OREGON STATE TREASURY

Tobias Read
State Treasurer

Darren Bond
Deputy State Treasurer

February 7, 2019

The Honorable Senator Peter Courtney
The Honorable Representative Tina Kotek
900 Court Street NE
H-178 State Capitol
Salem, OR 97301

Dear Senate President Peter Courtney and Speaker Tina Kotek:

I am pleased to present this progress report regarding the Legislatively-approved expansion of technology and staff capacity at the Oregon State Treasury Investment Division.

Nature of the Request

The Oregon State Treasury requests acknowledgement of this report as requested in the budget note attached to 2017 Senate Bill 5541 (Chapter 605, 2017 Laws):

> *Budget Note*
> The State Treasury reported to the Legislature in 2017 "Enabling more internal management by investing in Investment Management Program resources will reduce overall costs and likely provide improved net return to the funds under management." State Treasury is directed to report to the Legislature in 2019 on the actual cost savings and increased net investment returns derived from the Legislature's investments in the Investment Division and the general administration of the agency as well as produce a feasibility study supporting continued investment in the Investment Division.

Budget Report

Our early results are positive and promising. We have improved data integrity and internal processes. Funds under Treasury management, including the Public Employees Retirement Fund, are benefitting from higher net performance, as a result of reduced fees, and also from stronger returns generated to date by internal management of certain portfolios.

350 Winter St NE, Suite 100
Salem, OR 97301-3896
503.378.4000
oregon.treasurer@ost.state.or.us
oregon.gov/treasury

The Oregon State Treasury and Oregon Investment Council (OIC) asked the Legislature in 2015 and 2017 to authorize additional technology and staff expertise for the Investment Division. Earlier in the decade, reviews and audits showed Treasury was highly under-resourced in several facets of the investment operation, compared to peers. As a result, the OIC said additional capacity would be necessary to maintain in-house management of investments. In 2017, the Legislature approved my budget request and authorized a significant investment in our internal capacity.

The phased modernization of the investment division includes technology and staff to improve compliance and legal capacity, risk mitigation resources, and data integrity systems, all of which are essential for the proper fiduciary oversight of state-managed assets in increasingly volatile global markets.

The bottom line: Treasury is better protecting the financial position of the portfolio, resulting in stronger net performance of the Oregon Public Employees Retirement Fund and Oregon Short Term Fund, in particular.

The highlights:

- The new risk mitigation and analytical capacity has helped to uncover significant reporting discrepancies by external service providers, dating back years. These ongoing diligence efforts led to a one-time material increase in OPERF performance for the second quarter of 2016. Had this gone undiscovered, understated performance and valuations could have resulted in incorrect participant crediting rates and a negative impact on the pension fund's funded status.

- With new staff and technology capacity in place, Treasury was able to maintain its existing insourced investment management program. Also, management of additional assets is shifting in house, including both public equities (stocks) and fixed income (bonds). In September 2018, Treasury was managing roughly $30 billion internally, an increase of $10 billion from September 2016.

- These custom internal strategies cost less to operate and also have achieved higher returns compared to index fund benchmarks, to date.

- The net financial benefit to the Public Employees Retirement Fund has been $165 million, from 2016 to 2018, with $16 million due to reduced net fees and $149 million from investment outperformance compared to benchmarks.

- Investors in the Oregon Short Term Fund have seen a benefit of about $275 million in savings and performance value add during the same span.

Additional investments in Treasury operations will facilitate further insourcing, in those parts of the investment portfolio where it makes financial and strategic sense to do so.

Action Requested

The Oregon State Treasury requests acknowledgement of this report as requested in the budget note attached to 2017 Senate Bill 5541 (Chapter 605, 2017 Laws).

Legislation Affected

None.

Thank you for your interest in Treasury's investment operation. Please contact my office if you have additional questions.

Sincerely,

Tobias Read

Attachment: 2019 BUDGET DRAFT

Budget Report– SB 5541 2017 Session
The State Treasury reported to the Legislature in 2017

"Enabling more internal management by investing in Investment Management Program resources will reduce overall costs and likely provide improved net return to the funds under management."

State Treasury is directed to report to the Legislature in 2019 on the actual cost savings and increased net investment returns derived from the Legislature's investments in the Investment Division and the general administration of the agency as well as produce a feasibility study supporting continued investment in the Investment Division.

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Executive Summary

The goal of the Treasurer and staff at the Oregon State Treasury ("OST") is fiduciary excellence with a focus on earning positive and sustainable risk-adjusted returns on Oregon's investments while running an efficient, cost effective organization.

Summary Background

In August 2014, the Oregon Investment Council ("OIC") formally approved OST's recommendation to pursue an enhanced integrated investment, operating, staffing and risk management solution. The recommendation was based on a series of internal audits and independent studies all of which concluded that then prevailing staffing levels, investment processes and technology limitations introduced unacceptable levels of investment and operating risk. The internal audits and independent studies included the following recommendations:

- Address deficiencies, including operating and risk management shortcomings;
- Build an investment management platform based on leading industry practices with sufficient flexibility to quickly and adequately respond to OIC- or legislatively-approved changes in strategic direction;
- Mitigate potential investment and operational risks that may lead to reputational damage and/or monetary losses;
- Enable transformational change to elevate Oregon's investment program to a level comparable to leading peer organizations and other successful, institutional-quality asset managers;
- Improve information transparency to support staff analysis and improve decision making; and
- Enhance the OIC's ability to fulfill its fiduciary responsibilities by producing timely reports and accurate data analytics.

