resulting in a dollar amount equal to \$20,250,000.00 (Alpha).

Section 4.02 Maximum Performance Compensation. Prior to the beginning of each Fiscal Year, the Board shall estimate the Maximum Performance Compensation that may become payable to Participating Employees for the Investment Period. The Maximum Performance Compensation that may be earned in any given Investment Period for each Participating Employee shall not exceed the following:

Eligible Employee Position	Maximum Performance Compensation
Chief Investment Officer	One Hundred Percent (100%) of Base Salary
Senior Investment Officer	Seventy-Five Percent (75%) of Base Salary
Investment Officer	Fifty Percent (50%) of Base Salary
Senior Analyst	Twenty-Five Percent (25%) of Base Salary
Analyst	Twenty-Five Percent (25%) of Base Salary

Total payments to all Participating Employees for Performance Compensation earned in a given Investment Period shall not exceed two percent (2%) of the net investment returns above the Total Fund Benchmark established by the Board for that Investment Period. The amount of outperformance needed to achieve Maximum Performance Compensation payout for any given

Investment Period shall be determined by dividing the aggregate total of Maximum Performance Compensation for all Participating Employees by two percent (2%).

Example: Salary data used in the below example is not reflective of actual salary data. Salary data and the number of employees participating in a particular Investment Period are subject to change and will impact the determination of available Performance Compensation eligible for payment.

Position	Total Base Salary (\$)	Percentage Max (%)	Dollar Max (\$)
Chief Investment Officer (1)	250,000	100	250,000
Senior Investment Officer (3)	567,000	75	425,250
Investment Officer (1)	120,000	50	60,000
Senior Analyst (3)	210,000	25	52,500
Total	1,150,000		787,750

The total Maximum Performance Compensation payout in this example would be \$790,000.00. Dividing that amount by two percent (2%) results in an amount equal to \$39,500,000.00. This is the Alpha that would be required to pay the Maximum Performance Compensation for this Investment Period.

Section 4.03 Calculating Performance Compensation. At the conclusion of each Investment Period, the Plan Administrator shall calculate the amount of Performance Compensation earned for each Participating Employee and make a recommendation to the Board. If the Board determines that the Total Fund Benchmark has not been exceeded for a given Investment Period, then no Performance Compensation shall be payable for that Investment Period. If the Board determines that the Total Fund Benchmark has been exceeded for a given Investment Period, and that the Alpha is equal to or greater than the amount required for Maximum Performance Compensation payout, then Maximum Performance Compensation shall be payable to each Participating Employee for that Investment Period. If the Board determines that the Total Fund Benchmark has been exceeded for a given Investment Period, and that the Alpha is less than the amount required for Maximum Performance Compensation payout, then the amount of Performance Compensation payable shall be calculated by dividing the Alpha actually achieved by the Alpha required to pay Maximum Performance Compensation.

Example: Using the above example data, if the Total Fund outperformed the benchmark by 25 basis points, Performance Compensation would be calculated by dividing \$20,250,000.00 (Alpha) by \$39,500,000.00 (Alpha required to pay the Maximum Performance Compensation), resulting in an adjusted payout equal to fifty-one percent (51%) of Maximum Performance Compensation. This percentage would be applied to each Participating Employee's maximum payout for that Investment Period.

Position	Base Salary (\$)	% Max	\$ Max	Adjusted Payout Amount
CIO (1)	250,000	100	250,000	127,500
SIO (3)	570,000	75	425,250	216,878
IO (1)	120,000	50	60,000	30,600
SA (3)	210,000	25	52,500	26,775
Total	1,150,000		787,750	401,753

Section 4.04 Performance Compensation Payments During Plan Initiation. Payments for Performance Compensation for any one Investment Period shall be as follows:

(a) Payments of Performance Compensation for Fiscal Year 2020, if any, shall be based upon Total Fund investment performance beginning July 1, 2019 and ending June 30, 2020.

(b) Payments of Performance Compensation for Fiscal Year 2021, if any, shall be based upon the arithmetic average of the Total Fund investment performance beginning July 1, 2019 and ending June 30, 2020 and the Total Fund investment performance beginning July 1, 2020 and ending June 30, 2021.

(c) Payments of Performance Compensation for Fiscal Year 2022 and each Fiscal Year thereafter, if any, shall be based upon the arithmetic average of the Total Fund investment performance beginning that Fiscal Year and the two immediately preceding Fiscal Years.

Exhibit B - Calculation

September 10, 2020

Performance Compensation Model

Payout Based on Actual June 30, 2020 FYTD Returns

<u>Title</u>	<u>Annual</u> <u>Salary</u>	<u>Max Potential</u> <u>Bonus (% of</u> <u>Salary)</u>	<u>Maximum</u> <u>Potential</u> <u>Bonus</u>	<u>Earned</u> <u>Payout</u>	<u>Year 1</u> <u>Payout (25%)</u>	<u>Year 2</u> <u>Payout</u> <u>(25%)</u>	<u>Year 3</u> <u>Payout</u> <u>(50%)</u>
Team Total	\$ 1,046,498		\$ 706,103	\$ 706,103	\$ 176,526	\$ 176,526	\$ 353,051
Bonus as a % of \$ Alpha Produced				0.66%	0.17%	0.17%	0.33%
\$ of Alpha for Each \$ of Bonus				\$151	\$604	\$604	\$302

Fiscal Year June 2020 Portfolio Values

Beginning	\$8,645,383,274
Average	\$8,602,251,685
Ending	\$8,515,331,425

Maximum Potential Bonus Pool	\$706,103
Maximum % of Alpha Available for Bonuses	2.0%
\$ Alpha Required to Earn Max Bonus	\$ 35,305,149 (Max Potential bonus pool) ÷ 2%
% Return Outperformance Equivalent	0.41% (\$ Alpha Required) ÷ (Average Portfolio Value)

<u>Actual Performance June 2020 FY</u>	<u>1-Year Return</u>	***Final June returns from Meketa (8/17/20).***
WRS performance	2.46%	
Strategic Benchmark Performance	1.22%	
Staff Value-Add (Outperformance)	1.24%	

Actual \$ Alpha	\$ 106,667,921	(Avg. Portfolio Value) x (Staff Value Add %)
\$ Alpha Required for Max Bonus	\$ 35,305,149	
% of Maximum Bonus Calculation	302%	(Estimated Alpha) ÷ (Required Alpha)
% of Max Bonus Target Earned	100%	(Lesser of 100% and Formula)

Exhibit C - June 30, 2020 Fiscal Year-End Asset Allocation

As shown in the table, based on broad asset class exposure, portfolio risk was lower than the benchmark. The portfolio was underweight equities by 4.1% and overweight cash and marketable alternatives by an equivalent amount. Up until March, within fixed income, the portfolio was equal weighted to US Government bonds and core fixed income. During the dislocation in March, the investment team sold Treasury bonds and increased exposure to core fixed income.

Asset Class	WRS Board Adjusted Policy Weight	WRS Investment Team Implemented Weight	Difference as of 6/30/20
<u>Total Market Value</u>	<u>100%</u>	<u>100%</u>	
Total Cash	2.0%	4.2%	2.2%
Marketable Equities	44.0%	39.9%	-4.1%
Emerging Market	8.6%	7.1%	-1.5%
Domestic Equity	21.2%	15.0%	-6.2%
International Developed Equity	14.2%	17.8%	3.6%
Private Markets	17.0%	17.6%	0.6%
Fixed Income	18.0%	17.8%	-0.2%
Core Plus	5.0%	9.2%	4.2%
Opportunistic Credit	4.0%	3.3%	-0.7%
US Gov't Debt	9.0%	5.3%	-3.7%
Marketable Alternatives	19.0%	20.5%	1.5%

Exhibit D - Historical Asset Allocation Graphs

Combined risk assets were below benchmark for the entirety of the year. The team reduced risk assets in February in anticipation of the market recognizing the severity of the coronavirus pandemic. In March, when the market overreacted and sold off substantially, the team increased exposure to cheap risk assets, and benefited from the subsequent rally.

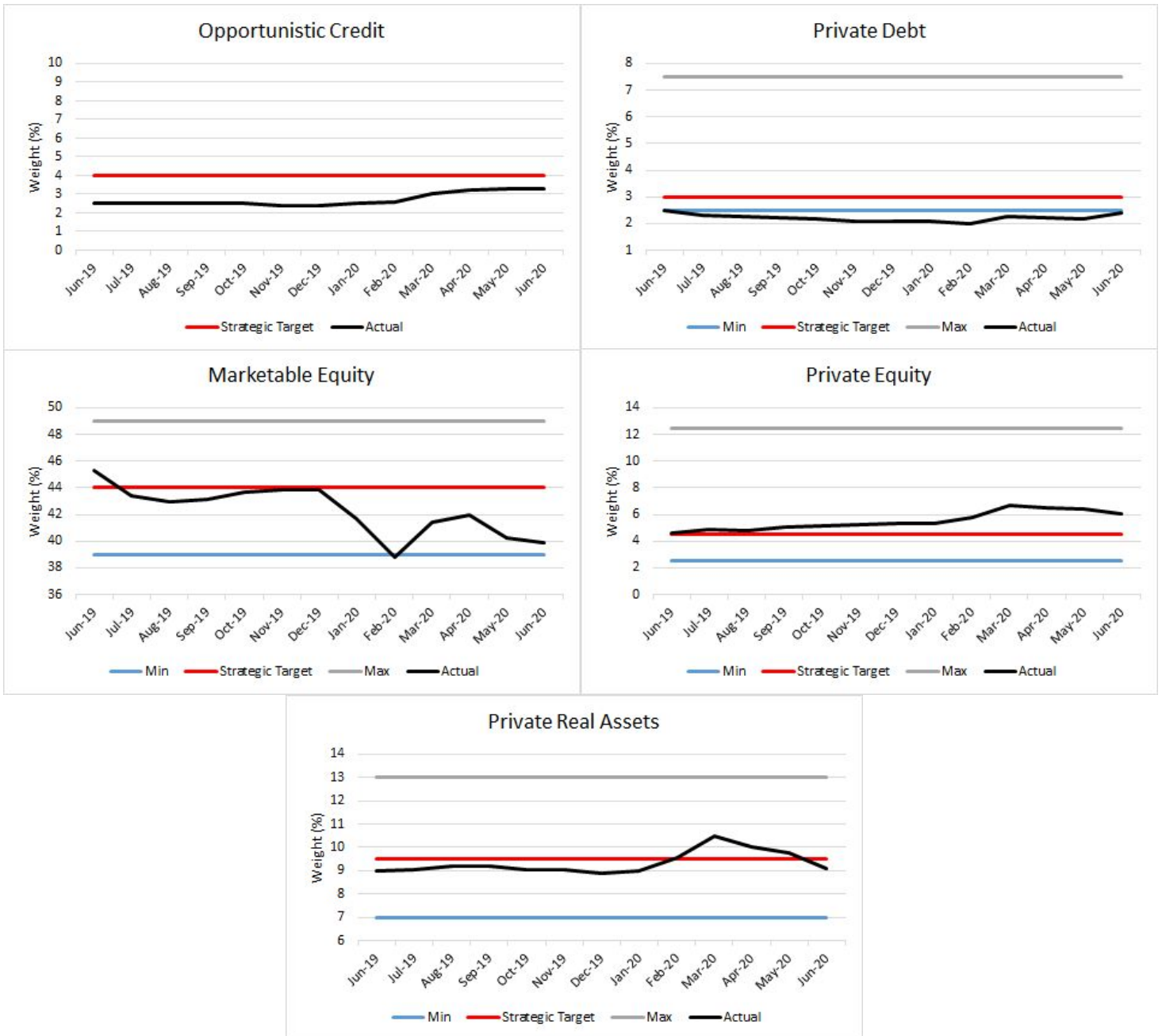


Risk Assets includes: Marketable (Public) Equity, Private Equity, Opportunistic Credit, Private Debt, and Private Real Assets



Risk Reducing Assets include Cash, Core Plus, US Government Debt, and Marketable Alternatives

Risk Assets Sub-Categories



Risk Reducing Assets Sub-Categories

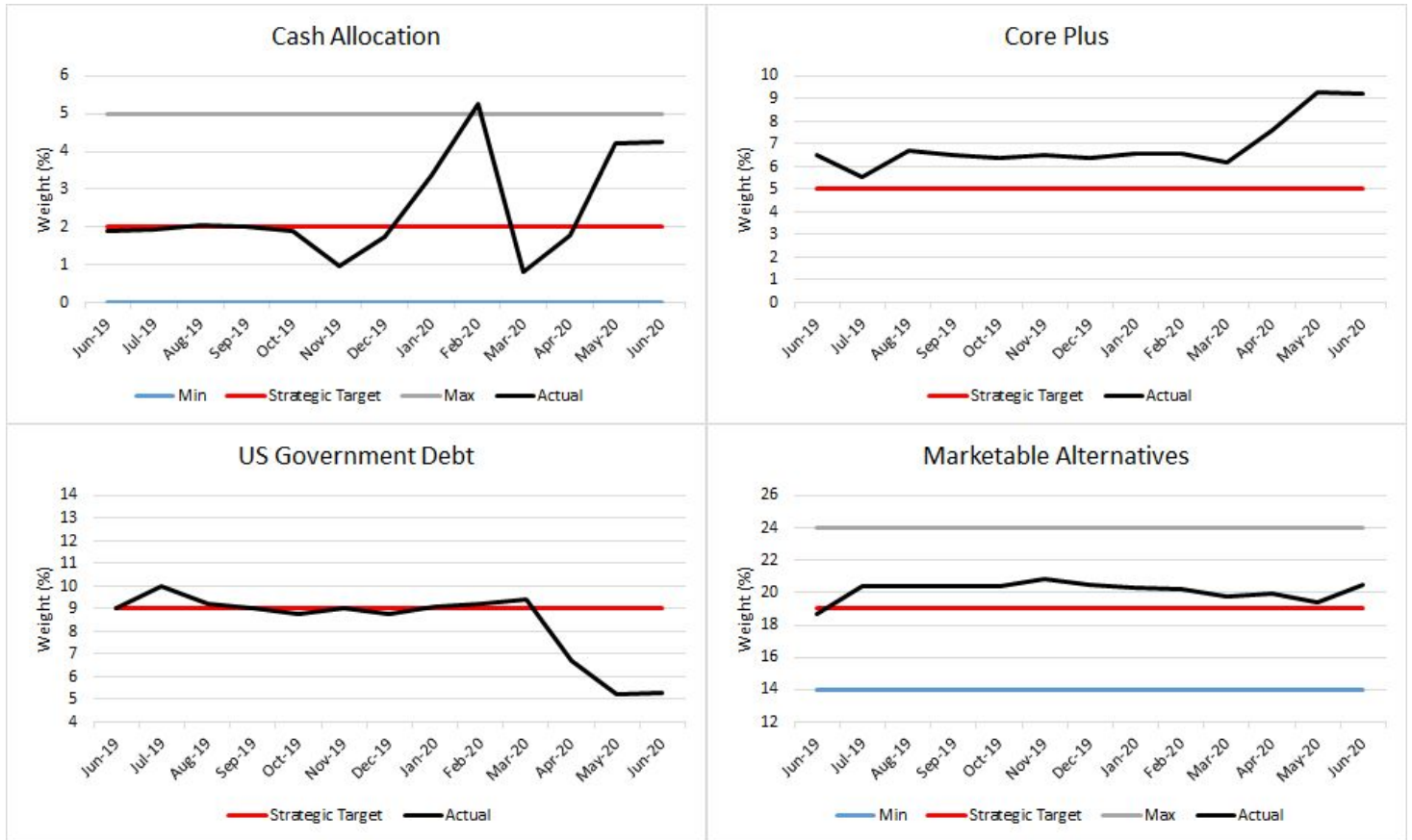


Exhibit E - Portfolio Risk - Sharpe Ratios

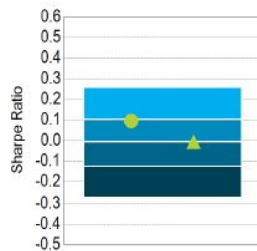
The portfolio Sharpe ratio (return/risk) was higher than the benchmark Sharpe ratio over the past year, indicating that the portfolio produced a greater level of return for each unit of risk. The WRS portfolio Sharpe ratio compared favorably to the peer set as well.



Wyoming Retirement System

Total Fund with Overlay and FX | As of June 30, 2020

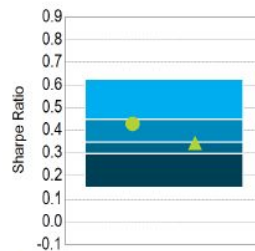
Sharpe Ratio 1YR



● Total Fund with Overlay and FX	
Value	0.1
Rank	30
▲ Strategic Blended Benchmark	
Value	0.0
Rank	51

Universe	
5th %tile	0.3
25th %tile	0.1
Median	0.0
75th %tile	-0.1
95th %tile	-0.3
Observations	71

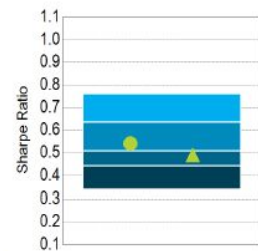
Sharpe Ratio 3YRS



● Total Fund with Overlay and FX	
Value	0.4
Rank	31
▲ Strategic Blended Benchmark	
Value	0.3
Rank	54

Universe	
5th %tile	0.6
25th %tile	0.4
Median	0.4
75th %tile	0.3
95th %tile	0.1
Observations	71

Sharpe Ratio 5YRS



● Total Fund with Overlay and FX	
Value	0.5
Rank	44
▲ Strategic Blended Benchmark	
Value	0.5
Rank	57

Universe	
5th %tile	0.8
25th %tile	0.6
Median	0.5
75th %tile	0.4
95th %tile	0.3
Observations	70

Exhibit F - WRS Portfolio Benchmarks

Pursuant to the Authority granted to it by 2019 House Enrolled Act No. 32, the Board has established the following external benchmarks for the Fiscal Year 2021 Investment Period beginning July 1, 2020.

Asset Class	WRS Approved Benchmark
US Equity	Russell 3000
Int'l Developed Equity	EAFE IMI (hedged 65%)
Emerging Market Equity	EM IMI
Private Equity	Cambridge Associates Global All Private Equity, QTR lag
Core Fixed Income	Barclays U.S. Aggregate
US Gov't Debt	Barclays U.S. Government
Opportunistic Credit	50% Credit Suisse Leveraged Loan/ 50% Barclays High Yield
Marketable Alternatives	HFRI FoF
Cash	Barclays Short Treasury
Private Real Assets	Cambridge Vintage Year, MSCI World Infrastructure, QTR Lag
Private Real Estate	NCREIF ODCE

Exhibit G - Meketa Performance Compensation Review

MEMORANDUM

TO: Board of Trustees, Wyoming Retirement System
FROM: Mika Malone, Nick Erickson, Paola Nealon, Meketa Investment Group
DATE: September 10, 2020
RE: Incentive Compensation Calculation 2020

Meketa Investment Group ("Meketa") has been asked by the CIO to review the calculation inputs utilized to determine the eligible incentive compensation available to WRS Investment Staff. *Meketa has reviewed the inputs and the calculation, as well as the legislation authorizing the Incentive Compensation, and concurs with Staff's calculation.* The Staff provided calculation is included as an Appendix. An excerpt from Meketa's Performance Report for June 30, 2020 is also included as an Appendix.

Review of Inputs

- Based on the HB0222, and the Enrolled Act No. 32, for the Incentive Compensation calculation for the one-year period ending June 30, 2020, several inputs are needed:
 - June 30 final market value, as provided by Meketa 45 days post quarter end.
 - Total Fund Performance, calculated by Meketa, through June 30, in the final Quarterly performance report.¹
 - Total Fund Benchmark Performance, calculated by Meketa, cutting off data feeds 45 days after quarter end.
- Meketa has checked the inputs in Staff's calculation and confirms the inputs as described above are drawn from the appropriate source documents.
- Meketa has also confirmed that the eligible employees have the correct number of months attributed to their tenure, as well as that salaries are correct, as per the Executive Administrator.

Review of Calculation

Meketa reviewed the statute providing for incentive compensation, and highlights that this is the first year that Investment Staff are eligible for this program, which means the formula relies entirely on a one-year performance calculation. In future years, a two-year, and then a rolling three-year calculation will be added in order to evaluate the success of Staff over longer time periods. We further confirm that;

- The maximum eligible percent (%) of compensation was attributed to each employee based on the classifications outlined in HB0222.
- Incentive Compensation for the System is calculated at the Total Fund level only.

¹ It should be noted that Meketa relies on custodian provided, Investorforce, and index data, as well as manager provided data to aggregate performance reporting. This influences both market values and return data over the periods referenced.

- Payments for Incentive Compensation are calculated as to be paid over three years, as dictated in the legislation (25% Year 1, 25% Year 2, and 50% year 3).
- Does not exceed 2% of net investment returns above the established Total Fund benchmark.
- Reporting to the Board includes a risk metric.
 - Meketa's standard quarterly reports include Sharpe Ratio¹ calculations, which allow Trustees to evaluate the risk adjusted return in a portfolio (calculation in footnote; a higher number is more favorable). The 1 year annualized Sharpe Ratio for the portfolio was 0.10% as of June 30, 2020, while the Sharpe Ratio for the benchmark was 0.00%. The portfolio also remained within its Policy Target ranges for the period.

Summary

In the year ended June 30, 2020, WRS achieved a one-year return of 2.46%, compared to a benchmark return of 1.22% (as found in Meketa's standard quarterly reporting). This performance ranks in the 31st percentile relative to peers for the period.

Following our review of the available data, it appears that Staff is eligible for 100% of their incentive compensation for the year ended June 30, 2020. It further appears that Staff has appropriately utilized the statute to calculate the incentive compensation that they are eligible for.

If you have questions, please feel free to contact us at (760) 795-3450.

MM/NE/pq

¹ The Sharpe ratio measures the performance of an investment compared to a risk-free asset, after adjusting for its risk. It is defined as the difference between the returns of the investment and the risk-free return, divided by the standard deviation of the investment.

Appendix

Performance Compensation Model

Payout Based on Actual June 30, 2020 FYTD Returns

<u>Title</u>	<u>Annual Salary</u>	<u>Max Potential Bonus (% of Salary)</u>	<u>Maximum Potential Bonus</u>	<u>Earned Payout</u>	<u>Year 1 Payout (25%)</u>	<u>Year 2 Payout (25%)</u>	<u>Year 3 Payout (50%)</u>
Team Total	\$ 1,046,498		\$ 706,103	\$ 706,103	\$ 176,526	\$ 176,526	\$ 353,051
Bonus as a % of \$ Alpha Produced				0.66%	0.17%	0.17%	0.33%
\$ of Alpha for Each \$ of Bonus				\$151	\$604	\$604	\$302

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Maximum % of Alpha Available for Bonuses	2.0%
\$ Alpha Required to Earn Max Bonus	\$ 35,305,149 (Max Potential bonus pool) ÷ 2%
% Return Outperformance Equivalent	0.41% (\$ Alpha Required) ÷ (Average Portfolio Value)

Actual Performance June 2020 FY	1-Year Return	***Final June returns from Meketa (8/17/20).***
WRS performance	2.46%	
Strategic Benchmark Performance	1.22%	
Staff Value-Add (Outperformance)	1.24%	

Actual \$ Alpha	\$ 106,667,921 (Avg. Portfolio Value) x (Staff Value Add %)
\$ Alpha Required for Max Bonus	\$ 35,305,149
% of Maximum Bonus Calculation	302% (Estimated Alpha) ÷ (Required Alpha)
% of Max Bonus Target Earned	100% (Lesser of 100% and Formula)

Wyoming Retirement System

Total Fund with Overlay and FX | As of June 30, 2020

	Trailing Net Performance								S.I. (%)	S.I. Date
	Market Value (\$)	% of Portfolio	QTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)		
Total Fund with Overlay and FX	8,515,331,425	100.00	9.47	-3.67	2.46	5.46	5.61	7.71	8.26	Feb-83
<i>Strategic Blended Benchmark</i>			<u>8.71</u>	<u>-3.73</u>	<u>1.22</u>	<u>4.61</u>	<u>5.06</u>	<u>7.04</u>	<u>9.35</u>	<u>Feb-83</u>
Over/Under			0.76	0.06	1.24	0.85	0.55	0.67	-1.09	

Historical Total Fund returns from February 1983 through December 1997 are gross only. Data prior to May 2016 provided by previous consultant. The Cash Overlay was implemented July 2014 and the Currency Overlay was implemented February 2017. Data prior to July 2016 provided by previous consultant. Performance is net of fees unless otherwise noted. Inception date reflects first full month of performance. See appendix for full description of benchmarks. Aggregate performance may reflect performance of managers no longer in the fund.

Exhibit H - McLagan 2020 Compensation Survey

2020 McLagan United States - Asset Owners / Institutional Investors - Public Funds (US.AOIPUB) - Management Summary

Firm: Wyoming Retirement Sys
Market: All Participants - Limited Report
Currency: USD (000's)

	2019 TOTAL CASH						2019 TOTAL COMPENSATION						2020 SALARY					
	MARKET			WYOMING RETIREMENT SYS			MARKET			WYOMING RETIREMENT SYS			MARKET			WYOMING RETIREMENT SYS		
	LOW QUARTILE (25%)	MEDIAN (50%)	HIGH QUARTILE (75%)	MEDIAN (50%)	RANK OF FIRM'S MEDIAN	VARIANCE TO MEDIAN (50%)	LOW QUARTILE (25%)	MEDIAN (50%)	HIGH QUARTILE (75%)	MEDIAN (50%)	RANK OF FIRM'S MEDIAN	VARIANCE TO MEDIAN (50%)	LOW QUARTILE (25%)	MEDIAN (50%)	HIGH QUARTILE (75%)	MEDIAN (50%)	RANK OF FIRM'S MEDIAN	VARIANCE TO MEDIAN (50%)
LE - Leadership																		
85 - Executive Director with or without CIO Responsibilities																		
LE.8500.P0 - All Focuses All Levels	204.9	277.6	406.5	195.0	34 OF 39		204.9	277.8	416.0	195.0	34 OF 39		204.9	283.4	366.0	195.0	33 OF 39	
BH - Executive Director With CIO Responsibilities																		
LE.BHMF.P0 - All Levels	210.3	335.0	496.3	195.0	20 OF 24		210.3	335.0	496.3	195.0	20 OF 24		206.7	332.0	489.1	195.0	19 OF 24	
BI - Executive Director Without CIO Responsibilities																		
LE.BIMF.P0 - All Levels	199.1	271.4	280.4	-	15		199.1	271.4	280.9	-	15		202.6	273.8	286.0	-	15	
AQ - Chief Investment Officer																		
LE.AQMF.P0 - All Levels	304.9	387.1	584.3	250.0	36 OF 41		304.9	387.4	627.0	250.0	36 OF 41		298.0	342.7	422.7	250.0	33 OF 40	
BC - Chief Operating / Administration Officer																		
LE.BCMF.P0 - All Levels	145.1	190.0	249.4	-	22		145.1	190.0	249.4	-	22		148.0	189.0	241.0	-	22	
PM - Portfolio Management																		
MM - Manager-of-Managers																		
PM.MM00.09 - All Focuses Snr Exp.	202.2	250.5	393.8	189.0	25 OF 28		205.4	258.3	393.8	189.0	25 OF 28		205.3	230.5	267.5	189.0	24 OF 28	
PM.MM00.08 - All Focuses Expert	161.9	196.1	305.3	189.0	17 OF 34		162.2	196.1	313.9	189.0	17 OF 34		159.5	176.9	206.5	189.0	14 OF 35	
PM.MM00.07 - All Focuses Advanced	133.8	165.1	205.8	-	21		135.2	165.1	205.8	-	21		138.3	156.6	183.0	-	20	
PM.MM00.06 - All Focuses Experienced	112.6	125.0	143.3	-	30		112.6	125.0	144.1	-	30		109.5	122.5	132.0	-	30	
PM.MM00.05 - All Focuses Intermediate	82.0	91.0	101.7	-	19		82.0	91.6	101.7	-	19		85.0	92.6	102.5	-	22	
PM.MM00.04 - All Focuses Entry	64.5	72.0	82.7	-	14		64.5	72.0	82.7	-	14		65.2	75.1	82.9	-	14	

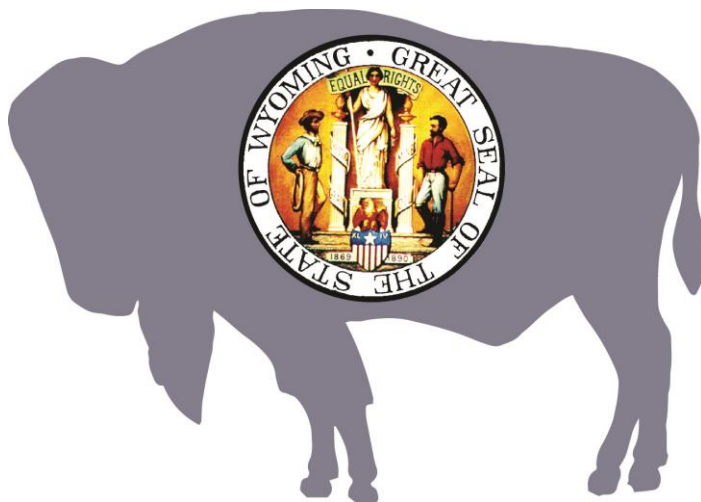


RETIREMENT SYSTEM

PARTNERING TO BUILD FINANCIAL SECURITY FOR MEMBERS AND THEIR FAMILIES

Annual Performance Compensation Update

October 29th, 2021



Select Committee on Capital Financing & Investment
Joint Appropriations Committee
VIA EMAIL c/o Legislative Service Office

October 29, 2021

Senator Drew Perkins, Chairman, Select Committee on Capital Financing & Investments
Representative Bob Nicholas, Co-Chair, Joint Appropriations Committee

Dear Senator Perkins and Representative Nicholas,

W.S. 9-3-406 (d) requires WRS to provide an update on the status of the Performance Compensation Plan before November 1st of each year. Our report also includes peer compensation information requested by the committees.