Actions Taken

Based on these recommendations, OST asked the Legislature in 2015 and 2017 to authorize expenditures on infrastructure and additional personnel for the Investment Division with the goals of meeting the OIC's fiduciary obligations while simultaneously building out more robust, transparent and comprehensive due diligence and risk management capabilities in order to better manage the state's $100+ billion investment program.

Legislative appropriations in those two sessions paved the way for Treasury to invest in portfolio management tools, technology, and additional staff which in turn expanded OST capacity in the following areas:

- control and governance;
- legal and compliance;
- risk mitigation; and
- data integrity.

Results

As a result of these new resources and the successful implementation thereof, OST is in a better position to enhance portfolio safeguards as well as improve the financial position and risk management of state-managed assets. Additionally, infrastructure improvements have also led to fee savings, and improved net performance for both the Oregon Public Employees Retirement Fund (OPERF) and the Oregon Short Term Fund (OSTF) as highlighted below.

Operational Impact – Data Quality and Controls
New risk mitigation and data analytic capabilities have helped uncover significant reporting errors by external service providers. In some cases, these errors date back several years. The recent identification and rectification of reporting errors led to a one-time, material adjustment that increased OPERF investment performance from 0.26% to 1.39% in the second quarter of 2016. Had this particular discrepancy gone undiscovered, investment performance and fund valuation would have been understated resulting in erroneous participant crediting rates and an inaccurate measure of the pension plan's funded status. The overall estimated impact equated to more than **$790 million**.

Internal Management – Cost Savings and Performance Value-Add
With new staff, technology, and portfolio management capacity in place, Treasury has been able to enhance its existing internal investment management program. As of September 2018, Treasury was managing roughly $30 billion internally, an increase of $10 billion from September 2016. These internal management activities include custom investment strategies that cost less to operate than externally-sourced analogues, and have achieved higher returns when compared to index fund benchmarks.

- The net financial benefit of internal management to OPERF has been **$165 million**, from 2016 to 2018, with $16 million due to reduced fees and $149 million attributable to investment outperformance compared to benchmarks.

- Investors in the OSTF have realized a benefit of approximately **$275 million** in fee savings ($39 million) and performance value-add ($236 million) during the same span.

Future State
Given the benefits realized from additional staff and infrastructure investments, further increases in Treasury resources (staff and infrastructure) would enable still more advances to internal management capabilities in select areas of the State's overall investment portfolio where internal management is cost- and competitively-advantaged. Strategically adding capacity in other targeted areas could also reduce reliance on external consultants while reducing costs (consulting and external management fees) at the same time.

Background

In August 2014, the OIC formally approved a recommendation from the Oregon State Treasury ("OST") to pursue the acquisition and implementation of an enhanced and integrated investment, operating, staffing and risk management solution. The recommendation was based on a series of internal audits and independent studies which concluded that then-prevailing limitations in staffing, investment processes and technology introduced unacceptable levels of investment and operating risk. These deficiencies endangered the preservation and productivity of the State's now $100+ billion investment program which includes the Oregon Public Employee Retirement System Fund (OPERF), the Common School Fund, the State Accident Insurance Fund and several other state agency and local government funds invested either as separate accounts or through commingled participation in the Oregon Short Term Fund (OSTF) or Oregon Intermediate Term Pool (OITP).

OST retained the consulting firm Cutter Associates (Cutter) to develop a future state operating model and supporting business case. To ensure that Cutter's work was sufficiently rigorous and independent, OST also retained consultants Deloitte and Wilshire Associates to simultaneously review OST investment operations, and validate that all then-current assessments accurately captured key future state requirements on a systems-agnostic basis. This approach ensured that the recommended strategy and systems configuration would address all identified risks and operational gaps rather than become a "solution in search of a problem."

With support and leadership from Legislators and the OIC, Treasury began a multi-pronged campaign to mitigate identified investment, operating, and risk management deficiencies beginning in late 2015 with the successful implementation and activation of the Aladdin platform - a best-in-class trading, portfolio management, and risk management platform.

Subsequently, legislative approval of the Treasurer's 2017-2019 biennium budget request nearly doubled the Investment Division staff, effectively bringing front-, middle-, and back-office capabilities closer to industry norms and fiduciary best practice standards while capitalizing on cost and scale efficiencies.

Given the size and complexity of the portfolios overseen by OST, the underlying operational processes and portfolio management infrastructure are critical to support efficient and cost-effective resource deployment. Better investment management tools and additional operational, compliance, and investment staff have allowed Investment Officers to focus more on informed decision-making and portfolio construction instead of lower value but time consuming non-investment related activities. Further, the added staff and infrastructure have enabled task and duty separation, which in turn has greatly improved accountability and process control, key elements of an enhanced risk management profile and related culture.