Wyoming Retirement System (WRS) is grateful to the legislature for supporting this program. It plays an important role in improving the stability of the investment team, which is critical to maximizing net investment returns and increasing the funding ratio.

We are pleased to report that the investment team outperformed the benchmark by 1.39% annualized for the fiscal two-year period ending June 30, 2021, which represents excess profits of approximately \$253 million. Based on this performance, and per the terms of the Plan, the investment team has earned its maximum performance compensation amount.

The earned amount represents only 0.29% of the additional value-add. The 2021 amount paid out this year will be only 0.07% of the additional value-add. The remainder is subject to a three-year vesting schedule. We believe these minimal payouts demonstrate excellent value and alignment of interests for all WRS stakeholders.

WRS also analyzes risk when it reviews the portfolio returns. The portfolio's risk-adjusted return, as measured by the Sharpe ratio, was greater than that of the benchmark. The portfolio's exposures were also within the Board's policy exposure ranges. We are pleased to note that the five-year peer ranking has improved dramatically, from the bottom quartile five years ago to the top quartile today.

The Board takes its fiduciary responsibility very seriously and has spent considerable time on the design, implementation and oversight of the Performance Compensation Plan. We appreciate the Legislature's continued support of this program.



Tom Chapman
WRS Board Chair



David Swindell
WRS Executive Director

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Purpose

W.S. 9-3-406 (d) requires WRS to report on the status of the Performance Compensation Plan no later than November 1st of each year.

“The board shall report to the joint appropriations committee and the select committee on capital financing and investments by November 1 of each year on the plan authorized by subsection (a) of this section. The report shall include: (i) Payments and methodology of calculating payments under the plan; (ii) A measurement quantifying the risk resulting from the variation between the prior year's investment benchmarks and the prior year's actual investments; (iii) An estimate of future payments under the plan and future expected investment benchmarks.”

In addition to the statutory reporting requirements, WRS was asked to provide peer compensation data on an annual basis. Base wages enumerated in the budget footnote from the 2019 session will benefit from periodic review, lest they become stale.

Background

The Act was passed during the 2019 legislative session with an effective date of July 1, 2019. It authorizes the payment of performance compensation for WRS investment team members.

Material terms are as follows:

- The period used for calculation of performance compensation is based on the rolling three-year return at the end of each June fiscal year. The periods for the first and second year of the program are trailing one-year and two-year performance, respectively.
- The total performance compensation bonus pool is based on 2% of “alpha dollars,” defined as the dollar profit corresponding to the return of the total portfolio above its benchmark.
- Performance compensation is based solely on the performance of the total portfolio. No portion is based on individual asset class performance.
- Each investment team member can earn performance compensation up to a maximum percentage of their salary, with more senior employees earning larger percentages.
- Payments vest over a three-year period (25%/25%/50%).

Statutory Requirements

[Requirement \(i\) Payments and methodology of calculating payments under the plan:](#)

Response: The first performance compensation measurement period was the fiscal year ending June 30, 2020. The second period was for the two-year period ending June 30, 2021. The methodology for calculating payments is embedded within WRS’ performance compensation plan document (articles 4.01-4.04) and is attached as Exhibit A.

The Board believes that the portfolio investment return relative to benchmark is the primary measure of the investment program’s success. Based on this standard, the investment team performed very well for the most recent fiscal year ending June 30th. The portfolio outperformed

its benchmark by 1.56%, representing \$148 million of added value for the trailing one-year period. Over the two-year period, which is the measurement period for the 2021 performance compensation calculation, the portfolio outperformed its benchmark by 1.39% annualized, representing \$253 million of added value.

Based on the strong outperformance, per the terms of the Plan, the investment team has earned the maximum performance compensation amount. See Exhibit B for the detailed calculations. The earned amount is only 0.29% of the additional two-year value-add, or \$745,687. The amount paid out this year will be only 0.07% of the additional value-add, or \$186,422. The remaining payouts are subject to a three-year vesting schedule. We believe this represents an excellent value for all WRS stakeholders.

Long-term performance has also been very strong. The investment team has substantially outperformed the portfolio benchmark over all rolling periods.

% Annualized Returns (as of June 30, 2021)	Calendar YTD	1-Year	2-Year (Performance Comp. Period)	3-Year	5-Year	10-Year
WRS	10.44	27.30	14.20	11.78	11.15	8.12
Benchmark	<u>9.12</u>	<u>25.74</u>	<u>12.81</u>	<u>10.24</u>	<u>10.26</u>	<u>7.68</u>
Difference	+1.32	+1.56	+1.39	+1.54	+0.89	+0.44

While the Board believes peer comparisons are a less important measure of the investment program's success, we are frequently asked to present this data. We have been very pleased with both the level and the improvement in our peer ranking. Based on the most recent data available, the two-year, three-year, and five-year peer rankings are all in the top third. This is a notable improvement from several years ago when the five-year ranking was usually in the bottom half and frequently in the bottom quartile.

Peer Ranking (as of June 30, 2021)	1-Year	2-Year (Performance Comp. Period)	3-Year	5-Year
WRS Percentile Ranking*	39	32	22	28

*Ranking data is in percentiles, with 1 being the top performing percentile and 99 being the worst performing percentile. The peer set is public defined benefit plans with assets greater than \$1 billion.

[Requirement \(ii\): Provide a measurement quantifying the risk resulting from the variation between the prior year's investment benchmarks and the prior year's actual investments:](#)

Response: The WRS Board limits risk within the portfolio through the use of restrictions at the portfolio, asset class, manager and security levels. These limits are in formal guidelines which

were reviewed by the JAC, CapFin and the IFC in 2019. These guidelines are monitored by a combination of WRS internal audit, the external consultant Meketa, the custodian Northern Trust, and the overlay provider Russell investments.

The Board measures portfolio risk in a variety of ways, but primarily by measuring the actual portfolio allocation compared to the target, or benchmark, allocation. The role of the investment team is to adjust the risk profile of the portfolio to be higher or lower than the benchmark, to reflect their view of current market environments and valuations. Compared to the Board's asset allocation targets, the portfolio had a lower risk profile than the benchmark throughout the entire fiscal two-year period. Cumulative risk assets, which are primarily equities, were below target. Risk reducing assets, such as fixed income, were above target. Please see Exhibit C for the fiscal year end asset allocation and Exhibit D for historical asset allocations.

Another way to measure risk, is to compare the standard deviation (variability) of actual returns to benchmark returns. However, this method has certain limitations when applied to a short period such as one year, because the sample size consists of only 12 monthly data points, or only four when including quarterly private investment valuations. This measure will become more meaningful this coming year and in future years as the performance compensation measurement period increases to three years and the number of data points increases proportionally.

Regardless, standard deviation has limited value when viewed in isolation. It must be considered in the context of the corresponding portfolio return to have much meaning. An industry-wide standard for doing so is to calculate the Sharpe Ratio (excess return divided by standard deviation) to produce a measure of return per unit of risk. Based on the Sharpe Ratio, the WRS portfolio outperformed its benchmark on a risk adjusted basis for the year. The portfolio's Sharpe ratio also ranked in the top quartile of its peer set. See Exhibit E.

WRS Sharpe Ratio and Peer Ranking (as of June 30, 2021)	<u>1-Year</u>	<u>2-Year</u> (Performance Comp. Period)	<u>3-Year</u>	<u>5-Year</u>
Portfolio	3.8	1.3	1.1	1.3
Benchmark	3.7	1.2	0.9	1.2
Peer Median	3.4	1.1	0.9	1.1
WRS Percentile Ranking*	18	24	22	26

*Ranking data is in percentiles, with 1 being the top performing percentile and 99 being the worst performing percentile. The peer set is public defined benefit plans with assets greater than \$1 billion.

Requirement (iii) - Provide an estimate of future payments under the plan and future expected investment benchmarks.

Response: As previously noted, the investment team outperformed the benchmark by 1.39% for the two-year period ending June 30, 2021. This represents excess profits of approximately \$253 million. Per the terms of the Plan, the investment team has earned the maximum performance compensation.

The earned amount represents only 0.29% of the additional value-add of the investment staff over the trailing two-year period. Due to the vesting feature, the amount paid out in 2021 is only 0.07% of the additional value-add.

Position	Salary	Max % of Salary for Performance Compensation	Indicated Performance Compensation	Year 1 Payout	Year 2 Payout	Year 3 Payout
CIO	250,000	100.0%	250,000	62,500	62,500	125,000
SIO #1	189,000	75.0%	141,750	35,438	35,438	70,875
SIO #2	189,000	75.0%	141,750	35,438	35,438	70,875
SIO #3	189,000	75.0%	141,750	35,438	35,438	70,875
IO and (2) Analysts	254,633	50%/25.0%	70,438	17,609	17,609	35,219
Totals	\$1,071,632		\$745,687	\$186,422	\$186,422	\$372,843
% of Total Value Added Paid As Bonuses			0.29%	0.07%	0.07%	0.14%
Total Investment Team Value Added ("Alpha")			\$253,165,34			
Vesting Schedule				25%	25%	50%

Potential future payments will depend on returns for the coming fiscal years. The table below shows the minimum and maximum payments that could be due. The minimum amount is the amount that has already been earned. The maximum amount is based on the assumption that performance will exceed the benchmark in each of the next two fiscal years by an adequate amount to earn maximum performance compensation.

Total Payout by Year				
Performance Compensation Period (June 30 FYE)	2020	2021	2022	2023
Earned Amounts				
FY 2020	\$176,526	\$172,151	\$344,302	
FY 2021		<u>\$186,422</u>	<u>\$186,422</u>	<u>\$372,843</u>
Total Earned Amount	\$176,526	\$358,572	\$530,723	\$372,843

Note: Assumes current staffing levels and compensation.

Benchmark Determination

Meketa, WRS' investment consultant, recommended WRS portfolio benchmarks. The Board approved the benchmarks, which were then reviewed by the Investment Funds Committee. The JAC, the Capital Finance committee, and the Treasurer's office also reviewed and commented on the benchmarks prior to the first year of implementation. The only change that was made since the initiation of the program was the incorporation of a 65% currency hedge ratio in the developed market equity benchmark beginning on July 1, 2020. The Investment Fund Committee reviewed this change.

The Board does not anticipate making any interim changes to the benchmarks for the year ending June 30, 2022. See Exhibit F for current portfolio benchmarks.

Performance Compensation Audit

The WRS internal accounting department audited the performance compensation calculation. The WRS internal auditor reviewed the process as well. To provide a third-party verification, Meketa, WRS' general consultant, reviewed and verified all of the inputs and methodology for the calculation. See Exhibit G. For confidentiality reasons, all actual individual salary information was not included, however, it can be made available to the Legislature's oversight committees upon request.

The WRS Board approved the payout at the September Board meeting. The Investment Fund Committee reviewed the calculation and methodology, and had no objections.

Peer Compensation Comparison

WRS was asked to provide a public pension peer compensation analysis as part of its annual reporting package. The following table includes survey data provided by the McLagan company, which is widely considered to be the investment industry's premier source of compensation data.

WRS investment team salaries have historically been in the bottom quartile of the peer set and approximately 15%-30% below median. The performance compensation plan has been very helpful in closing this gap.

McLagan - Public Plan Compensation Data

2021 Salary

Salary (\$ in ,000s)	Analyst	Sr. Analyst	Investment Officer	Sr. Investment Officer	CIO
Public Pension Median	\$95	\$121	\$180	\$230	\$341
WRS Actual (maximum authorized)	\$70	\$93	\$130	\$189	\$250
WRS - \$ Difference from Median	-\$25	-\$28	-\$50	-\$41	-\$91
WRS - % Difference from Median	-26%	-23%	-28%	-18%	-27%
Quartile	4th	4th	4th	4th	4th

Bonus (2020, most recent available)

Bonus (\$ in ,000s)	Analyst	Sr. Analyst	Investment Officer	Sr. Investment Officer	CIO
Total Peer Bonus Maximum (Median)	\$10	\$26	\$158	\$310	\$300
WRS Max Bonus 2020 (vested over 3 years)	\$18	\$23	\$59	\$142	\$250
WRS - \$ Difference from Median	+\$8	-\$3	-\$99	-\$168	-\$50
WRS - % Difference from Median	+80%	-12%	-63%	-54%	-17%

Conclusion

Once again, we are deeply grateful for the Legislature's approval and continued support of the performance compensation plan. It is critical to maintaining a top-tier investment program and maximizing investment returns for the benefit of all WRS stakeholders.

Exhibit A - Performance Compensation Calculation Methodology

Article IV. Calculation of Performance Compensation

Section 4.01 Quantitative Performance. The Plan Administrator shall calculate Performance Compensation for a particular Investment Period by comparing the Total Fund's actual performance for a specified Investment Period to a Total Fund Benchmark established by the Board prior to the beginning of an Investment Period. Performance shall be calculated to the nearest 1/10th of a basis point. The Plan Administrator shall provide the calculation to the Board with its recommendation regarding whether Performance Compensation was earned for a given Investment Period. The Board's final determination regarding whether the Total Fund Benchmark was exceeded for a given Investment Period is subject to review by the Investment Funds Committee.

Example: If the Total Fund Return equals 10% and the Benchmark Return was 9.75%, then the fund would have outperformed the benchmark by 25 basis points (0.25%) for that Investment Period.

The Board shall determine the Alpha for any given Investment Period by multiplying the Portfolio Value by the percentage outperformance for that Investment Period. Portfolio Value shall be determined by averaging the monthly values of the Total Fund Portfolio over the course of an Investment Period.

Example: If the average value of the Total Fund for an Investment Period was \$8.1 billion, that amount would be multiplied by 25 basis points outperformance (0.0025), resulting in a dollar amount equal to \$20,250,000.00 (Alpha).

Section 4.02 Maximum Performance Compensation. Prior to the beginning of each Fiscal Year, the Board shall estimate the Maximum Performance Compensation that may become payable to Participating Employees for the Investment Period. The Maximum Performance Compensation that may be earned in any given Investment Period for each Participating Employee shall not exceed the following:

Eligible Employee Position	Maximum Performance Compensation
Chief Investment Officer	One Hundred Percent (100%) of Base Salary
Senior Investment Officer	Seventy-Five Percent (75%) of Base Salary
Investment Officer	Fifty Percent (50%) of Base Salary
Senior Analyst	Twenty-Five Percent (25%) of Base Salary
Analyst	Twenty-Five Percent (25%) of Base Salary

Total payments to all Participating Employees for Performance Compensation earned in a given Investment Period shall not exceed two percent (2%) of the net investment returns above the Total Fund Benchmark established by the Board for that Investment Period. The amount of outperformance needed to achieve Maximum Performance Compensation payout for any given

Investment Period shall be determined by dividing the aggregate total of Maximum Performance Compensation for all Participating Employees by two percent (2%).

Example: Salary data used in the below example is not reflective of actual salary data. Salary data and the number of employees participating in a particular Investment Period are subject to change and will impact the determination of available Performance Compensation eligible for payment.

Position	Total Base Salary (\$)	Percentage Max (%)	Dollar Max (\$)
Chief Investment Officer (1)	250,000	100	250,000
Senior Investment Officer (3)	567,000	75	425,250
Investment Officer (1)	120,000	50	60,000
Senior Analyst (3)	210,000	25	52,500
Total	1,150,000		787,750

The total Maximum Performance Compensation payout in this example would be \$790,000.00. Dividing that amount by two percent (2%) results in an amount equal to \$39,500,000.00. This is the Alpha that would be required to pay the Maximum Performance Compensation for this Investment Period.

Section 4.03 Calculating Performance Compensation. At the conclusion of each Investment Period, the Plan Administrator shall calculate the amount of Performance Compensation earned for each Participating Employee and make a recommendation to the Board. If the Board determines that the Total Fund Benchmark has not been exceeded for a given Investment Period, then no Performance Compensation shall be payable for that Investment Period. If the Board determines that the Total Fund Benchmark has been exceeded for a given Investment Period, and that the Alpha is equal to or greater than the amount required for Maximum Performance Compensation payout, then Maximum Performance Compensation shall be payable to each Participating Employee for that Investment Period. If the Board determines that the Total Fund Benchmark has been exceeded for a given Investment Period, and that the Alpha is less than the amount required for Maximum Performance Compensation payout, then the amount of Performance Compensation payable shall be calculated by dividing the Alpha actually achieved by the Alpha required to pay Maximum Performance Compensation.

Example: Using the above example data, if the Total Fund outperformed the benchmark by 25 basis points, Performance Compensation would be calculated by dividing \$20,250,000.00 (Alpha) by \$39,500,000.00 (Alpha required to pay the Maximum Performance Compensation), resulting in an adjusted payout equal to fifty-one percent (51%) of Maximum Performance Compensation. This percentage would be applied to each Participating Employee's maximum payout for that Investment Period.

Position	Base Salary (\$)	% Max	\$ Max	Adjusted Payout Amount
CIO (1)	250,000	100	250,000	127,500
SIO (3)	570,000	75	425,250	216,878
IO (1)	120,000	50	60,000	30,600
SA (3)	210,000	25	52,500	26,775
Total	1,150,000		787,750	401,753

Section 4.04 Performance Compensation Payments During Plan Initiation. Payments for Performance Compensation for any one Investment Period shall be as follows:

(a) Payments of Performance Compensation for Fiscal Year 2020, if any, shall be based upon Total Fund investment performance beginning July 1, 2019 and ending June 30, 2020.

(b) Payments of Performance Compensation for Fiscal Year 2021, if any, shall be based upon the arithmetic average of the Total Fund investment performance beginning July 1, 2019 and ending June 30, 2020 and the Total Fund investment performance beginning July 1, 2020 and ending June 30, 2021.

(c) Payments of Performance Compensation for Fiscal Year 2022 and each Fiscal Year thereafter, if any, shall be based upon the arithmetic average of the Total Fund investment performance beginning that Fiscal Year and the two immediately preceding Fiscal Years.

Exhibit B - Calculation

Performance Compensation Model

Payout Based on Actual June 30, 2021 FYTD Returns

					Vesting Schedule				
						25%	25%	50%	
Title (See names in Column L)	% of Year Worked	Salary (as of period end date)	Max Potential Bonus (% of Salary)	Maximum Potential Bonus	Earned Payout	Year 1 Payout (25%)	Year 2 Payout (25%)	Year 3 Payout (50%)	
CIO	100%	\$ 250,000	100%	\$ 250,000	\$250,000	\$62,500	\$62,500	\$125,000	
SIO #1	100%	\$ 189,000	75%	\$ 141,750	\$141,750	\$35,437	\$35,437	\$70,875	
SIO #2	100%	\$ 189,000		\$ 141,750	\$141,750	\$35,437	\$35,437	\$70,875	
SIO #3	100%	\$ 189,000		\$ 141,750	\$141,750	\$35,437	\$35,437	\$70,875	
IO (promoted 12/1/20)	100%	\$ 118,800	40%	\$ 47,025	\$47,025	\$11,756	\$11,756	\$23,513	
Junior Staff (3)		\$ 254,633		\$ 70,438	\$ 70,438	\$ 17,609	\$ 17,609	\$ 35,219	
Team Total		\$ 1,071,632		\$ 745,687	\$ 745,687	\$ 186,422	\$ 186,422	\$ 372,843	

Fiscal Year Portfolio Values	2020	2021	Combined
Beginning	\$8,645,383,274	\$8,515,331,425	
Average	\$8,602,251,685	\$ 9,480,986,978	\$9,041,619,331
Ending	\$8,515,331,425	\$10,357,585,195	

Maximum Potential Bonus Pool	\$745,687
Maximum % of Alpha Available for Bonuses	2.0%
\$ Alpha Required to Earn Max Bonus	\$ 37,284,337 (Max Potential bonus pool) ÷ 2%
% Return Outperformance Equivalent	0.39% (\$ Alpha Required) ÷ (Average Portfolio Value)

Actual Performance June 2021 FY	2020 Return	2021 Return*	2-Year Arithmetic Avg Return	2-Year Geometric Annualized Return
WRS performance	2.46%	27.30%	14.88%	14.20%
Strategic Benchmark Performance	1.22%	25.74%	13.48%	12.81%
Staff Value-Add (Outperformance)	1.24%	1.56%	1.40%	1.39%

*2021 Trailing 1-Year returns only relevant for new hires (i.e. Ben W.)

Actual \$ Alpha (2021 year)	\$147,903,397 (Avg. Portfolio Value) x (Staff Value Add %)
\$ Alpha Required for Max Bonus	\$ 37,284,337
% of Maximum Bonus Calculation	397% (Estimated Alpha) ÷ (Required Alpha)
% of Max Bonus Target Earned	100% (Lesser of 100% and Formula)

Actual \$ Alpha (2020 year)	\$106,667,921 (Avg. Portfolio Value) x (Staff Value Add %)
\$ Alpha Required for Max Bonus	\$ 35,305,149
% of Maximum Bonus Calculation	302% (Estimated Alpha) ÷ (Required Alpha)
% of Max Bonus Target Earned	100% (Lesser of 100% and Formula)

Actual \$ Alpha over 2 years	\$253,165,341	Avg. Portfolio Value x Staff Value Add %
\$ Alpha Required for Max Bonus	\$ 72,589,486	2020 Required Alpha + 2021 Required Alpha
% of Maximum Bonus Calculation	349%	Actual Alpha ÷ Required Alpha
% of Max Bonus Target Earned	100%	Lesser of 100% and Formula

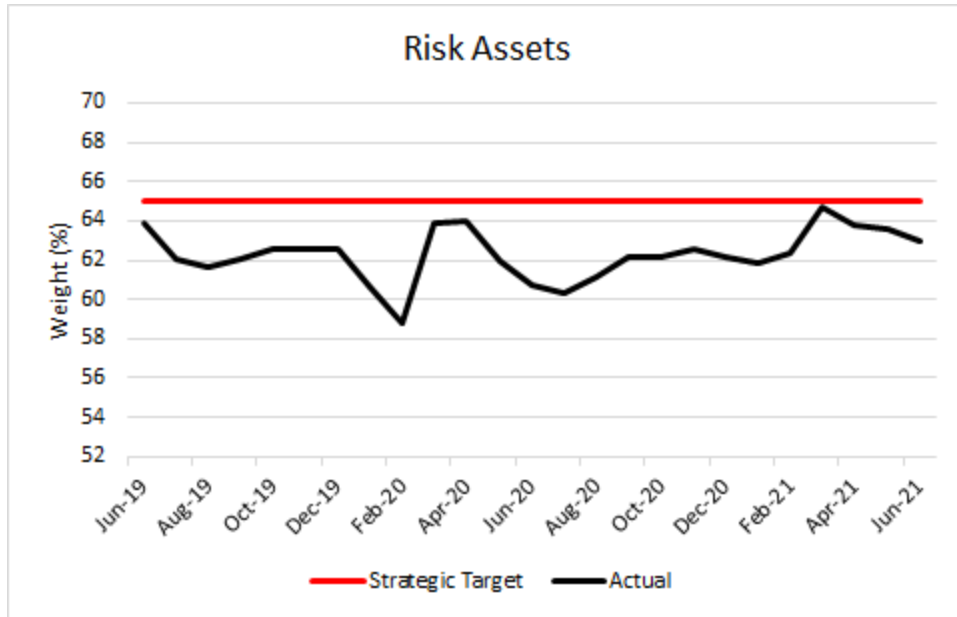
Exhibit C - June 30, 2021 Fiscal Year-End Asset Allocation

As shown in the table, based on broad asset class exposure, portfolio risk was lower than the benchmark. The portfolio was underweight marketable equities by 6.1% which was partially offset by an overweight to private markets of 5.6%. Fixed income was underweight by 2.1%, but this was more than offset by an overweight to cash of 2.4%.

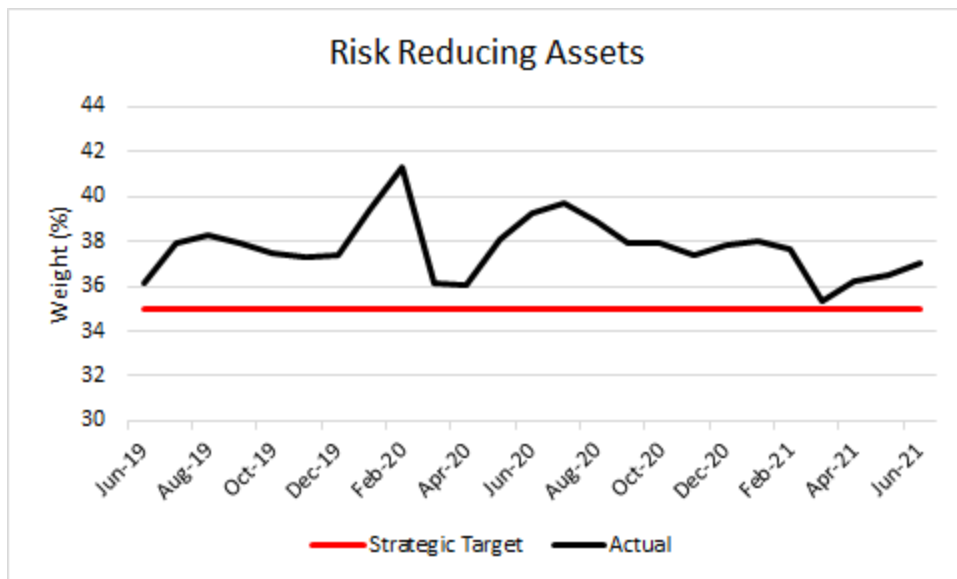
Asset Class	WRS Board Adjusted Policy Weight	WRS Investment Team Implemented Target Weight	Difference as of 6/30/21
<u>Total Market Value</u>	<u>100%</u>	<u>100%</u>	
Total Cash	2.0%	4.4%	2.4%
Marketable Equities	44.0%	37.9%	-6.1%
Emerging Market	8.6%	7.0%	-1.6%
Domestic Equity	21.2%	14.6%	-6.6%
International Developed Equity	14.2%	16.3%	2.1%
Private Markets	17.0%	22.6%	5.6%
Fixed Income	18.0%	15.9%	-2.1%
Core Plus	5.0%	5.3%	0.3%
Opportunistic Credit	4.0%	2.6%	-1.4%
US Gov't Debt	9.0%	8.0%	-1.0%
Marketable Alternatives	19.0%	19.3%	0.3%

Exhibit D - Historical Asset Allocation Graphs

Combined risk assets were below benchmark target for the entirety of the two-year period. The team reduced risk assets in February 2020 in anticipation of the market recognizing the severity of the coronavirus pandemic. In March 2020, when the market overreacted and sold off substantially, the team increased exposure to cheap risk assets, and benefited from the subsequent rally.