Outlined in the following pages are details of some of the benefits including positive operational impacts (quality and controls), expanded internal management activities (and associated cost savings and performance improvements) as well as future state goals.

Operational Impact – Data Quality and Controls

Given the size, scale and complexity of the investment program, even slight discrepancies in data accuracy can magnify performance distortions which may, if not uncovered, result in unintended investment consequences and fund valuation mistakes.

The addition of dedicated investment operations staff has directly addressed several of Treasury's primary strategic objectives including cost reductions, efficiency enhancements, performance oversight, and new risk management and mitigation capabilities.

While the true and total costs associated with adequate resourcing, process efficiency or data integrity can be difficult to measure, even slight performance improvements can have a considerable impact in real dollars. For example, a single basis point (0.0001) performance drag due to operational inefficiencies, or, conversely, a single basis point performance increase attributable to process improvements is equivalent to +/- $7,500,000 *annually* for the Oregon Public Employees Retirement Fund (OPERF) at its current balance of approximately $75 billion. Clearly, the additional internal resources required to mitigate risks and effect process improvements are negligible relative to the positive impact of these resources on State investment funds.

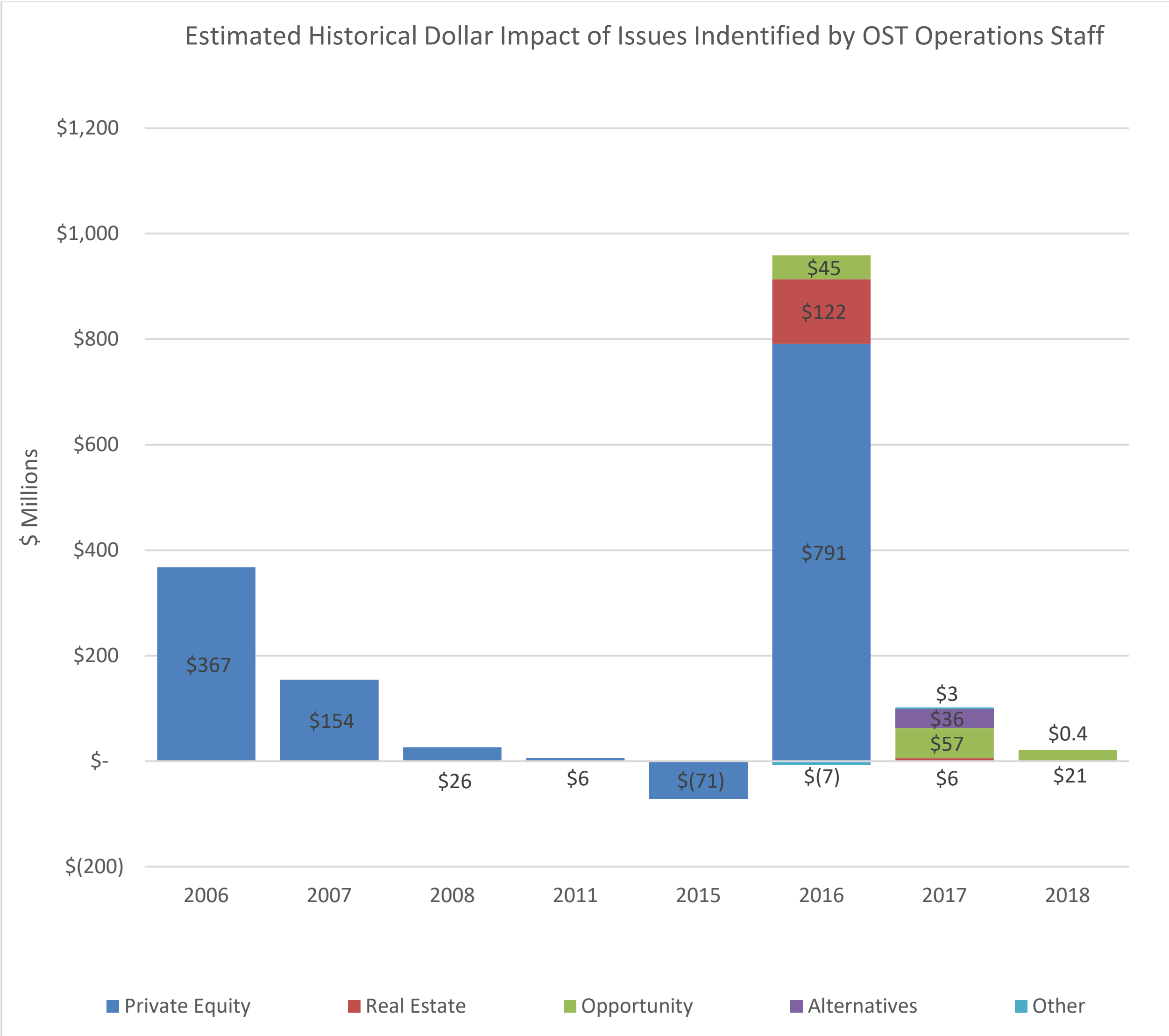
Significant time and energy are now spent on data quality, valuation and performance calculation reconciliations. Numerous cross checks and assurance reviews are now performed in areas previously vulnerable to single point of failure structures. Treasury's new operating structure and investment processes are a direct result of the significant increases in staff and technology resources approved over the last two fiscal biennium, and the successful implementation of these resources has resulted in the identification of a number of material discrepancies in previously reported investment performance and account or fund valuations.