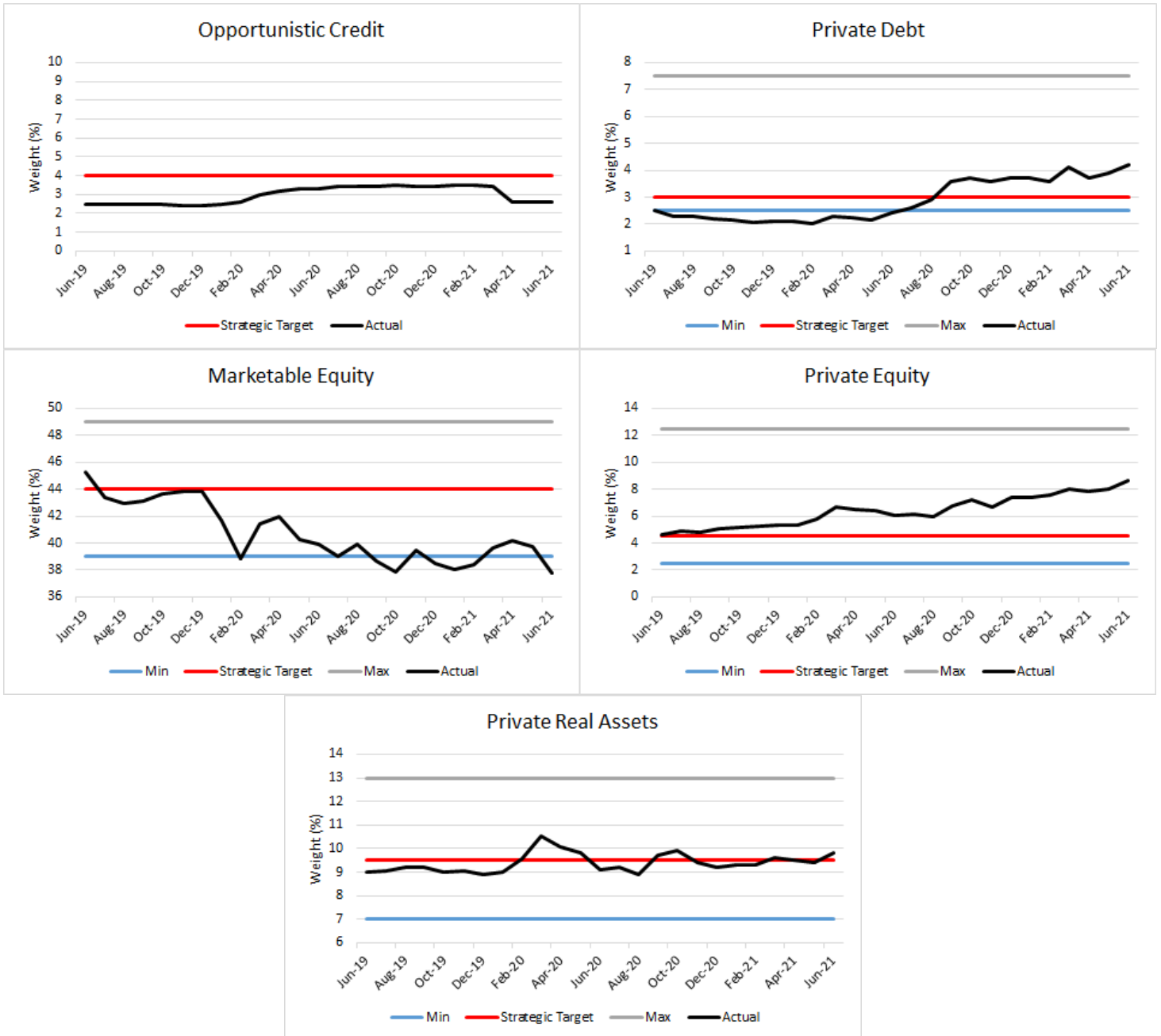


Risk Assets includes: Marketable (Public) Equity, Private Equity, Opportunistic Credit, Private Debt, and Private Real Assets



Risk Reducing Assets include Cash, Core Plus, US Government Debt, and Marketable Alternatives

Risk Assets Sub-Categories



Risk Reducing Assets Sub-Categories

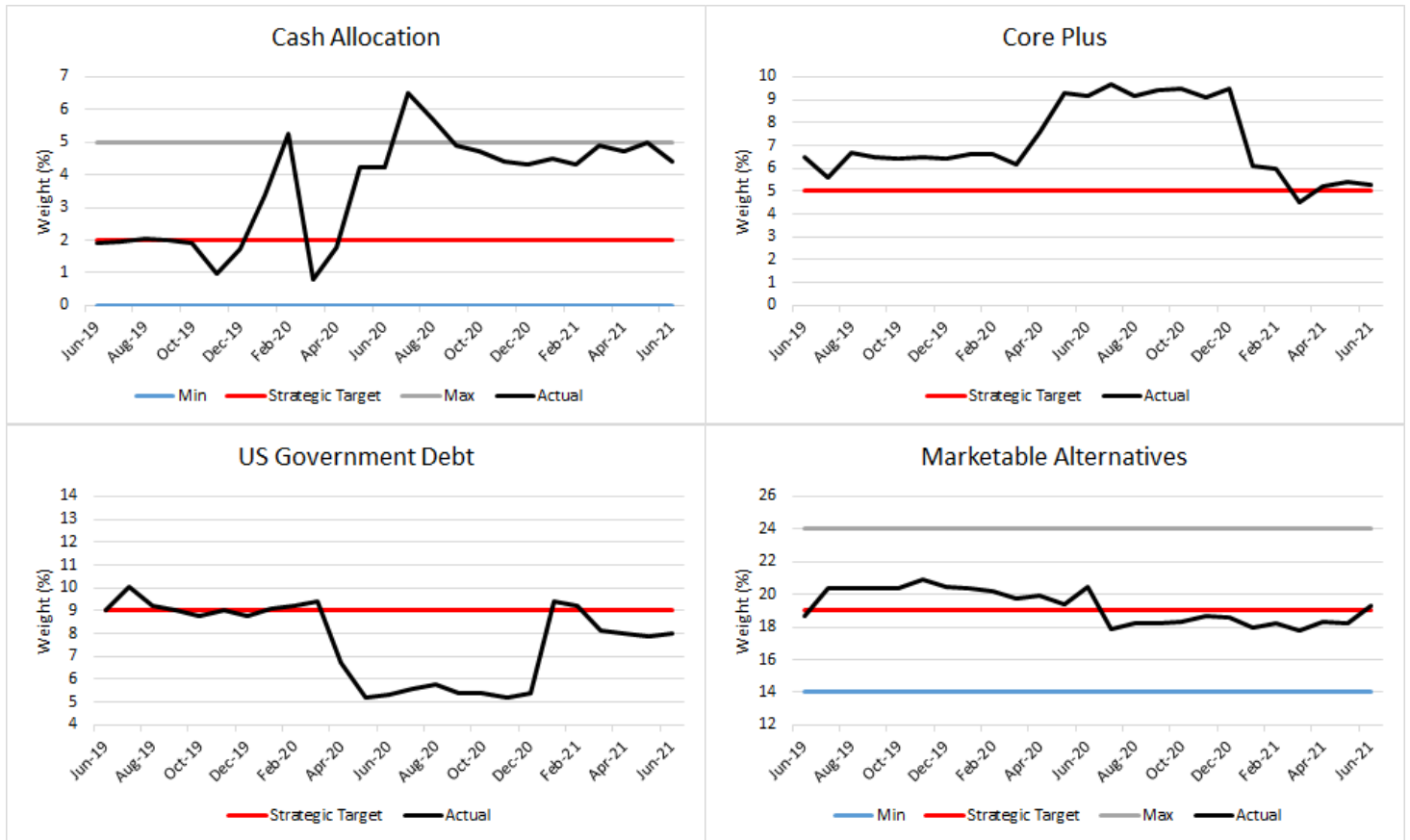


Exhibit E - Portfolio Risk - Sharpe Ratios (as of 6/30/2021)

The portfolio Sharpe ratio (return/risk) was higher than the benchmark Sharpe ratio over the past two-year period (1.3 vs. 1.2), indicating that the portfolio produced a greater level of return for each unit of risk. The WRS portfolio Sharpe ratio compared favorably to the peer set median ratio as well (1.3 vs. 1.1).

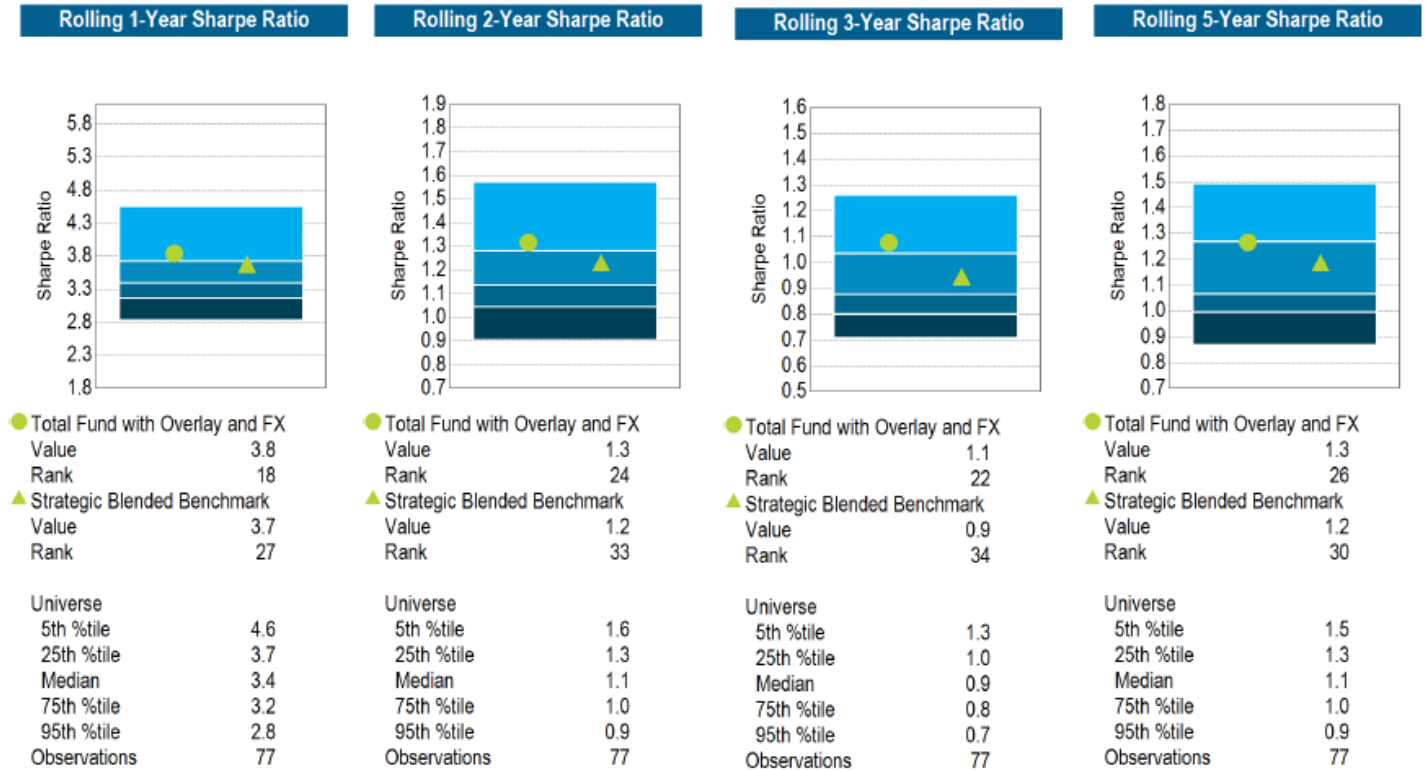


Exhibit F - WRS Portfolio Benchmarks

Pursuant to the Authority granted to it by 2019 House Enrolled Act No. 32, the Board has established the following external benchmarks for the Fiscal Year 2021 Investment Period beginning July 1, 2020.

Asset Class	WRS Approved Benchmark
US Equity	Russell 3000
Int'l Developed Equity	MSCI EAFE IMI, Net Dividend (65% Hedged)
Emerging Market Equity	MSCI EM IMI, Net Dividend
Private Equity	Cambridge Associates Global All Private Equity, QTR Lag
Core Fixed Income	Barclays U.S. Aggregate
US Gov't Debt	Barclays U.S. Government
Opportunistic Credit	50% Credit Suisse Leveraged Loans / 50% Barclays High Yield
Private Debt	Cambridge Associates Vintage Year Blended Private Debt, QTR Lag
Marketable Alternatives	HFRI FoF Index
Cash	Barclays US Treasury 1-3 Year Total Return
Private Real Assets	Cambridge Associates Vintage Year Blended Benchmark, QTR Lag



INVESTMENT GROUP

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MEMORANDUM

TO: Board of Trustees, Wyoming Retirement System
FROM: Mika Malone, Nick Erickson, Paola Nealon, Meketa Investment Group
DATE: August 24, 2021
RE: Incentive Compensation Calculation 2021

Meketa Investment Group ("Meketa") has been asked by the System to review the calculation inputs utilized to determine the eligible incentive compensation available to WRS Investment Staff. *Meketa has reviewed the inputs and the calculation, as well as the legislation authorizing the Incentive Compensation, and concurs with WRS' calculation.* The WRS- provided calculation is included as an Appendix. An excerpt from Meketa's Performance Report for June 30, 2021 is also included as an Appendix.

Review of Inputs

- Based on the HB0222, and the Enrolled Act No. 32, for the Incentive Compensation calculation for the period ending June 30, 2021, several inputs are needed:
 - June 30 final market value, as provided by Meketa 45 days post quarter end.
 - Total Fund Performance, calculated by Meketa, through June 30, in the final Quarterly performance report.¹
 - Total Fund Benchmark Performance, calculated by Meketa, cutting off data feeds 45 days after quarter end.
- The calculation of incentive compensation for WRS Staff is calculated based on whether the trailing performance of the fund exceeds the total fund benchmark over the relevant time period.
- Meketa has checked the inputs in the WRS calculation and confirms the inputs as described above are drawn from the appropriate source documents.
- Meketa has also confirmed that the eligible employees have the correct number of months attributed to their tenure, as well as that salaries are correct, as per the Executive Administrator.

¹ It should be noted that Meketa relies on custodian provided, Investorforce, and index data, as well as manager provided data to aggregate performance reporting. This influences both market values and return data over the periods referenced.



Review of Calculation

This is the second year in which staff are eligible for performance compensation, which means the formula relies on a two-year period for all hires who have been with the System two years. New hires rely on the one-year calculation. In future years, a rolling three-year calculation will be added in order to evaluate the success of Staff over longer time periods. We further confirm that;

- The final monthly market value utilized matches Meketa's monthly reports.
- The maximum eligible percent (%) of compensation was attributed to each employee based on the classifications outlined in HB0222.
- Incentive Compensation for the System is calculated at the Total Fund level only.
- Payments for Incentive Compensation are calculated as to be paid over three years, as dictated in the legislation (25% Year 1, 25% Year 2, and 50% year 3).
- Does not exceed 2% of net investment returns above the established Total Fund benchmark.
- Reporting to the Board includes a risk metric.
 - Meketa's standard quarterly reports include Sharpe Ratio¹ calculations, which allow Trustees to evaluate the risk adjusted return in a portfolio (calculation in footnote; a higher number is more favorable). The 2-year Sharpe Ratio for the portfolio was 1.32% as of June 30, 2021, while the Sharpe Ratio for the benchmark was 1.23%. The Information Ratio for the Total Fund over the trailing 2-year period was 1.3. The Total Fund Standard Deviation was 10.28% over the trailing 2-year period, while the benchmark standard deviation was 9.86%.
 - The portfolio also remained within its Policy Target ranges for the period, with the exception of marketable equity, which stood at 37.8% at June 30, with a range of 39-49%. This partially reflected the current overweight to private equity relative to targets, in keeping with the total equity objective within the portfolio.

Summary

On June 30, 2021, WRS achieved a one-year return of 27.30%, compared to a benchmark return of 25.74% (as found in Meketa's final quarterly reporting). This performance ranks in the 39th percentile relative to peers for the period. *Over the relevant two year period, the fund returned 14.20%, compared to 12.81% for the benchmark, ranking in the 32nd percentile relative to peers.*

Following our review of the available data, it appears that Staff is eligible for 100% of their incentive compensation (prorated for newer employees) for the year ended June 30, 2021 based on two-year performance. It further appears that WRS has appropriately utilized the statute to calculate the incentive compensation that the investment staff are eligible for.

If you have questions, please feel free to contact us at (760) 795-3450.

MM/NE/pq

¹ The Sharpe ratio measures the performance of an investment compared to a risk-free asset, after adjusting for its risk. It is defined as the difference between the returns of the investment and the risk-free return, divided by the standard deviation of the investment.

Performance Compensation Model

Payout Based on Actual June 30, 2021 FYTD Returns

Vesting Schedule	25%	25%	50%
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<u>Title (See names in Column L)</u>	<u>% of Year Worked</u>	<u>Salary (as of period end date)</u>	<u>Max Potential Bonus (% of Salary)</u>	<u>Maximum Potential Bonus</u>	<u>Earned Payout</u>	<u>Year 1 Payout (25%)</u>	<u>Year 2 Payout (25%)</u>	<u>Year 3 Payout (50%)</u>
CIO	100%	\$ 250,000	100%	\$ 250,000	\$250,000	\$62,500	\$62,500	\$125,000
SIO #1	100%	\$ 189,000	75%	\$ 141,750	\$141,750	\$35,437	\$35,437	\$70,875
SIO #2	100%	\$ 189,000		\$ 141,750	\$141,750	\$35,437	\$35,437	\$70,875
SIO #3	100%	\$ 189,000		\$ 141,750	\$141,750	\$35,437	\$35,437	\$70,875
Junior Staff (3)		\$ 254,633		\$ 70,438	\$ 70,438	\$ 17,609	\$ 17,609	\$ 35,219
Team Total		\$ 1,071,632		\$ 745,687	\$ 745,687	\$ 186,422	\$ 186,422	\$ 372,843
Bonus as a % of \$ Alpha Produced (Informational. 2021 only)					0.50%	0.13%	0.13%	0.25%
\$ of Alpha for Each \$ of Bonus (Informational. 2021 only)					\$198	\$793	\$793	\$397

<u>Fiscal Year Portfolio Values</u>	<u>2020</u>	<u>2021</u>	<u>Combined</u>
Beginning	\$8,645,383,274	\$8,515,331,425	
Average	\$8,602,251,685	\$ 9,480,986,978	\$9,041,619,331
Ending	\$8,515,331,425	\$10,357,585,195	

Maximum Potential Bonus Pool	\$745,687
Maximum % of Alpha Available for Bonuses	2.0%
\$ Alpha Required to Earn Max Bonus	\$ 37,284,337 (Max Potential bonus pool) ÷ 2%
% Return Outperformance Equivalent	0.39% (\$ Alpha Required) ÷ (Average Portfolio Value)

<u>Actual Performance June 2021 FY</u>	<u>2020 Return</u>	<u>2021 Return*</u>	<u>2-Year Arithmetic Avg Return</u>	<u>2-Year Geometric Annualized Return</u>	(Informational only)
WRS performance	2.46%	27.30%	14.88%	14.20%	
Strategic Benchmark Performance	1.22%	25.74%	13.48%	12.81%	
Staff Value-Add (Outperformance)	1.24%	1.56%	1.40%	1.39%	

*2021 Trailing 1-Year returns only relevant for new hires (i.e. Ben W.)

Actual \$ Alpha (2021 year)	\$ 147,903,397 (Avg. Portfolio Value) x (Staff Value Add %)
\$ Alpha Required for Max Bonus	\$ 37,284,337
% of Maximum Bonus Calculation	397% (Estimated Alpha) ÷ (Required Alpha)
% of Max Bonus Target Earned	100% (Lesser of 100% and Formula)

Actual \$ Alpha (2020 year)	\$ 106,667,921 (Avg. Portfolio Value) x (Staff Value Add %)
\$ Alpha Required for Max Bonus	\$ 35,305,149
% of Maximum Bonus Calculation	302% (Estimated Alpha) ÷ (Required Alpha)
% of Max Bonus Target Earned	100% (Lesser of 100% and Formula)

Actual \$ Alpha over 2 years	\$ 253,165,341	Avg. Portfolio Value (E18) x Staff Value Add % (E29)
\$ Alpha Required for Max Bonus	\$ 72,589,486	2020 Required Alpha (B37) + 2021 Required Alpha (B32)
% of Maximum Bonus Calculation	349%	Actual Alpha (B41) ÷ Required Alpha (B42)
% of Max Bonus Target Earned	100%	Lesser of 100% and Formula (B43)

Overlay Performance Summary | As of June 30, 2021

	Market Value (\$)	QTD (%)	YTD (%)	1 Yr (%)	2 Yrs (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	S.I. (%)	S.I. Date
Total Fund with Overlay & FX	10,357,585,195	5.67	10.44	27.30	14.20	11.78	11.15	8.12	8.72	Feb-83
<i>Strategic Blended Benchmark</i>		<i>5.03</i>	<i>9.12</i>	<i>25.74</i>	<i>12.81</i>	<i>10.24</i>	<i>10.26</i>	<i>7.68</i>	<i>9.74</i>	<i>Feb-83</i>
Over/Under		0.64	1.32	1.56	1.39	1.54	0.89	0.44	-1.02	
<i>60% MSCI ACWI/ 40% Barclays Multiverse</i>		<i>4.99</i>	<i>5.99</i>	<i>23.83</i>	<i>13.07</i>	<i>10.73</i>	<i>9.88</i>	<i>6.98</i>	--	<i>Feb-83</i>
Total Fund with Overlay	10,348,304,118	5.68	10.13	27.55	14.32	11.83	11.24	8.16	8.73	Feb-83
<i>Strategic Blended Benchmark</i>		<i>5.03</i>	<i>9.12</i>	<i>25.74</i>	<i>12.81</i>	<i>10.24</i>	<i>10.26</i>	<i>7.68</i>	<i>9.74</i>	<i>Feb-83</i>
Over/Under		0.65	1.01	1.81	1.51	1.59	0.98	0.48	-1.01	
Total Fund	10,291,527,957	5.76	10.45	28.94	14.58	11.63	11.31	8.05	8.70	Feb-83
<i>Strategic Blended Benchmark</i>		<i>5.03</i>	<i>9.12</i>	<i>25.74</i>	<i>12.81</i>	<i>10.24</i>	<i>10.26</i>	<i>7.68</i>	<i>9.74</i>	<i>Feb-83</i>
Over/Under		0.73	1.33	3.20	1.77	1.39	1.05	0.37	-1.04	
Total Equity	4,805,050,376	6.91	15.39	42.61	20.73	--	--	--	19.95	Mar-19
<i>Total Equity Blended Benchmark</i>		<i>6.97</i>	<i>13.95</i>	<i>41.13</i>	<i>19.38</i>	--	--	--	<i>18.50</i>	<i>Mar-19</i>
Over/Under		-0.06	1.44	1.48	1.35				1.45	
Marketable Equity with Overlay and FX	3,915,827,995	6.21	12.89	39.54	19.56	14.47	14.35	9.24	10.24	Mar-86
<i>Marketable Equity Blended Index</i>		<i>6.68</i>	<i>12.72</i>	<i>39.77</i>	<i>18.67</i>	<i>14.01</i>	<i>14.48</i>	<i>9.83</i>	--	<i>Mar-86</i>
Over/Under		-0.47	0.17	-0.23	0.89	0.46	-0.13	-0.59		
Domestic Equity with Overlay	1,508,456,247	7.60	15.58	45.26	25.71	20.15	18.83	13.99	11.10	Apr-86
<i>Domestic Equity Blended Index</i>		<i>8.24</i>	<i>15.11</i>	<i>44.16</i>	<i>23.93</i>	<i>18.73</i>	<i>17.79</i>	<i>14.32</i>	--	<i>Apr-86</i>
Over/Under		-0.64	0.47	1.10	1.78	1.42	1.04	-0.33		

(1) Total Fund with Overlay and FX includes Mesirow Financial Currency Management from 7/1/2020 to present.

(2) Marketable Equity with Overlay and FX performance includes returns from Marketable Equity from inception through 2/28/2017.

(3) Domestic Equity with Overlay performance includes returns from Domestic Equity from inception through 6/30/2014.

(4) Developed International Equity with Overlay and FX includes Mesirow Financial Currency Management from 7/1/2020 to present, and returns from Developed International Equity with Overlay from 6/30/2014 through 2/28/2017, then Developed International Equity prior to 6/30/2014.

(5) Emerging Market Equity with Overlay and FX performance includes returns from the Emerging Equity with Overlay composite from 6/30/2014 through 2/28/2017, and Emerging Market Equity prior to 6/30/2014.

(6) Marketable Fixed Income with Overlay performance includes returns from Marketable Fixed Income from inception through 6/30/2014.

(7) Core Plus Fixed Income with Overlay performance includes returns from the Core Fixed Income composite from inception through 6/30/2014.

(8) US Government Debt with Overlay performance includes returns from the US Government Debt composite from inception through 6/30/2016.

Overlay Performance Summary | As of June 30, 2021

	Market Value (\$)	QTD (%)	YTD (%)	1 Yr (%)	2 Yrs (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	S.I. (%)	S.I. Date
Developed International Equity with Overlay and FX	1,685,068,990	4.75	11.20	31.27	14.35	10.01	10.93	--	8.43	Jan-13
<i>Developed International Equity Custom Index</i>		4.91	11.53	30.74	11.51	8.38	10.90	--	7.40	Jan-13
Over/Under		-0.16	-0.33	0.53	2.84	1.63	0.03		1.03	
Developed International Equity with Overlay	1,675,862,113	4.80	9.35	32.61	14.93	10.46	11.52	--	6.71	Jul-14
<i>Developed International Equity Custom Index</i>		4.91	11.53	30.74	11.51	8.38	10.90	--	5.32	Jul-14
Over/Under		-0.11	-2.18	1.87	3.42	2.08	0.62		1.39	
Emerging Market Equity with Overlay and FX	722,302,758	6.68	11.48	49.16	19.06	12.70	13.11	4.92	5.73	May-10
<i>MSCI Emerging Market IMI Net</i>		5.73	8.75	43.21	17.27	11.38	12.86	4.31	5.20	May-10
Over/Under		0.95	2.73	5.95	1.79	1.32	0.25	0.61	0.53	
Private Equity	889,222,381	9.98	28.04	57.29	28.25	23.83	18.39	--	--	
<i>Cambridge Associates Global All PE 1 Qtr Lag</i>		9.54	25.99	51.84	22.94	18.93	17.41	--	--	
Over/Under		0.44	2.05	5.45	5.31	4.90	0.98			
Total Fixed Income	2,082,520,058	3.05	3.27	7.97	7.06	--	--	--	8.05	Mar-19
<i>Total Fixed Income Blended Benchmark</i>		2.17	0.74	4.18	5.05	--	--	--	6.17	Mar-19
Over/Under		0.88	2.53	3.79	2.01				1.88	
Marketable Fixed Income with Overlay	1,646,280,379	1.94	-0.33	3.48	5.68	6.20	3.62	4.46	7.48	Mar-83
<i>Wyoming Custom Marketable Fixed Income Benchmark</i>		1.83	-0.93	1.18	4.30	5.21	2.96	3.84	7.00	Mar-83
Over/Under		0.11	0.60	2.30	1.38	0.99	0.66	0.62	0.48	
Core Plus Fixed Income with Overlay	548,408,017	1.11	-0.81	2.19	4.71	5.75	4.06	4.44	7.35	Mar-83
<i>Core Fixed Income Custom Benchmark</i>		1.83	-1.60	-0.33	4.10	5.34	3.49	4.00	7.04	Mar-83
Over/Under		-0.72	0.79	2.52	0.61	0.41	0.57	0.44	0.31	
US Government Debt with Overlay	833,671,229	2.07	-2.29	-3.18	3.46	4.79	2.17	--	2.57	Jun-16
<i>BBgBarc US Govt TR</i>		1.71	-2.51	-3.10	3.40	4.65	2.19	--	2.58	Jun-16
Over/Under		0.36	0.22	-0.08	0.06	0.14	-0.02		-0.01	

Overlay Performance Summary | As of June 30, 2021

	Market Value (\$)	QTD (%)	YTD (%)	1 Yr (%)	2 Yrs (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	S.I. (%)	S.I. Date
Opportunistic Credit	264,201,133	3.03	5.74	20.78	7.08	6.42	--	--	5.49	May-17
<i>50% BBgBarc US High Yield/ 50% Credit Suisse Leveraged Loans</i>		<u>2.09</u>	<u>3.55</u>	<u>13.53</u>	<u>5.95</u>	<u>5.91</u>	--	--	<u>5.28</u>	<u>May-17</u>
Over/Under		0.94	2.19	7.25	1.13	0.51			0.21	
Private Debt	436,239,679	7.50	20.17	30.16	9.96	7.06	8.96	9.47	10.98	Jul-09
<i>Blended Private Debt QTR Benchmark</i>		<u>4.27</u>	<u>11.29</u>	<u>23.96</u>	<u>9.21</u>	<u>8.40</u>	<u>9.89</u>	--	--	<u>Jul-09</u>
Over/Under		3.23	8.88	6.20	0.75	-1.34	-0.93			
Marketable Alternatives	2,002,480,135	6.09	8.21	28.21	13.79	11.66	11.26	--	7.67	Apr-14
<i>HFRI Fund of Funds Composite Index</i>		<u>2.89</u>	<u>4.97</u>	<u>18.32</u>	<u>9.01</u>	<u>6.33</u>	<u>6.13</u>	--	<u>4.17</u>	<u>Apr-14</u>
Over/Under		3.20	3.24	9.89	4.78	5.33	5.13		3.50	
Private Real Assets	1,015,773,400	5.78	13.91	20.83	6.21	6.63	8.12	8.07	6.75	Jan-09
<i>Vintage Year Blended Benchmark</i>		<u>6.81</u>	<u>13.97</u>	<u>22.28</u>	<u>4.52</u>	<u>5.40</u>	<u>7.97</u>	<u>8.54</u>	<u>6.48</u>	<u>Jan-09</u>
Over/Under		-1.03	-0.06	-1.45	1.69	1.23	0.15	-0.47	0.27	

Total Fund with Overlay and FX | As of June 30, 2021

Statistics Summary						
1 Year Ending June 30, 2021						
	Anlzd Return	Anlzd Standard Deviation	Information Ratio	Beta	Sharpe Ratio	Tracking Error
Total Fund with Overlay and FX	27.30%	7.10%	1.19	1.00	3.84	1.31%
Strategic Blended Benchmark	25.74%	6.98%	--	1.00	3.68	0.00%
2 Years Ending June 30, 2021						
	Anlzd Return	Anlzd Standard Deviation	Information Ratio	Beta	Sharpe Ratio	Tracking Error
Total Fund with Overlay and FX	14.20%	10.28%	1.30	1.04	1.32	1.07%
Strategic Blended Benchmark	12.81%	9.86%	--	1.00	1.23	0.00%
3 Years Ending June 30, 2021						
	Anlzd Return	Anlzd Standard Deviation	Information Ratio	Beta	Sharpe Ratio	Tracking Error
Total Fund with Overlay and FX	11.78%	9.83%	1.34	1.02	1.08	1.15%
Strategic Blended Benchmark	10.24%	9.56%	--	1.00	0.95	0.00%
5 Years Ending June 30, 2021						
	Anlzd Return	Anlzd Standard Deviation	Information Ratio	Beta	Sharpe Ratio	Tracking Error
Total Fund with Overlay and FX	11.15%	7.94%	0.83	1.02	1.27	1.07%
Strategic Blended Benchmark	10.26%	7.71%	--	1.00	1.19	0.00%
10 Years Ending June 30, 2021						
	Anlzd Return	Anlzd Standard Deviation	Information Ratio	Beta	Sharpe Ratio	Tracking Error
Total Fund with Overlay and FX	8.12%	8.36%	0.34	1.05	0.90	1.33%
Strategic Blended Benchmark	7.68%	7.84%	--	1.00	0.90	0.00%



CURTIS E. MEIER, JR.