These discrepancies, found in both the Performance and Accounting Book of Record, affect returns and valuations which can potentially impact OPERF's funded status and participant crediting rates. Fortunately, the majority of the errors identified thus far have, after rectification, resulted in upward revisions to both fund values and investment performance. These errors were identified following the design and implementation of contemporary operating procedures and data reconciliation processes that did not previously exist. Highlights include the following:

- Improved data integrity controls and oversight activities that have led to the identification of more than **$1.5 Billion** in performance and valuation discrepancies; and

- New risk mitigation and analytical capacity that has helped uncover significant reporting discrepancies, in some cases dating back several years. These ongoing diligence efforts led to a one-time material increase in reported OPERF investment performance from 0.26% to 1.39% for the second quarter of 2016. Had these discrepancies gone undiscovered, OPERF's investment performance and fund valuation would have been understated resulting in incorrect participant crediting rates and a negative impact to the pension plan's funded status. The overall estimated impact equated to more than **$790 million**.

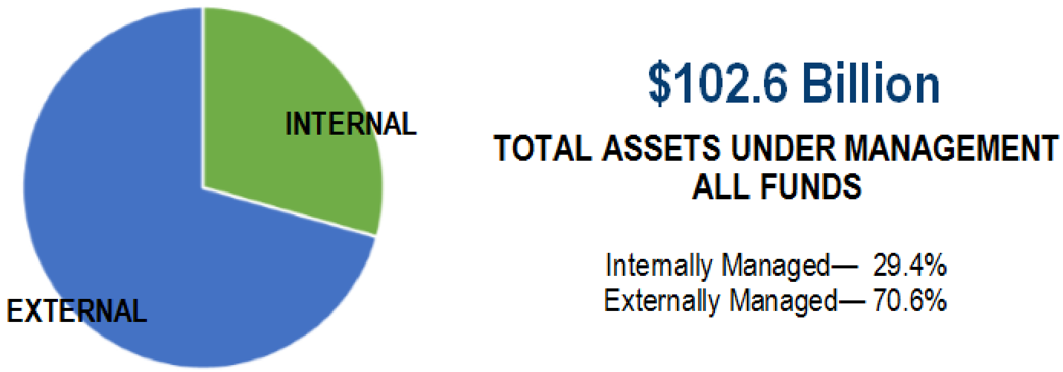
The following graph summarizes the errors and reporting discrepancies identified as well as the approximate impact totaling more than $1.5 billion.

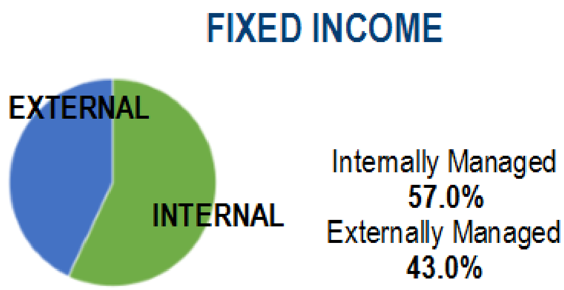


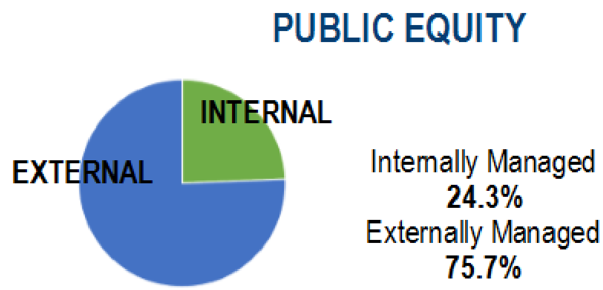
Estimated Historical Dollar Impact of Issues Indentified by OST Operations Staff
$ Millions
$1,200
$1,000
$800
$600
$400
$200
$-
$(200)
2006
2007
2008
2011
2015
2016
2017
2018
$367
$154
$26
$6
$(71)
$45
$122
$791
$(7)
$3
$36
$57
$6
$0.4
$21
Private Equity
Real Estate
Opportunity
Alternatives
Other

Internal Management – Bringing Assets In-House

As of September 30, 2018, internally-managed assets totaled more than $103 billion, of which $73 billion comprises OPERF.

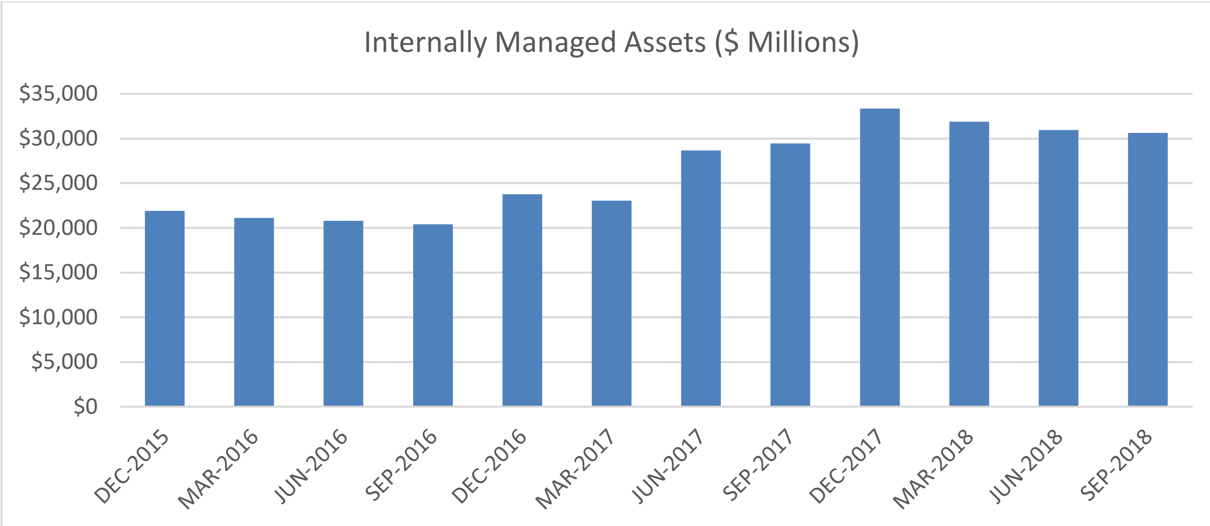




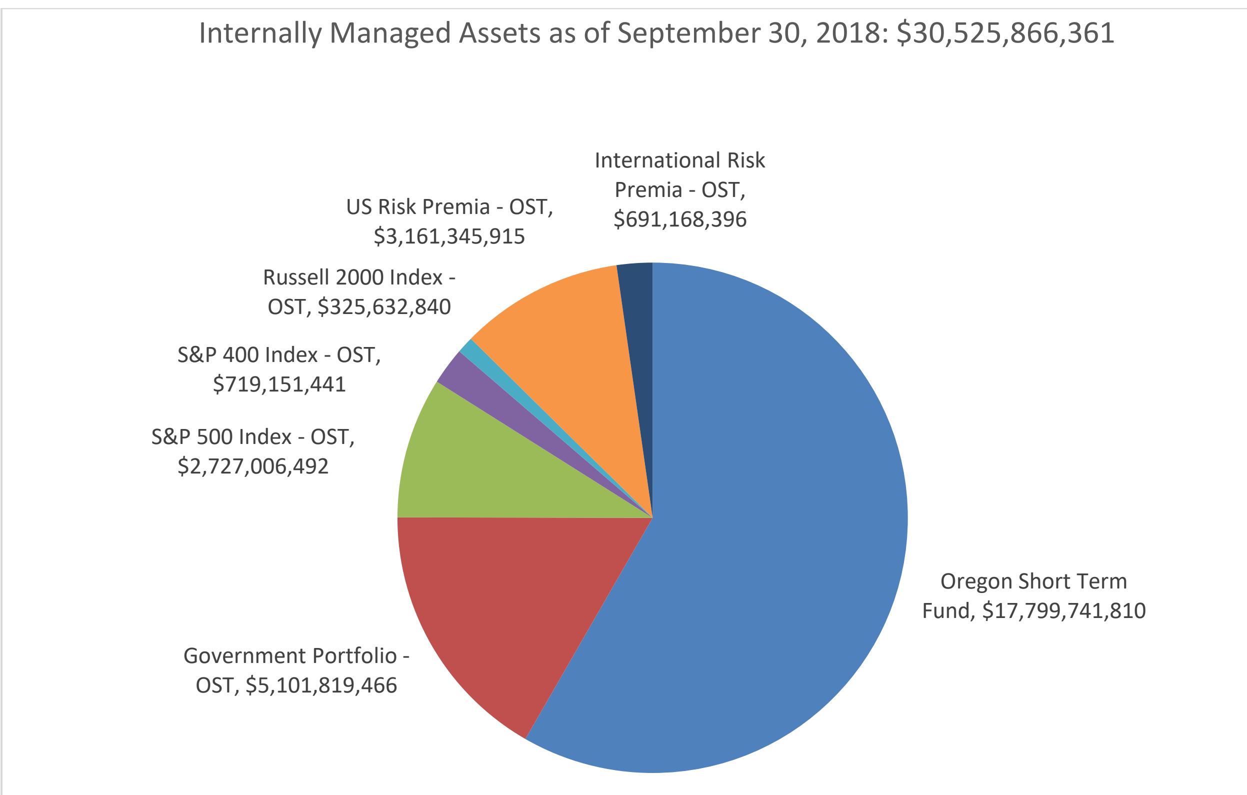


While returns have been strong historically and consistently ahead of institutional investor peers, Treasury identified the potential to improve net performance and reduce overall investment costs by shifting more of the portfolio to internal management.