WYOMING STATE TREASURER

DAWN A. WILLIAMS, DEPUTY STATE TREASURER

January 21, 2021

McGee, Hearne & Paiz, LLP
P.O. Box 1088
Cheyenne, Wyoming 82003

In connection with your engagement to perform, in accordance with attestation standards established by the American Institute of Certified Public Accountants, specified agreed-upon procedures with respect to the evaluation of the Performance Compensation Calculation Spreadsheet for compliance with the Investment Professional Performance Compensation Plan of the Wyoming State Treasurer's Office (the "STO") for the period of July 1, 2019 through June 30, 2020, we confirm, to the best of our knowledge and belief, the following representations made to you during the course of your engagement:

1. We understand that the STO has the responsibility for the evaluation of the Performance Compensation Calculation Spreadsheet for compliance with the Investment Professional Performance Compensation Plan for the period of July 1, 2019 through June 30, 2020.
2. We have obtained from all necessary parties agreement to the procedures and acknowledgment that the procedures are appropriate for their purposes.
3. We have made available to you all records and related data relevant to the evaluation of the Performance Compensation Calculation Spreadsheet for compliance with the Investment Professional Performance Compensation Plan for the period of July 1, 2019 through June 30, 2020 and the agreed-upon procedures.
4. There are no known matters contradicting the evaluation of the Performance Compensation Calculation Spreadsheet for compliance with the Investment Professional Performance Compensation Plan for the period of July 1, 2019 through June 30, 2020 nor any communication from regulatory agencies affecting the evaluation of the Performance Compensation Calculation Spreadsheet for compliance with the Investment Professional Performance Compensation Plan for the period of July 1, 2019 through June 30, 2020.
5. We have no knowledge of any material misstatements in the Performance Compensation Calculation Spreadsheet of the STO for the period of July 1, 2019 through June 30, 2020.
6. We have disclosed to you all known events subsequent to June 30, 2020 that would have a material effect on the evaluation of the Performance Compensation Calculation Spreadsheet for compliance with the Investment Professional Performance Compensation Plan for the period of July 1, 2019 through June 30, 2020.
7. There has been no knowledge of fraud or suspected fraud affecting the STO involving:
 - a. Management.
 - b. Employees who have significant roles in internal control.
 - c. Others where fraud could have a material effect on the evaluation of the Performance Compensation Calculation Spreadsheet for compliance with the Investment Professional Performance Compensation Plan for the period of July 1, 2019 through June 30, 2020.

8. We acknowledge our responsibility for the design and implementation of programs and controls to provide reasonable assurance that fraud is prevented and detected.
9. We have no knowledge of any allegations of fraud or suspected fraud affecting the STO received in communications from employees, former employees, analysts, regulators, short sellers or others.
10. We have responded fully to all inquiries made to us by you during your engagement.
11. During the course of your engagement, you may have accumulated records containing data that should be reflected in our books and records. All such data have been so reflected. Accordingly, copies of such records in your possession are no longer needed by us.

WYOMING STATE TREASURER'S OFFICE

Matt Sackett

Matt Sackett
Senior Policy Advisor

Dawn Williams

Dawn Williams
Deputy State Treasurer

WYOMING STATE TREASURER'S OFFICE

REPORT ON AGREED-UPON PROCEDURES
FOR EVALUATING THE
PERFORMANCE COMPENSATION CALCULATION SPREADSHEET

FOR THE PERIOD
JULY 1, 2019 – JUNE 30, 2020

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INDEPENDENT ACCOUNTANT'S REPORT ON AGREED-UPON PROCEDURES

To Management
Wyoming State Treasurer's Office
Cheyenne, Wyoming

We have performed the procedures as described in the accompanying Description of Procedures, Findings, and Observations on the Performance Compensation Calculation Spreadsheet for the period July 1, 2019 through June 30, 2020. The Wyoming State Treasurer's Office (the "STO") is responsible for the Performance Compensation Calculation Spreadsheet for the period July 1, 2019 through June 30, 2020.

The STO has agreed to and acknowledged that the procedures performed are appropriate to meet the intended purpose of evaluating the Performance Compensation Calculation Spreadsheet for compliance with the Investment Professional Performance Compensation Plan. This report may not be suitable for any other purpose. The procedures performed may not address all the items of interest to a user of this report and may not meet the needs of all users of this report and, as such, users are responsible for determining whether the procedures performed are appropriate for their purposes.

The procedures we performed and the accounts and items to which they pertained, as well as our findings relative thereto, are set forth in the accompanying Description of Procedures, Findings, and Observations, which is an integral part of this report.

We were engaged by the STO to perform this agreed-upon procedures engagement and conducted our engagement in accordance with attestation standards established by the American Institute of Certified Public Accountants. We were not engaged to and did not conduct an examination or review engagement, the objective of which would be the expression of an opinion or conclusion, respectively, on the Performance Compensation Calculation Spreadsheet for the period July 1, 2019 through June 30, 2020. Accordingly, we do not express such an opinion or conclusion. Had we performed additional procedures, other matters might have come to our attention that would have been reported to you.

We are required to be independent of the STO and to meet our other ethical responsibilities, in accordance with the relevant ethical requirements related to our agreed-upon procedures engagement.

This report is intended solely for the information and use of the management of the STO, and is not intended to be, and should not be, used by anyone other than the specified party.

McLee, Hearne & Paiz, LLP

Cheyenne, Wyoming
January 21, 2021

WYOMING STATE TREASURER'S OFFICE

DESCRIPTION OF PROCEDURES, FINDINGS, AND OBSERVATIONS For Calculation of Performance Compensation

This report describes the procedures that were performed, as well as our findings and observations.

The agreed-upon procedures date, June 30, 2020, and agreed-upon procedures period, July 1, 2019 through June 30, 2020, were selected by the management of the Wyoming State Treasurer's Office (the "STO").

The procedures requested to be performed did not include verification of the accuracy of the source data utilized throughout the documents referenced below.

- A. We obtained the performance compensation calculation spreadsheet (the "Spreadsheet") from the STO for the period July 1, 2019 through June 30, 2020 (the "PCP working File MHP" dated November 20, 2020).

We reviewed the "MV's," "Real Estate," "Hedge Funds," "Equities," "Fixed Income," "Total Fund" and "PCP Pay Calcs" tabs within the Spreadsheet and ensured that:

1. All alphas, averages, percentages and totals recalculated.

On the "Total Fund" tab, we identified that the Analyst 2's "Maximum Potential of Bonus" and "50% for Total Fund First Half" in cells D11 and E11, respectively, were not included in the total of all positions in cells D12 and E12. However, we noted that proper inclusion of the balances did not change the total performance compensation calculated within the spreadsheet. This exception was also identified through the STO's internal review and communicated to us on December 7, 2020. No other exceptions were found as a result of applying this procedure.

We received a revised Spreadsheet from the STO on December 17, 2020, noting that the errors identified above had been corrected.

2. All percentages applied to dollar balances recalculated.

No exceptions were found as a result of applying this procedure.

3. All linked cells appeared reasonable based on the character description.

On the "Equities" tab, we identified that the "Estimated \$ Alpha" in cells G31 and H31 improperly linked to cells H20 and I20, respectively, as opposed to the proper cells of G20 and H20. However, we noted that proper linking of the balances did not change the total performance compensation calculated within the Spreadsheet. This exception was also identified through the STO's internal review and communicated to us on December 15, 2020. No other exceptions were found as a result of applying this procedure.

We received a revised Spreadsheet from the STO on December 17, 2020, noting that the errors identified above had been corrected.

WYOMING STATE TREASURER'S OFFICE

DESCRIPTION OF PROCEDURES, FINDINGS, AND OBSERVATIONS For Calculation of Performance Compensation

- B. We obtained the Investment Professional Performance Compensation Plan (the "PCP"), effective January 1, 2020, from the STO.

We reviewed the following provisions of the PCP to determine that they were appropriately reflected in the "MV's," "Real Estate," "Hedge Funds," "Equities," "Fixed Income," "Total Fund" and "PCP Pay Calcs" tabs of the Spreadsheet:

1. Section 3.02 of the PCP states that performance compensation shall be determined based upon investment performance for the investment period in which the participating employee was hired, pro-rated for the employee's months of employment.

No exceptions were found as a result of applying this procedure.

2. Section 4.01 of the PCP states that the determination of whether investment performance has exceeded established investment benchmarks is weighed as follows: fifty percent (50%) based on the Total Fund Performance and fifty percent (50%) based on the Participating Employee's individual Assigned Asset Class Performance.

No exceptions were found as a result of applying this procedure.

3. Section 4.01.01 of the PCP states that performance shall be calculated to the nearest 1/10th of a basis point.

On the "MV's" tab, we noted that performance (i.e., Alpha %) was not calculated to the nearest 1/10th of a basis point within the Spreadsheet. When properly calculated to the nearest 1/10th of a basis point, the performance compensation for the Senior Investment Officer 1 increased \$12.41 and the performance compensation for the Senior Investment Officer 2 increased \$85.61, for a total increase of \$98.02.

We received a revised spreadsheet from the STO on December 17, 2020, noting that the errors identified above had been corrected.

4. Section 4.02 of the PCP states that the maximum performance compensation that may be earned in any given investment period for each participating employee shall not exceed the following:

<u>Eligible Employee Position</u>	<u>Maximum Performance Compensation</u>
Chief Investment Officer	One Hundred Percent (100%) of Base Salary
Senior Investment Officer	Seventy-Five Percent (75%) of Base Salary
Investment Officer	Fifty Percent (50%) of Base Salary
Senior Analyst	Twenty-Five Percent (25%) of Base Salary
Analyst	Twenty-Five Percent (25%) of Base Salary

No exceptions were found as a result of applying this procedure.

WYOMING STATE TREASURER'S OFFICE

DESCRIPTION OF PROCEDURES, FINDINGS, AND OBSERVATIONS For Calculation of Performance Compensation

5. Section 4.02 of the PCP states that total payments to all participating employees for performance compensation earned in a given investment period shall not exceed two percent (2%) of the net investment returns above the established benchmark of the total fund for that investment period and two percent (2%) of the net investment returns above the established benchmark of the participating employee's assigned asset class. The amount of outperformance needed to achieve maximum performance compensation payout for any given investment period shall be determined by dividing the aggregate total of maximum performance compensation for each participating employee by two percent (2%).

No exceptions were found as a result of applying this procedure.

6. Section 4.04 of the PCP states that payments of performance compensation for Fiscal Year 2020, if any, shall be based upon investment performance measurement beginning July 1, 2019 and ending June 30, 2020.

No exceptions were found as a result of applying this procedure.

7. Appendix A of the PCP states the following individual portfolio assignments:

Effective July 1, 2019

Chief Investment Officer	Fixed Income
Senior Analyst	Fixed Income
Senior Investment Officer	Alternatives
Senior Investment Officer	50% Fixed Income, 50% Public Equity
Analyst	50% Fixed Income, 50% Public Equity
Analyst	Public Equity

Effective August 1, 2019

Senior Investment Officer	50% Total Fund, 50% Public Equity
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Effective January 1, 2020

Chief Investment Officer	50% Total Fund, 50% Fixed Income
Senior Analyst	50% Total Fund, 50% Fixed Income
Senior Investment Officer	50% Total Fund, 50% Hedge Funds
Senior Investment Officer	50% Total Fund, 50% Real Estate
Analyst	100% Total Fund
Analyst	50% Total Fund, 50% Public Equity

No exceptions were found as a result of applying this procedure.



CURTIS E. MEIER, JR.
WYOMING STATE TREASURER

DAWN A. WILLIAMS, DEPUTY STATE TREASURER

December 29, 2021

McGee, Hearne & Paiz, LLP
P.O. Box 1088
Cheyenne, Wyoming 82003

In connection with your engagement to perform, in accordance with attestation standards established by the American Institute of Certified Public Accountants, specified agreed-upon procedures with respect to the evaluation of the Performance Compensation Calculation Spreadsheet for conformance with the Investment Professional Performance Compensation Plan of the State of Wyoming, State Treasurer's Office (the STO) for the year ended June 30, 2021 we confirm, to the best of our knowledge and belief, the following representations made to you during the course of your engagement:

1. We understand that the STO has the responsibility for the evaluation of the Performance Compensation Calculation Spreadsheet for conformance with the Investment Professional Performance Compensation Plan for the year ended June 30, 2021.
2. We acknowledge that the procedures performed during your engagement are appropriate for the intended purpose of the engagement.
3. We have made available to you all records and related data relevant to the evaluation of the Performance Compensation Calculation Spreadsheet for conformance with the Investment Professional Performance Compensation Plan for the year ended June 30, 2021 and the agreed-upon procedures.
4. There are no known matters contradicting the evaluation of the Performance Compensation Calculation Spreadsheet for conformance with the Investment Professional Performance Compensation Plan for the year ended June 30, 2021 nor any communication from regulatory agencies affecting the evaluation of the Performance Compensation Calculation Spreadsheet for conformance with the Investment Professional Performance Compensation Plan for the year ended June 30, 2021.
5. We have no knowledge of any material misstatements in the Performance Compensation Calculation Spreadsheet of the STO for the year ended June 30, 2021.
6. There are no known events subsequent to June 30, 2021 that would have a material effect on the evaluation of the Performance Compensation Calculation Spreadsheet for conformance with the Investment Professional Performance Compensation Plan for the year ended June 30, 2021.
7. There has been no knowledge of fraud or suspected fraud affecting the STO involving:
 - a. Management.
 - b. Employees who have significant roles in internal control.
 - c. Others where fraud could have a material effect on the evaluation of the Performance Compensation Calculation Spreadsheet for conformance with the Investment Professional Performance Compensation Plan for the year ended June 30, 2021.