When Aladdin was implemented in late 2015, Treasury's Investment Division managed approximately $20 billion internally. In mid-2017, the internally-managed Government and International Risk Premia portfolios were launched, bringing an additional $5+ billion in-house. With these newly-launched portfolios and asset appreciation over the period, internally-managed assets have risen to more than $30 billion, an increase of 50%. Growth in internally-managed assets over time is reflected as follows:

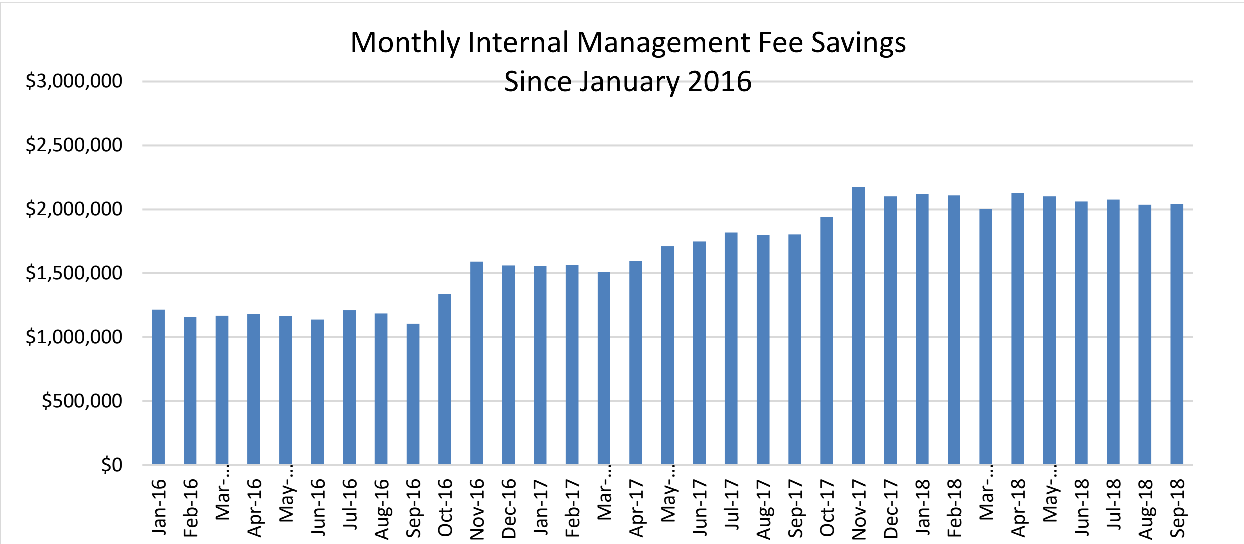


The $30 billion in internally-managed assets consists of seven portfolios that collectively comprise approximately 30% of total program assets. The largest of these portfolios is OSTF, followed by the Government Portfolio and five public equity portfolios – both domestic and international. The distribution of internally-managed assets to-date is as follows:

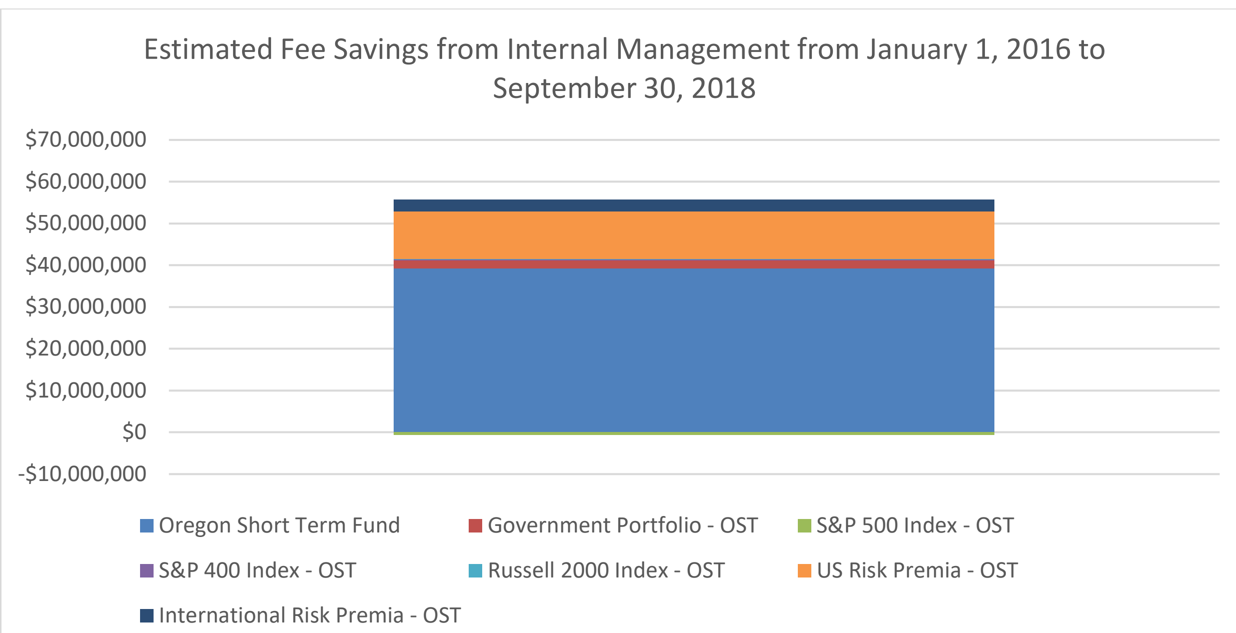


Internal Management – Cost Savings

Managing assets internally not only creates opportunities for enhanced returns, but can lead to signification cost savings. Specific asset classes have been strategically targeted for insourcing and produce considerable savings as a result. During the period January 2016 to September 2018, a comparison of the opportunity cost to manage the funds externally shows cost savings ranging from $1.1 million to $2.2 million per month.

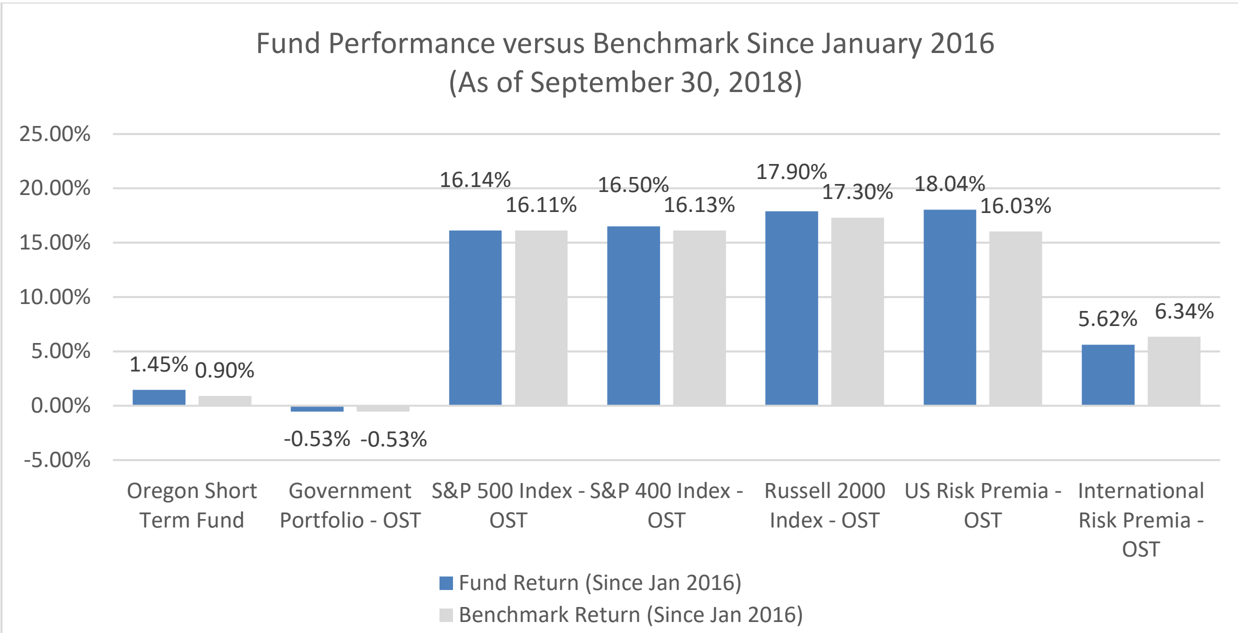


Savings achieved via insourcing have roughly doubled from 2015 to today, and now exceed $2 million per month. **These fee-related savings from internal management activities totaled roughly $55 million in the three-year span from 2016 to 2018.** Moreover, this figure is "net" and accounts for the additional costs of expanded internal staff capacity. Additional savings continue to accrue monthly.



Internal Management – Performance Value-Add

Internal management efforts have not only provided costs savings, but have also produced added value in the form of excess returns versus benchmarks. In all but one instance, internally-managed portfolios outperformed their corresponding benchmarks, as see below:



Fixed Income

Within fixed income and given various funds' and agencies' bespoke portfolio guidelines and constraints (e.g., maximum 50% to corporate securities, minimum weighted average credit quality of AA), OSTF is managed to add value by maintaining deliberate and diversified exposure to U.S. Treasury and Government Agency securities, AAA-rated Asset-Backed Securities, and high quality, investment grade credit instruments (e.g., corporate bonds, commercial paper and municipal securities). Internal investment staff will also increase/decrease OSTF's allocation to floating rate securities depending on security valuation levels and the macroeconomic outlook.