CURTIS E. MEIER, JR.
WYOMING STATE TREASURER

DAWN A. WILLIAMS, DEPUTY STATE TREASURER

8. We acknowledge our responsibility for the design and implementation of programs and controls to provide reasonable assurance that fraud is prevented and detected.
9. We have no knowledge of any allegations of fraud or suspected fraud affecting the STO received in communications from employees, former employees, analysts, regulators, short sellers or others.
10. We have responded fully to all inquiries made to us by you during your engagement.
11. During the course of your engagement, you may have accumulated records containing data that should be reflected in our books and records. All such data have been so reflected. Accordingly, copies of such records in your possession are no longer needed by us.

STATE OF WYOMING, STATE TREASURER'S OFFICE

Matt Sackett

Matt Sackett
Senior Policy Advisor

Dawn Williams

Dawn Williams
Deputy State Treasurer

**STATE OF WYOMING,
STATE TREASURER'S OFFICE**

**REPORT ON AGREED-UPON PROCEDURES
ON THE
PERFORMANCE COMPENSATION CALCULATION SPREADSHEET**

**FOR THE YEAR ENDED
JUNE 30, 2021**

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INDEPENDENT ACCOUNTANT'S REPORT ON AGREED-UPON PROCEDURES

To Management
State of Wyoming, State Treasurer's Office
Cheyenne, Wyoming

We have performed the procedures as described in the accompanying Description of Procedures, Findings, and Observations on the evaluation of the Performance Compensation Calculation Spreadsheet for conformance with the Investment Professional Performance Compensation Plan of the State of Wyoming, State Treasurer's Office (the STO) for the year ended June 30, 2021. The STO is responsible for the Performance Compensation Calculation Spreadsheet for the year ended June 30, 2021.

The STO has agreed to and acknowledged that the procedures performed are appropriate to meet the intended purpose of evaluating the Performance Compensation Calculation Spreadsheet for conformance with the Investment Professional Performance Compensation Plan of the STO. This report may not be suitable for any other purpose. The procedures performed may not address all the items of interest to a user of this report and may not meet the needs of all users of this report and, as such, users are responsible for determining whether the procedures performed are appropriate for their purposes.

The procedures we performed and the associated findings are set forth in the accompanying Description of Procedures, Findings, and Observations, which is an integral part of this report.

We were engaged by the STO to perform this agreed-upon procedures engagement and conducted our engagement in accordance with attestation standards established by the American Institute of Certified Public Accountants. We were not engaged to and did not conduct an examination or review engagement, the objective of which would be the expression of an opinion or conclusion, respectively, on the evaluation of the Performance Compensation Calculation Spreadsheet for conformance with the Investment Professional Performance Compensation Plan of the STO for the year ended June 30, 2021. Accordingly, we do not express such an opinion or conclusion. Had we performed additional procedures, other matters might have come to our attention that would have been reported to you.

We are required to be independent of the STO and to meet our other ethical responsibilities, in accordance with the relevant ethical requirements related to our agreed-upon procedures engagement.

This report is intended solely for the information and use of the management of the STO, and is not intended to be, and should not be, used by anyone other than the specified party.

McLee, Hearne & Paiz, LLP

Cheyenne, Wyoming
December 29, 2021

STATE OF WYOMING, STATE TREASURER'S OFFICE

DESCRIPTION OF PROCEDURES, FINDINGS, AND OBSERVATIONS ON THE PERFORMANCE COMPENSATION CALCULATION SPREADSHEET

This report describes the procedures that were performed, as well as our findings and observations.

The procedures requested to be performed do not include verification of the accuracy of the source data utilized throughout the documents referenced below.

- A. We obtained the Performance Compensation Calculation Spreadsheet (the Spreadsheet) from the State of Wyoming, State Treasurer's Office (the STO) for the year ended June 30, 2021.

We reviewed the market value, asset class, and pay calculation tabs within the Spreadsheet and ensured that:

1. All alphas, averages, percentages, and totals recalculated.

No exceptions were found as a result of applying this procedure.

2. All percentages applied to dollar balances recalculated.

No exceptions were found as a result of applying this procedure.

3. All linked cells appeared reasonable based on the character description.

On the "Total Fund" tab, we noted the 'FY21 Estimated Returns Above/Below Benchmark Total,' which links to the "PCP TF month avg" tab, was calculated differently as compared to the prior year. The prior-year calculation utilized the sum of the rounded alphas (\$) for each of the 12 months for the year ended June 30, 2020, whereas in the current-year calculation, only five (5) data points were utilized, which encompassed all 12 months for the year ended June 30, 2021. Per our discussions with STO personnel, this is the result of fewer data points being provided to the STO by the applicable investment managers for the year ended June 30, 2021. As the STO was unable to utilize the same methodology as was utilized in the prior year, a '1-year alpha (\$)' was utilized by multiplying the one-year alpha (%) by the average market value. As the number of data points provided to the STO may not be consistent from year to year, we recommend that the STO continue to utilize the '1-year alpha (\$)' methodology in order to produce consistent results from year to year.

On the "Opportunistic funds" tab, we identified that the 'FY21 Total Average Market Value' in cell E12 was not properly linked to the corresponding balance in cell Q34 on the "MV's" tab. As no employees were assigned to this asset class in the current year, there was no impact on the calculations. No other exceptions were found as a result of applying this procedure. We received a revised spreadsheet from the STO on November 24, 2021, noting that the error identified above had been corrected.

STATE OF WYOMING, STATE TREASURER'S OFFICE

DESCRIPTION OF PROCEDURES, FINDINGS, AND OBSERVATIONS ON THE PERFORMANCE COMPENSATION CALCULATION SPREADSHEET

- B. We obtained the Investment Professional Performance Compensation Plan (PCP), effective January 1, 2020, from the STO.

We reviewed the following provisions of the PCP to determine that they were appropriately reflected in the market value, asset class and pay calculation tabs of the Spreadsheet:

1. Section 3.02 of the PCP states that performance compensation shall be determined based upon investment performance for the investment period in which the participating employee was hired, prorated for the employee's months of employment.

No exceptions were found as a result of applying this procedure.

2. Section 4.01 of the PCP states that the determination of whether investment performance has exceeded established investment benchmarks is weighed as follows: fifty percent (50%) based on the Total Fund Performance and fifty percent (50%) based on the Participating Employee's individual Assigned Asset Class Performance.

No exceptions were found as a result of applying this procedure.

3. Section 4.01.01 of the PCP states that performance shall be calculated to the nearest 1/10th of a basis point.

No exceptions were found as a result of applying this procedure.

4. Section 4.02 of the PCP states that the maximum performance compensation that may be earned in any given investment period for each participating employee shall not exceed the following:

Eligible Employee Position	Maximum Performance Compensation
Chief Investment Officer	One Hundred Percent (100%) of Base Salary
Senior Investment Officer	Seventy-Five Percent (75%) of Base Salary
Investment Officer	Fifty Percent (50%) of Base Salary
Senior Analyst	Twenty-Five Percent (25%) of Base Salary
Analyst	Twenty-Five Percent (25%) of Base Salary

No exceptions were found as a result of applying this procedure.

However, per our discussions with STO personnel and review of the "PCP Pay Calcs" tab, we noted that the calculated payments for the year ended June 30, 2020 have not been rounded consistently. The first payments made in December 2020 were rounded to the nearest penny, whereas the second payments made in July 2021 were rounded to the nearest dollar. In order to ensure the total payments agree to the total compensation amounts approved, we recommend that the third and final payments to be paid in July 2022 be in amounts that will ensure the summation of all three payments agree to the total amounts approved.

STATE OF WYOMING, STATE TREASURER'S OFFICE

DESCRIPTION OF PROCEDURES, FINDINGS, AND OBSERVATIONS ON THE PERFORMANCE COMPENSATION CALCULATION SPREADSHEET

5. Section 4.02 of the PCP states that total payments to all participating employees for performance compensation earned in a given investment period shall not exceed two percent (2%) of the net investment returns above the established benchmark of the total fund for that investment period and two percent (2%) of the net investment returns above the established benchmark of the participating employee's assigned asset class. The amount of outperformance needed to achieve maximum performance compensation payout for any given investment period shall be determined by dividing the aggregate total of maximum performance compensation for each participating employee by two percent (2%).

No exceptions were found as a result of applying this procedure.

6. Section 4.04 of the PCP states that payments of performance compensation for fiscal year 2021, if any, shall be based upon the arithmetic average of the investment performance measurement beginning on July 1, 2019 and ending on June 30, 2020, and the investment performance measurement beginning on July 1, 2020 and ending on June 30, 2021.

No exceptions were found as a result of applying this procedure.

7. Appendix A of the PCP states the following individual portfolio assignments:

Effective July 1, 2020 through June 30, 2021

Patrick Fleming	Chief Investment Officer	50% Total Fund, 50% Fixed Income
Kalib Simpson	Senior Analyst	50% Total Fund, 50% Fixed Income
Matt Smagacz	Senior Investment Officer	50% Total Fund, 50% Hedge Funds
Robin Preston	Senior Investment Officer	50% Total Fund, 50% Real Estate
Mahdi Chahkandi	Analyst	100% Total Fund
Seth Consoliver	Analyst	50% Total Fund, 50% Public Equity
Feng Zhang	Senior Investment Officer	50% Total Fund, 50% Public Equity

No exceptions were found as a result of applying this procedure.

Appendix D

MEMORANDUM OF EXCLUDED INVESTMENTS

Public Purpose Investments

The State Treasurer's Office will exclude all public purpose investments from the return calculation based on Wyo. Stat. 9-1-409(e)(v)(A)(I), which excludes "Funds invested for a specific public purpose."

Private Equity and Real Estate

The Office will also exclude all current private equity and non-core real estate, except for the SCORE+ fund from the return calculation based on Wyo. Stat. 9-1-409(e)(v)(A)(II) which excludes "'Investments specifically directed by the state treasurer or state loan and investment board and not made at the recommendation of participating employees."

Private Equity

Our private equity holdings consist of Access Venture Partners II, Cheyenne Capital, Hamilton Lane, and Neuberger Berman Sauger Fund. We will exclude our legacy private equity managers based on Wyo. Stat. 9-1-409(e)(v)(A)(II), as none of these investments were recommended by participating employees, and all were directed by the State Treasurer or State Loan and Investment Board. In the case of Cheyenne Capital, this investment was initiated in 2003.

Real Estate – Core and Non-Core

Our real estate universe can be divided into core and non-core holdings. For the majority of our holdings this distinction is relatively straightforward - UBS and Clarion are core, whilst M&G, Northwood, WestRiver and the handful of other smaller funds are non-core.

In theory, the open-ended funds can be redeemed at our discretion, so by choosing not to redeem them, we are implicitly accepting their presence within the portfolio. Conversely, the closed ended funds cannot be redeemed. Instead the positions would have to be sold in the secondary market, likely at a considerable discount.

Many of our current non-core funds were not selected by participating employees. Also several of these funds have returns that do not reflect their benchmarks - an example of this would be the M&G investment due to its sterling-denomination. As per Wyo. Stat. 9-1-409(e)(v)(A)(II) , this exposure will therefore be excluded from any performance calculations for the group, as none of these investments were recommended by participating employees, and all were directed by the State Treasurer or State Loan and Investment Board.

The one exception to this would be the SCORE+ fund managed by SC Capital. Unlike the other non-core holdings, the decision to invest in this investment was made by the existing investment team, so its performance (whether positive or negative) should also be attributed to the team.

Wyoming Retirement System Historical Tactical Trade Record (as of 6/6/2022)									
Trade #	Dates	Max Notional Exposure (one side, \$MM)	Type	Long Position	Short Position	Profit / Loss (\$MM)	Earned Since 7/1/2019 (Start of Per. Comp)	Est. Impact on Annualized 3-year Return	
Overlay Tactical Trades (all have been realized)									
1	5/15/2014 - 10/2/2014	\$380	Hedge	UST 30 Yr	UST 2 Yr	\$9.3			
2	12/17/2014 - 5/29/2015	\$450	Hedge	UST 2 Yr	UST 30 Yr	\$15.5			
3	5/29/2015 - 6/15/2015	\$400	Hedge	UST 2 Yr	German Bund 30 Yr (50%) / Italian 10 Yr (50%)	\$22.0			
4	7/1/2015 - 8/11/2015	\$400	Hedge	UST 2 Yr	UST 30 Yr (50%) / German Bund 30 Yr (50%)	-\$26.3			
5	9/3/2015 - 10/14/2015	\$200	Opportunistic	S&P Oil & Gas	S&P 500	\$6.0			
6	8/16/2016 - 10/8/2018*	\$200	Opportunistic / Hedge	UST 10 Yr	Italian Gov 10 Yr	-\$5.4			
7	8/9/2017 - 8/9/2019**	\$300	Hedge	Gold Futures	UST 2 Yr / DXY	\$28.3	\$7.9	0.03%	
REALIZED GAIN						\$49.4	\$7.9	0.03%	
						Total Portfolio Annualized Alpha		1.68%	
						Total Portfolio Alpha Net of Tactical Trade P&L		1.65%	
Physical Trade (Technically, not a Tactical Trade)									
1	10/18/21	\$57	Opportunistic	Uranium	N/A	\$1.9	\$1.9		
Total Gain						\$51.3	\$9.8	0.03%	
						Total Portfolio Annualized Alpha		1.68%	
						Total Portfolio Alpha Net of Tactical Trade P&L		1.65%	
* \$100MM was liquidated on 5/23/18									
** Short position changed from the UST 2 Yr (\$300MM) to the DXY (\$100MM) on 3/22/19. One half of the gold position was liquidated on 6/27/19, with the \$100MM DXY short position remaining in place. The trade was fully unwound on 8/9/19.									
Fund Leverage (\$, Mil.)									
Total Fund Leverage		0.58%	Up to 5.0% leverage is permitted.						
Days outstanding		40	From 7/1/2019-8/9/2019.						