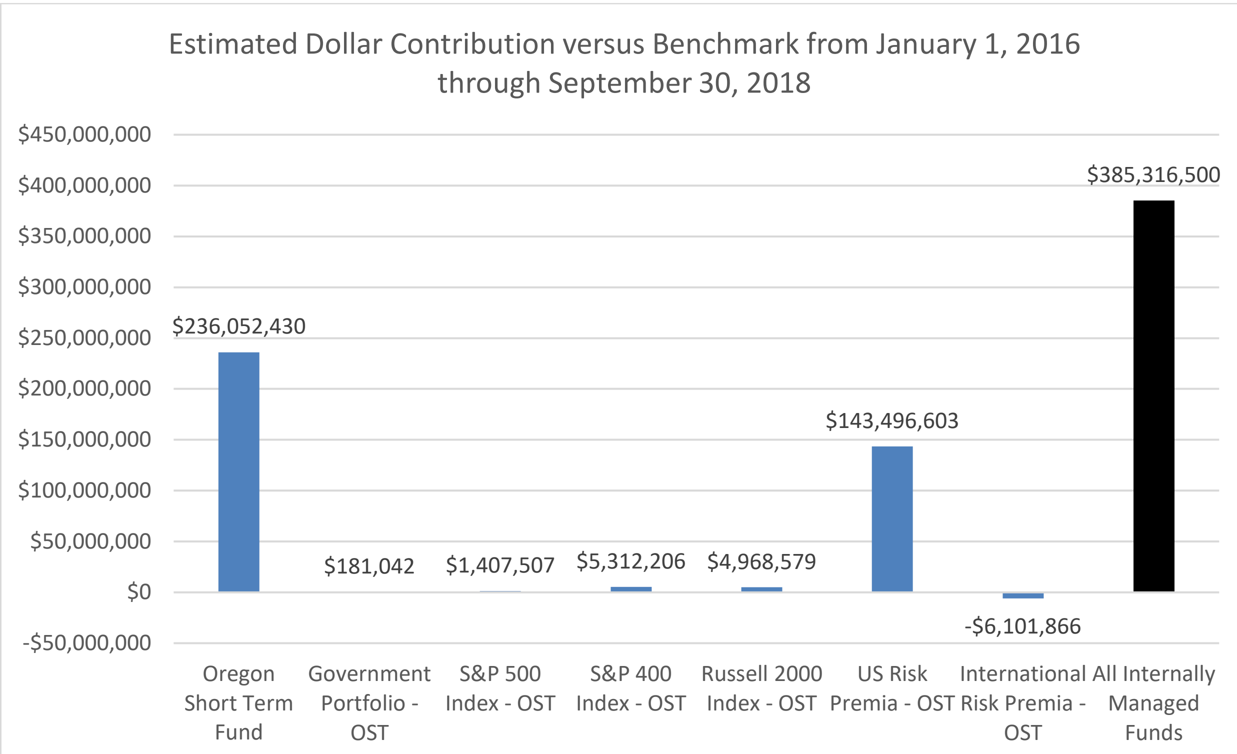
The Government Portfolio is managed to add value by minimizing fees and transactions costs, as well as by applying both deliberate overweights/underweights to index constituents and modest benchmark-relative duration positioning.

Public Equities

Within public equities, the objective of one particular strategy is to exploit inefficiencies associated with index changes or "reconstitutions" (i.e., specific security additions and/or deletions from an index). Index reconstitutions occur following various corporate actions, such as mergers, acquisitions or bankruptcies, and often result in temporary supply/demand imbalances in the affected security. To capitalize on these imbalances, the equity team will take incremental (i.e., low expected tracking error) positions away from the index with the expectation that supply and demand forces will ultimately converge. Staff has compiled a successful track record of realizing modest but consistent excess returns with this strategy.

Another strategy's basic premise is that much of what investment managers categorize as alpha is, to a material degree, nothing more than tilts toward certain risk factors, such as value, size or momentum. As a result, this strategy tilts towards those risk factors that have historically produced strong risk-adjusted returns.

Any net performance premium earned above a benchmark's result equates to positive dollar contributions to State investment funds. Even a few basis points of outperformance can, over time, produce material dollar impacts. The contribution to total return for each fund or account since January 2016 is show below:



The aggregate performance premium, measured in dollar terms, equates to approximately **$385 million** in total added value.

Combined Impact of Cost Savings and Performance Value Add

Enhanced portfolio management capabilities enabled by the Aladdin platform and executed by additional front-, middle-, and back-office staff have contributed more than **$440 million** to total return among internally-managed assets in just under three years' time. This contribution comprised $55 million in cost savings and $385 million in excess return.

Future State – Additional Staffing and Insourcing Goals

Recent resource additions in the Investment Division have contributed to cost savings of **$1.1 to $2.2 million per month**. Moreover, the current savings rate is expected to continue advancing, resulting in additional savings going forward. Improved internal management capabilities have generated better net returns relative to benchmarks, and now amount to approximately **$140 million per year, or just under $12 million per month**.

The allocation of future resources (in the form of both additional personnel and infrastructure) provides targeted opportunities for further expansions in internal management activities (with attendant cost savings) while simultaneously positioning staff with the necessary tools and capacity needed to increase the likelihood of outperforming benchmarks and external management alternatives.

Operational improvements continue to manifest in the form of better internal controls, risk management and data oversight, efforts that since January, 2016 have identified and resolved more than **$1.5 billion** in (net positive) calculation and reporting discrepancies. The Investment Division's middle- and back-office teams are currently about 70% staffed with plans to request additional positions so that all remaining trade processing functions can be moved in-house, leading to further cost savings, improved front-office synergies and enhanced capacity for both more internal management and future asset growth.